In The Matter Of:

George Boltz v.

Larry Jennings, et al.

Paul Collier, M.D.

April 25, 2014

Min-U-Script® with Word Index

STATE OF MICHIGAN

IN THE CIRCUIT COURT FOR THE COUNTY OF JACKSON

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GEORGE BOLTZ,
Plaintiff,
vs.
LARRY JENNINGS, M.D., COREEN GARCIA, PA-C, and LARRY JENNINGS, M.D., P.C.,
Defendants.

No. 12-2490-NH

- - -

Deposition of PAUL COLLIER, M.D.

Friday, April 25, 2014

- - -

The deposition of PAUL COLLIER, M.D., called as a witness by the Defendants, pursuant to notice and the Pennsylvania Rules of Civil Procedure pertaining to the taking of depositions, taken before me, the undersigned, Ena R. Marino, a Notary Public in and for the Commonwealth of Pennsylvania, at The Edgeworth Club, 511 East Drive, Sewickley, Pennsylvania, 15143, commencing at 12:58 o'clock p.m., the day and date above set forth.

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APPEARANCES:

On behalf of the Plaintiff:

Ferris & Salter PC:
Heidi L. Salter-Ferris, Esquire
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Ann Arbor, Michigan 48108

On behalf of the Defendants
Larry Jennings, M.D., and
Larry Jennings, M.D., P.C.:

Foley Baron Metzger & Juip PLLC:
Cathy Bowerman, Esquire
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Livonia, Michigan 48152

On behalf of the Defendant
Coreen Garcia, PA-C:

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I-N-D-E-X

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E-X-H-I-B-I-T-S

PAUL COLLIER, M.D.,
called as a witness by the Defendants, having been first duly sworn, as hereinafter certified, was deposed and said as follows:

EXAMINATION

BY MS. BOWERMAN:

Q. Let this reflect this is the discovery-only deposition of Dr. Collier, Dr. Paul Collier, taken pursuant to those limited purposes under the Michigan General Court Rules. Sir, my name is Cathy Bowerman. I represent two of the Defendants in this case, Dr. Jennings, and his professional Corporation. I'm going to ask you a series of questions today. If my questions aren't clear, or if you don't hear me or understand me, let me know that. I'll be happy to repeat or rephrase, because it's important that when I ask a question and that you answer it, that we are on the same page and that you have understood what I have asked; is that fair?

A. Yes, ma'am.

Q. I'm going to assume, when you answer the question, that you have heard me and understood me; fair enough?

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A. Yes, ma'am.
Q. Your full name is what?
A. Paul E. Collier, C-O-L-L-I-E-R.
Q. Your date of birth?
A. December 24, 1953.
Q. And your professional address?
A. 701 Broad Street, Sewickley, Pennsylvania, 15143.
Q. It's pronounced Zewickie -- Zewickley? How do you say your city?
A. It's Sewickley.
Q. Zewickley?
A. Close.
Q. That's a suburb of Pittsburgh; is that correct?
A. Yes, ma'am.
Q. How far out of Pittsburgh is it?
A. About 12 to 15 miles down the Ohio River.
Q. Okay. You are a vascular surgeon?
A. Yes, ma'am.
Q. Do you hold yourself out as anything else?
A. No. I'm also a Board-Certified general surgeon.

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Q. How do you divide your practice time? Is it strictly vascular surgery or do you do general surgery, as well, or other aspects?
A. No. I stopped doing general surgery three, three-and-a-half years ago, except for command performances up at another hospital, but I don't advertise that. I just do it for people who want me to do something for them.
Q. Okay.
A. Otherwise, it's just vascular surgery: Arteries, veins, and wounds.
Q. I'm sorry?
A. Arteries, veins, and wounds.
Q. Your CV has been provided to us, today, which I'm going to mark as Exhibit 1.
(Deposition Exhibit No. 1 was marked for identification.)
Q. Is this current and up-to-date?
A. Hot off the press this morning.
Q. Is it current and up-to-date?
A. Yes, ma'am.
Q. It seems to be eight pages, and my understanding is that you have kindly anticipated a question that one of us might ask

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in terms of whether there's anything on your CV that is relevant or you believe to be relevant to the issues raised by this case, and I understand that you have circled those presentations, articles, book chapters, that you believe, out of your CV, are relevant in one way or another; is that fair?
A. Yes, ma'am.
Q. So when we see a circle such as, as an example on Page 7, there is a circle on an article No. 12 and an article No. 13. It's your belief that these articles are relevant to the issues raised by the case, by this Boltz case; is that correct?
A. Potentially, yes, ma'am.
Q. Okay. Have you gone back and reviewed any of the articles or book chapters that you've written --
A. No, ma'am.
Q. -- in preparation?
A. Sorry. No.
Q. This deposition will be a lot of easier if you understand that I'm a slow speaker. I was born and raised in the south, and it would be much better for all of us if

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you let me finish my question first before you answer it. I can appreciate that our speech patterns are different, but it will be better for the record if that happens, okay?
A. Not a problem. That last question seemed like you were done.
Q. I understand. This is not a criticism. We haven't been engaging for very long, but you'll see I'm -- my brain just doesn't work as fast as yours, so I talk slower, as well.
A. I'm not sure about the brain not working as fast.
Q. Just understand that let me finish my question before you jump into the answer. Have you maintained notes for any of these presentations that you've circled?
A. No, ma'am. They're in the literature. I could look them up if I had to but --
Q. Is it fair to say that the most recent article, book chapter, or even presentation that you have circled is 1987, that's relevant to this case, out of your CV?
A. Maybe, you know. I don't know if

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anything came out after that.
Q. I'm sorry?
A. I said I don't know if anything came out after that. Sure, that's probably true.
Q. You grew up in New Jersey?
A. Yes, ma'am.
Q. You attended the University of Pennsylvania as an undergrad and Yale Medical School for your M.D. degree; is that correct?
A. Yes, ma'am.
Q. Then it indicates you went for your general surgery residency at Allegheny General Hospital which you completed in 19 -- looks like 1984, including the Chief Residency in general surgery; is that fair?
A. Yes, ma'am.
Q. And then you did a Fellowship in vascular surgery at Montefiore Medical Center in the Bronx?
A. Yes.
Q. Finished that in 1986?
A. Yes, ma'am.
Q. You've listed your Board Certifications here. Have you passed each of your Board Certification examinations on the

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first attempt?
A. Yes, ma'am.
Q. It would appear that you're Board Certified in both general surgery and vascular surgery?
A. Correct.
Q. And those are current certifications and up-to-date?
A. Yes, ma'am.
Q. You are not a family practitioner; is that correct?
A. That is correct.
Q. You're not a physician assistant, certified physician assistant?
A. Correct.
Q. You don't hold yourself out as either of those specialties?
A. Correct.
Q. And as I understand it, it not your intent to offer standard of care testimony in either of those fields; is that fair?
A. Fair.
Q. Now, the -- in terms of your practice, what has been the nature of your practice since you finished your training in

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1986?
A. Well, up until three, three-and-a-half years ago, I did general surgery, vascular surgery, thoracic surgery, pacemakers, ran the vascular laboratory in Sewickley. Then, about three, three-and-a-half years ago, I stopped doing general surgery and thoracic surgery and pacemakers, at least in Sewickley, and just focused on vascular surgery including arteries, veins, wounds.
Q. Have you been in the same practice since 1986?
A. No, ma'am. I was --
Q. I'm sorry. Yeah, since '86?
A. I was with a group for 12 years, and then in '98, I went solo.
Q. What was the name of the group you were in for 12 years?
A. Surgical Associates of Sewickley.
Q. And the -- that group practice, were there other vascular surgeons?
A. Not Boarded, no.
Q. And since -- so that would have taken us up to -- 1986 to '98?
A. '98.

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Q. '98. Is that, roughly, correct?
A. Yes, ma'am.
Q. Then in '98 you went into solo practice?
A. Yes, ma'am.
Q. And you've remained in solo practice since that?
A. I've had a couple associates, off and on, people I've worked with. They were all general surgeons.
Q. So the year you changed your practice more recently to limit it to vascular surgery, what year was that?
A. What year is this? End of 2010, yeah.
Q. Okay. Does your practice have a name?
A. It goes by Greater Pittsburgh Surgical Alliance.
Q. Are you the sole owner?
A. Yes, ma'am.
Q. In terms of your hospital affiliations, do you currently have hospital affiliation?
A. Yes, ma'am.

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Q. Since 1986, has it always been one hospital or more than one?
A. It's been more than one, intermittently.
Q. What is the primary hospital that you have been involved with?
A. It was Sewickley Valley Hospital. It's now known as Heritage Valley Sewickley, but I still call it Sewickley Valley. Too old to change.
Q. This Grove City Medical Center, what is that?
A. It's another hospital I have privileges at.
Q. What do you do at that hospital?
A. About twice a month we go up and have clinic, see people with vein problems, mostly. We're doing some arterial work up there. Operate up there, periodically. Like I said, I'll sneak a general surgery case in, periodically, if somebody really wants me to do it.
Q. What's -- this is going to be a really stupid question. What city is Grove City Medical Center in? Is it in Grove City?

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A. Yes, ma'am. It was actually Grove City College.
Q. That's the name of the town?
A. Yeah. Grove City, not Grove City College.
Q. You also have yourself listed as the director of the Sewickley Vein Center. What is that?
A. Well, basically, nowadays, a lot of specialties are doing vein work that aren't vascular surgeons, so in order to keep the patients flowing in, you put up a shingle that says Sewickley Vein Center. It's just part of my main practice. I've been doing veins my entire career.
Q. What percentage of your practice in, say, the past ten years has been vein as opposed to arterial work?
A. Over ten years?
Q. Well, let's say over the last -- since 2009?
A. Well, why don't we just say since 2010, when I stopped doing general surgery, because that complicates the picture, but I'd say that it's probably to the point now where

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it's half vein, half arterial. But prior to that, I mean, the veins had only really started to grow, and we focused more on that just because I'm getting older and I don't want to do the major stuff anymore. Probably, the average over the ten years, it's probably 15 percent.
Q. Over the ten years, what percentage of your practice has, on average, been arterial work?
A. The arterial work, it varies anywhere between 50 and 70 percent, depending if somebody's with me. I'd say 60 percent, at least.
Q. Is that 60 percent of your vascular practice or 60 percent of your entire practice over the last ten years?
A. No. The entire -- the rest would be the general surgery practice, if we're just talking about procedures.
Q. So prior to three-and-a-half years ago, what percentage of your practice was vascular surgery as opposed to general surgery or thoracic surgery?
A. It would depend if I had an

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associate with me. My associates were all general surgeons, so I would try and shift my general surgery work to them. So if I was by myself, probably just over 50 percent vascular. If I had somebody with me, probably 70 percent vascular.
Q. When is the last time you had a partner?
A. Three-and-a-half years ago.
Q. What is the name of that last partner?
A. It was Dr. Solow, S-O-L-O-W.
Q. And is it a woman?
A. She.
Q. She. Is Dr. Solow still practicing in the area?
A. No.
Q. Was she a general surgeon?
A. Yes, ma'am.
Q. Do you have any academic appointments?
A. Not currently, no, ma'am.
Q. When's the last time you had an academic appointment?
A. '86 or '87.

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Q. Where was that?
A. I think I had a clinical appointment at Allegheny, but prior to that, it was Montefiore.
Q. So your last academic appointment was, essentially, in your training; is that fair?
A. I think I had one for a little while at Allegheny, because I would go down there and teach the residents, but that just got to be a waste of time.
Q. Why was it a waste of time?
A. Well, number one, the residents tended not to show up for lectures. Number two, when I would do a case down there that I thought would be interesting to the residents, it would, invariably, be bounced back on the schedule because I wasn't a frequent flyer down there, sit around five or six hours waiting to go. It was a waste of time.
Q. At the hospital that you practice at, Sewickley Valley Hospital, which is now -- what did you say it is now called?
A. Heritage Valley of Sewickley.
Q. Why did it change the name, if you

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know?
A. We merged with another hospital in the valley, the Beaver Medical Center there, Heritage Valley. So we are -- they are Heritage Valley, Beaver. Basically, insurance wars out here, so we have our own little slice that UPMC and Allegheny weren't in.
Q. The hospital which is now Heritage Valley Sewickley, how many a bed hospital is that?
A. I think it's listed at about 200, it runs about 180. It has 17 or 18 ICU beds.
Q. Why type of facility is that? Is that a community hospital?
A. It's community.
Q. Is it a --
A. No. It's not a Level-1 Trauma Center.
Q. Is it a Level-2 Trauma Center?
A. No. It's not a Trauma Center.
Q. Are there other vascular surgeons on staff?
A. There's one other gentleman who rarely ever comes. He's stationed down in Beaver.

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Q. Is he a full-time vascular surgeon down there?
A. In all honesty, I heard he was going to go to hospital administration school, so I don't know what he does down there.
Q. What's his name?
A. Sandhu, S-A-N-D-H-U.
Q. That's his last name, I assume?
A. Yes, ma'am.
Q. Are there other surgeons at your hospital that perform arterial bypass procedures?
A. Yes, ma'am. There's two others that do a little bit of work.
Q. Who are they?
A. Dr. Wilcox and Dr. Felix.
Q. Are they general surgeons?
A. Yes, ma'am. They do general and bariatric surgery.
Q. Have done any research or investigative work in any area of arterial bypass graft surgeries?
A. Have I done research?
Q. Yeah.
A. Those are the papers I showed you.

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Those had to do with graft failures and things like that.
Q. Were those papers that, basically, arose out of your Fellowship training?
A. Yes, ma'am. That's my two year research project.
Q. Okay. And you've not been involved in any research since then; is that correct?
A. No. I still have done clinical research and published papers.
Q. But not in the area of arterial bypass grafting; is that fair?
A. I think that's fair, sure. There's some papers, since then, that had to do with ischemia and bypasses, but not germane to this case, but, yeah.
Q. For the medical issues or surgical issues raised by this case, do you consider any medical journal or any textbook authoritative or generally reliable?
A. I would say some of them are generally reliable. I don't consider anything the Gospel, it that's what you mean by authoritative, but there's good starting points.

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Q. What would be good starting points?
A. If you look at a textbook, I like Rutherford's Vascular Surgery, although my edition is probably outdated. As for journals, I would say our number one journal is the Journal of Vascular Surgery. If I had a question, I'd probably try to find it there first. Nowadays, with computers, you can pretty much get anything, but they're good starting points.
Q. Have you reviewed any literature, including textbooks, any writings beyond the materials in this case, any medical literature for this case?
A. I don't understand what you mean, "Beyond the materials in this case."
Q. Let me rephrase that, because it was rambling and inartful. I was trying to improve it as I went along but wasn't successful. Have you reviewed any literature, medical literature, as part of your review of preparation for this case?
A. Not specifically for this case, no, ma'am.
Q. Have you looked up anything in a

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journal or textbook?
A. Not for this case, no.
Q. Are you planning to rely on any medical literature in support of your opinions in this case?
A. I wouldn't say, necessarily, rely. I mean, there's the Rutherford's Scale of Acute Ischemia, but that's basic vascular surgery that every vascular surgeon knows.
Q. I'm sorry. Rutherford's Scale of?
A. The scale of how you grade acute arterial ischemia.
Q. I just need the name? Rutherford's Scale of?
A. Acute Ischemia. I don't know if that's what it's officially called. That's pretty much how we grade it.
Q. I don't mean to be critical, but your speech pattern is a thousand miles an hour. I just can't keep up with you. If you don't mind slowing down a bit. I will do my best not to ask you to repeat things. I'm not deaf, so it's not a matter of that. I'm just not accustomed to your speech pattern. I don't mean it as a criticism, but if you could slow

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down, it would be helpful.
A. Usually it's the court reporter that slows me down.
Q. I am stunned that she hasn't, except I know that she is recording this.
(Discussion held off the record.)
Q. Have you reviewed anything in the Rutherford vascular surgery textbook?
A. I have reviewed the entire textbook. You mean for this case?
Q. For this case?
A. No.
Q. You consider Rutherford's classification generally authoritative and reliable?
A. I think for what it does, yeah.
Q. Okay. Is there more than one Rutherford scale?
A. I don't know if they have one for chronic ischemia, but the one that I'm thinking about is for acute ischemia. It's the only one I know of. Bob has been around a long time. He's the author of the textbook so I'm sure there's more than one Rutherford scale for

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different thing.
Q. In terms of your experience as an expert, when did you begin reviewing cases?
A. Either '85 or '86.
Q. What started you in that process?
A. I had written a paper about a unusual complication. It was a cardiac tamponade from central veinous catheters. I reviewed the world's literature and pretty much wrote a paper saying that this is how you avoid having it happen. Published it. Unbeknownst to me, it was put in all the package inserts for all the catheters in the country, and I guess the lawyers knew about it and it I didn't know about that, so I got called about a case that was similar to my case, and I reviewed it. In the beginning I got cases. The only case I reviewed was this kind of case, from all over the country, and so I wrote another paper. I figured I'm really trying to put myself out of business and eliminate this problem.
Continued to see cases, so I started working with the catheter companies, the BARD Corporation, and the Arrow Corporation, and with the Food and Drug Administration, and we

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presented a paper at a National conference. I wrote another paper, and I guess I'm proud to say I haven't seen a case listed in the last ten years, so maybe I accomplished what I set out to do. That's how I get into it.
Q. Other the years, how many cases have you reviewed?
A. I'd say probably over 400.
Q. You ever advertise for your services?
A. No, ma'am.
Q. Ever review cases through a medicolegal service?
A. No, ma'am.
Q. Do you have a sense of the percentage of case, plaintiff versus defense, that you reviewed?
A. I'd say, over the years, I reviewed probably two-thirds or 70 percent on behalf of the patient and the other third or so on behalf of the doctor.
Q. What do you charge an hour to review cases?
A. Right now I charge $500 hour.
Q. For what period of time have you

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been charging $500 an hour?
A. It's been the last few years, at least. Three, four, five, I don't know.
Q. You've reviewed cases in the state of Michigan?
A. I have, ma'am.
Q. For what attorneys or law firms?
A. Obviously, Ms. Salter-Ferris, I think, this is the second case I've done with her.
Q. Okay. With her or with her firm?
A. Well, both. Her, specifically. I did another case with a lawyer, I think his last name was Wrangler. I know I've done a couple other cases. I did a defense case a few years ago. It was one of those catheter cases.
Q. Do you know who the lawyer was?
A. No. It was interesting because I think he was from Royal Oaks. The only reason I remember that is my wife was an ICU nurse and that came with R-O-M-I on the return address which is Rule Out M-I, Rule Out Myocardial Infarction, and she thought it was funny. I don't remember his name, though, or hers. I don't remember anything about him.

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Q. Can you estimate for me the number of cases you've done out of the State of Michigan?
A. Both guess, half a dozen.
Q. And you don't remember the other attorneys you've reviewed for?
A. Quite honestly, I don't usually remember lawyers' names.
Q. Can you tell me what other states besides Michigan you've reviewed cases out of?
A. I've probably reviewed cases in about 25 to 30 states. If you want me to try to rattle them off, I can, but mostly to the east of the Mississippi. Some to the west.
Q. In terms of depositions, how many have you given?
A. Best guess, probably 125 or so.
Q. Has that increased over the years?
A. Yeah, of course. I started out slow and then picked up.
Q. In the last five years, how often have you given deps, a year?
A. It varies. Probably 10 to 12, 10 to 15.
Q. What do you charge for a deposition?

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A. I charge $3,000 for a block of 4 hours, because I can't work. If it goes over 4 hours, I now charge $1,000 an hour.
Q. Again, is the percentage of depositions you've given for plaintiff versus defense similar to the two-thirds to 70 percent for plaintiff versus --
A. Sorry. It's probably just a tad higher on behalf of the patient. In Pennsylvania, we don't give depositions. We just do reports.
Q. What defense firms here in Pennsylvania have you reviewed for?
A. You probably know better than I do. Dickie Chilcote McCamey, is it? I think it's dickie Chilcote McCamey. There used to be one called Israel, Wood & Puntil, but they broke up, and I've done work each of them on their own. Murphy Taylor. I think, B-I, Buchanan Ingersoll. There's a couple other firms I missed.
Q. In the other case you had for Ms. Salter-Ferris, have you given a deposition?
A. I think it was a few years ago, yes, ma'am.

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Q. Do you know the name of the case?
A. No, ma'am.
Q. Do you know what City or County the case was in?
A. No, ma'am. Sorry.
Q. Name of the doctor or the hospital involved?
A. I don't remember anything about the case, just, I did one.
Q. And in terms of trials, have you appeared in trial before?
A. Yes, ma'am.
Q. On how many occasions?
A. I'd say, probably, about 30.
Q. What do you charge for trial appearance?
A. I charge $7,000 a day, away from the practice.
Q. Plus travel expenses, I assume?
A. Yes, ma'am. I always forget that.
Q. Have you testified in Michigan before?
A. In trial?
Q. Yes.
A. No.

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Q. Did you give trial testimony in the case for Ms. Salter?
A. No. I think I just did a deposition by video.
Q. Was that for trial purposes, if you know?
A. I don't think so, but I don't think it was, no.
MS. SALTER-FERRIS: It wasn't.
A. I probably would have worn a jacket and tie if it was.
Q. Have you ever testified in a Federal Court case?
A. Many years ago.
Q. Have you maintained a list of cases that you have given testimony in?
A. No, ma'am.
Q. Do you have a separate business or entity through which you do your medicolegal work?
A. No, ma'am. It all goes through the same thing.
Q. Can you tell me how much money you make a year doing medicolegal activity?
A. It's gone down because I've slowed

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down but, I guess, about 16 percent of my practice.
Q. How much money?
A. I understand your question. I'm trying to think. I mean, I'm sure -- I don't know the exact number. Probably, in the years I've made the most, it's been somewhere between 100-to- $200,000.
Q. Over what period of time were you making that kind of money?
A. Those were just the best years. Probably, just a few years, I went over 100,000.
Q. When were you first contacted in this case?
A. I think it was the end of 2012.
Q. Was that by Ms. Salter?
A. Salter-Ferris, yes, ma'am.
Q. What were asked to do?
A. I was just asked to review the case and determine whether there was a -- if the patient had been treated sooner, would there have been a different outcome.
Q. I'm sorry?
A. If the patient had been treated

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sooner, would there have been a different outcome. In other words, causation.
Q. The materials that you have reviewed for this case, are they -- have you brought all of those with you today?
A. Yes, ma'am.
Q. I'm going to hand them back to you and ask you if you could list them for me, what you reviewed?
A. Sure. There's a deposition of Dr. Heidenreich, H-E-I-D-E-N-R-E-I-C-H. There's selective records. These are records from the Associates in General and Vascular Surgery. I have the deposition of PA Garcia. There's a CV and, what do you call them, exhibits from Dr. Heidenreich's deposition.
Q. What is -- what do you understand to be the makeup of that, those exhibits? Are those, basically, the records from St. Joe's, or are there other institutions, as well? Let me rephrase that. Is -- are those records that you reviewed from that, that you said were marked as exhibits in Dr. Heidenreich's, were they limited to the care and treatment in April of 2010 and more recent?

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A. Yeah. It looks like it's more recent, yeah, and April of 2010 --
Q. I'm sorry. I didn't mean to interrupt you. Go ahead.
A. There's bills from his office, it looks like. It looks like this is, probably, just his office record that was Xeroxed, but I'm not sure.
Q. Okay.
A. Then, there is some records from 2006, in -- Toledo Hospital; there's some records from May 29, '07, Toledo Hospital; October 7, 2007, Toledo Hospital; there's some records from February 6, 2008, Toledo hospital; records from Dr. Balkany, B-A-L-K-A-N-Y's office; some records from St. Joseph's Mercy Hospital, April 2, 2010, admission; there's records from the Associates in General and Vascular Surgery; records from Allegiance Emergency Room, April 1, 2010; records of Dr. Jennings; and then there is as couple CD-ROMS, four, to be exact. One is the CT scan from April 3, 2010, at Mercy Health System, and then there is three disks with records from Joseph's Mercy Hospital.

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Q. As far as you know, those three disks that you have in your hand, now, are limited to the medical records and not imaging studies?
A. Correct. I don't remember seeing imaging on them.
Q. Did you review all of what's on those three disks?
A. Yes, ma'am, at one point. There is all sorts of photographs.
Q. Can you give me the dates of those photographs that you reviewed?
A. Let's see.
MS. SALTER-FERRIS: Do you want -- can we just mark that list? It's the same list we're using in every deposition.
MS. BOWERMAN: Well, I'm going to go mark all of -- I think we'll probably end up marking all of these. I don't know what the quality of these are, versus something else. I'm going to mark as Exhibit 2 what has been stapled together with a list of, looks like, a printer's copy of photos, and the list on the front says, handwritten notes on backside of photographs. See that?

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THE WITNESS: Yes.
BY MS. BOWERMAN:
Q. Am I correct?
A. Yes, ma'am.
(Deposition Exhibit No. 2 was marked for identification.)
Q. Then you have additional photographs here that seem to be, at least two pages of them are glossy --
A. Yes, ma'am.
Q. -- printing. I'm going to mark one as Exhibit 3, which has one photograph of 3-24-2010, and two photographs of 3-30-2010. Did I identify that correctly?
A. Yes, ma'am.
(Deposition Exhibit No. 3 was marked for identification.)
Q. And, then, we'll mark as Exhibit 4 another glossy printout of three photographs, and the dates on these are 3-31-2010, and 4-1-2010, and 4-2-2010. Did I identify that correctly?
A. Appears to be, yes, ma'am.
(Deposition Exhibit No. 4 was marked for identification.)

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MS. BOWERMAN: Then, there is, stapled together, another three photographs that, again, look like they came out of a printer, a color printer. There's one photograph per --
MS. SALTER-FERRIS: That's Exhibit 5?
(Deposition Exhibit No. 5 was marked for identification.)
MS. BOWERMAN: That's Exhibit 5, thank you, and the front page says, 3-24-2010, 6:17 P.M. The second one seems to have the same time and date. And the third one, because it looks like a copy, it's cut off as to the date and time. Although, from what I can see, it would appear that date, at least, is 3-24-2010 and perhaps 6-something, but I can't read them, the date and time on that third page. You can do a better job --
THE WITNESS: I have no idea. I'm sure it's a repeat, anyway.
BY MS. BOWERMAN:
Q. What else have you reviewed, sir?
A. Notice of Deposition, does that count?

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Q. Sure. You've made some notes on this Notice of Deposition?
A. Yes, ma'am.
Q. I'm going to mark this Notice as Exhibit 6.
(Deposition Exhibit No. 6 was marked for identification.)
Q. Are you complied with bringing with you all the things that this Notice has requested?
A. What I could, sure.
Q. Under No. 1, you've written, "Okay," which means that -- I assume you mean that you have brought your Curriculum Vitae, summarizing your professional qualifications?
A. Yes, ma'am. You have it.
Q. No. 2, copies of all scientific and technical publications authored by you, and you've written, "Don't have." Does that mean you don't possess them anywhere, or you just don't have them today?
A. Both.
Q. Exhibit number -- I'm sorry. No. 3, which was all time records, diaries, bills prepared and rendered in connection with

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your investigation and evaluation of the issues involved in the lawsuit, what does that word say that you've written?
A. I think it says, "Them," meaning I don't have diaries, and the way I bill, yes, ma'am time records. I send an invoice. When it gets paid, our invoice goes in the garbage. And, "Them," I asked Ms. Salter-Ferris today, I said if you have them, you know, I don't have copies.
Q. Okay. Do you keep records of how much time you've spent on the case and how much you have billed?
A. No, ma'am.
Q. So there is no way for you to recreate how much you have been paid so far in this case, is that what you're telling me?
A. Unless I get W-2s back at the end of the year. Assuming this was the only case I was working under during that time period for this firm, I could probably do it that way, but other that, no.
Q. So let me make sure I'm understanding you. You send out a bill, and once it's paid, you destroy the bill?

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A. Correct.
Q. How do you account for your income on your income tax?
A. You get a W-2 or a 1099 or something at the end of the year.
Q. How does that payment of that bill become a W-2 or 1099?
A. Well, I assume, the person that paid me fills it out and sends it to me.
Q. So you are relying on the fact that, in every instance, you have received a 1099 at the end of every calendar year for cases that you have reviewed or billed for?
A. I certainly hope that people forget so I don't have to pay taxes on it, but, you know, I rely on it, sure. I think they're required to do that. It would be nice if they didn't, you know, but --
Q. You have two pages of notes; is that correct?
A. Yes, ma'am.
Q. I'm going to mark, as Exhibit 7, a page that has at the top, left-hand corner, the date 3-24-2010.
A. Yes, ma'am.

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(Deposition Exhibit No. 7 was marked for identification.)
Q. When was that page authored?
A. Probably as I was doing the records or if I scribbled when I was going through the records I, sort of, put it together at that time. Usually, it's an ongoing type of thing, as I read things.
Q. And all of the notes on here were made by you?
A. Yes, ma'am.
Q. Exhibit 8 is a second page of notes, and at the top, left-hand corner is, I assume, a schematic drawing of a vascular -- a lower extremity or lower extremities or pelvis-down vascular system?
A. Yes, ma'am.
(Deposition Exhibit No. 8 was marked for identification.)
Q. When were -- when was the contents of this document authored?
A. Same way. As I go through the records, I take notes, especially if they're on a disk.
Q. Have you authored a report in this

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case?
A. I don't think so, no, ma'am.
Q. Have you made any other notes, to your knowledge?
A. Unless there's things written in there, but I don't think so.
Q. When you say, "Things written in there," do you make highlights on any of the records?
A. I don't think I did on these. I did -- highlighted some of the deposition things but, I think, here, I didn't highlight.
Q. Are all of the highlightings or writings in the exhibits that you have listed off -- I'm sorry. The records that you have listed off that you've reviewed, are all of those markings, whether they're highlights or ink markings or whatever, were they all made by you?
A. Yes, ma'am.
Q. I want to start with Exhibit 7 and ask if you could, slowly, read into the record, since it's not a whole lot of notes, your -- all that's on this page?
A. Okay.

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Q. I might interrupt you, if you don't mind, as you go along, in I have a question as to what it means.
A. Okay. Well, if it's an abbreviation, I'll just say that.
Q. Okay.
A. 3-24-2010, it says, 6 days, meaning there were 6 days of symptoms. 3/1-17, foot fine, then changed. That's going back in that 6 days. That changed, probably, about 3-18. PA Garcia. Increased pain, no new sensorimotor. That just means the sensorimotor changes in his foot didn't change. He walks. It says photos showed mild, dependent rubor, and it just says Jennings, M.D., since it was his office.
Q. If I could stop you there. The photo you're referring to, the -- some of the photos that we marked in this already as exhibits -- and you're referring to one particular photo or all the photos that are dated March 24, 2010?
A. I would assume that would be all of them, but I don't remember, specifically, why I wrote that.

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Q. Did you note, in the photos timed or dated March 24, 2010, that the mild, dependent rubor was present on the left as well as the right?
A. Well, clearly, the right one was worse. There may have been some changes on the left. I don't remember, specifically, looking at that. I could look at the picture. I'd be glad to look at that. My focus was on the right leg.
Q. Okay. Well, when you say, "Changes," you don't have any photos, do you, of what his foot looked like on March 1, for instance?
A. I don't think there's anything in there, no, ma'am.
Q. Or any date before 3-24-2010, do you have any photos that show you -- show us what his feet, left and/or right feet; left and/or right lower extremities look like?
A. No. All of the pictures I have are there.
Q. Okay. Go ahead.
A. Okay. Then we have a 30 and a 31. Just, basically, working backwards, to remind

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me there's 31 days in March, so I started trying to figure out days there, with a question mark next to it. The question is trying to work backwards from the other records when his foot changed or when it was salvageable.
The 31, there's a note that says needs to be seen per Doctor J, (next appointment 4-2). I think there was a phone call to a nurse that was recorded there. April first, Duplex, no flow of right common femoral artery, superficial femoral artery, popliteal, posterior tibial and peroneal arteries. It says class III which is that Rutherford's classification we were talking about. I think that's from Dr. Heidenreich's notes. Profound right lower extremity ischemia, distal calf and foot nonviable. It says 4-2-10, so April 2.
Q. If I may stop you for a second. The entry from 4-1 about the Doppler negative flow and then -- is everything else on that line what you understand to be the result of a Doppler study done on 4-1?
A. Yes, ma'am.
Q. Where was that study done, if you

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know?
A. I don't remember if that was the emergency room or if it was when he got transferred. I didn't, specifically, note that.
Q. Okay.
A. I think we're on 4-2-10. It says INR 4. He was (inaudible) regulated. We talked about the Class III changes. Then, it says thrombectomy right aorta femoral graft, and right fem-pop bypass by Dr. Heidenreich. Under that it says right aorta femoral to deep femoral artery PTFE, and that's a bypass. Right calf fasciotomy. Over to the right it says questionable left fem-pop out, and under that it says to save below knee, meaning the amputation, prevent possible hip, meaning if he didn't do that, Mr. Boltz would probably have hip disarticulation.
Q. What do you mean by that?
A. Well, if he had no flow to that leg, I don't think an above-the-knee amputation would have healed. He would lose his leg up at the hip.
Q. I understand now.

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A. That's disarticulation. Then there was a CT scan, I think. It says negative embolic source. So this was not from something coming from his heart or something like that.
Q. All right.
A. April 5, 2010, right, below-knee amputation, then just phantom pain next to that. Later on it says November 11, 2010, left aorta femoral opened. There's a bovine paracardial patch, because they took out 1.5 centimeters of fresh clot in the profunda or deep femoral artery. The fem-pop is out so they performed a femoral to below-knee popliteal vein bypass graft. There was two vessel runoffs and the surgeon noted that there was very minimal atherosclerosis of the popliteal artery.
Q. When you say, "Two vessel runoff," you mean to say that there were two vessels that were patent into his left foot?
A. There were two vessels into his left foot from the popliteal.
Q. Do you know which two?
A. One of them is the peroneal which doesn't directly go into the foot. The other

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was the posterior tibial.
Q. So on the left he had direct runoff into the foot through the posterior tibial; is that correct?
A. Yes, ma'am. It depends what you mean by direct. Obviously, he had a bypass graft put in there prior to that. He didn't have direct flow.
Q. I'm sorry. My question, perhaps, wasn't artful so let me ask it again. The -- on the left, his posterior tibial artery was patent down into his foot; is that correct?
A. That's correct.
Q. Go ahead. You were on the last line there.
A. January 26, 2011, basically, an open left fem-pop bypass graft with a distal anastomosis. There was a stenosis, and they put a 6 millimeter balloon into it. The open means they did it with an open technique.
Q. Explain to me what that is, that last procedure?
A. Well, basically, he developed, probably, intimal hyperplasia at his distal anastomosis. So if you don't repair that, you

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could close his graft. Usually, you do it percutaneously, but because of all the scarring of his groin, they thought it would be too hard to go in through the groin, so they made a little cut in his thigh and directly accessed the graft and just did it that way.
Q. Based on your review of all the records, did he have a similar finding at any other time with regard to his grafts, this what did you call it, an intimal --
A. Hyperplasia.
Q. Hyperplasia.
A. Again, I'm just -- it wasn't documented it was intimal hyperplasia. It's just, generally speaking, two months after you put a graft in, if it's got a narrowing at the anastomosis, it's usually intimal hyperplasia.
Q. Did they document intimal hyperplasia in relation to this January 26 procedure?
A. Again, they didn't expose it. They didn't look at it. They did it long distance with a balloon.
Q. But did they -- is there anywhere in the records that you saw, they referenced that

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was the cause?
A. I don't remember them saying intimal hyperplasia. Again --
Q. Or words that effect, scaring?
A. That they said anastomosis stenosis which is scarring.
Q. So they used a different term for it but, unmistakably, it was, I mean -- undeniably, it's not confusing to you as a surgeon that they had a finding of a narrowing that was not the result of atherosclerotic disease; is that fair?
A. Correct, yeah.
Q. There was another cause other then atherosclerotic?
A. He developed some scar tissue there.
Q. As far as you know, in relation to any of the prior grafts, bypass grafts that had been placed in Mr. Boltz since 2006, there was never a finding of any toward sort of scarring that caused the clotting off of the grafts; is that fair?
A. Well, again, that wasn't well-documented, whether it was atherosclerosis, intimal hyperplasia, a

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combination of both. I mean, the grafts clot -- a lot of times when the graft clots, you don't even see what caused the distal end unless you expose it. So, fair, yes, it wasn't documented. But, again, you don't sometimes directly look at it, so you don't document it. So if a graft closes and you don't get it open, it's just a closed graft.
Q. Again, there's no description in any of the prior surgeries that there was a narrowing or stricture anywhere in the graft itself or at the beginning of or at the end of the graft where they inserted into the native veins -- native arteries; is that fair?
A. Correct. They usually just have a closed graft. Generally speaking, a graft just doesn't close miraculously. There's usually some narrowing that leads to the closure, but it wasn't documented because they didn't uncover it. They left the clot in place.
Q. Okay. These are your only notes?
A. Yes, ma'am.
Q. Are there any materials which have not been provided to you, to date, that you feel that you need to more accurately render

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opinions in this case?
A. I don't think, specifically, no. I mean, it would be nice to see the prior arteriograms. I mean, it would, but I don't think it's going to change anything.
Q. When you say it would be nice to see them, are the reports not specific enough for you?
A. You know, it's what I said. Since I'm really not rendering an opinion about that, you know, it's not in that important, but the reports are fairly specific, but, you know, vascular surgeons are pretty anal. We like to look at the pictures and not just rely on how a radiologist interprets them.
Q. Okay. Your understanding, I assume, from the review of the records is that not only did a radiologist review the arteriograms of May 2006, but Dr. Balkany, himself, reviewed them?
A. That's standard procedure, yes, ma'am.
Q. Do you see anywhere in the records where Dr. Balkany's interpretation of those arteriograms from 2006 differed from what the

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radiologist found?
A. No, ma'am.
Q. Do you have any reason to believe that the radiologist's report is inaccurate in any way?
A. No, ma'am.
Q. What is the five-year patency of the fem-pop bypass graft above-the-knee with using a vein?
A. Eventually, gotten better, I'd say. Well, it also -- I don't want to complicate your question, but there's primary patency, there's secondary patency, there's assisted primary patentcy, so it depends which one you're looking at. I'd say, you know, in good hands, probably hitting up close to 90 percent, five year.
Q. And what about ten years out?
A. Well again, with the -- if you have good follow-up on these patients and take care of them, help maintain the patency and monitor their risk factors and things like that, probably, like, 75 to 80 percent.
Q. At ten years?
A. Yes, ma'am.

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Q. What did Dr. Heidenreich use for the bypass graft? Did he use a vein, or did he use some synthetic material?
A. What date are you talking about?
Q. April 2.
A. He used a piece of GORE-TEX from the aorta femoral to the deep femoral, if that's the bypass you're talking about.
Q. What about -- I'm sorry. From the aorta to the deep femoral, did you say?
A. GORE-TEX. It's PTFE.
Q. I want to make sure we're taking about the same bypass graft, not the material that was used?
A. I thought that's what you asked me, what did he use?
Q. Yeah, but did he use the GORE-TEX for -- let me rephrase that question, because as I recall now that I'm asking it, he only put in one new graft on April 2, and he cleaned out the existing ABF; is that correct?
A. Correct. He cleaned out the aorta femoral, and he put a short jump graft into the deep femoral, yeah.
Q. What is the five-year patency of a

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fem-pop, above-the-knee graft --
MS. SALTER-FERRIS: You just asked him that.
Q. -- using --
MS. BOWERMAN: Excuse me. Why don't you let me finish.
BY MS. BOWERMAN:
Q. Using GORE-TEX?
A. Again, you know, with surveillance and things like that, probably 80 percent.
Q. 80-percent patency at five years?
A. Yeah. I mean, there's ways to keep them going, so -- I mean, it depends on, you know, which exact number -- like I said, there's primary, where you take it to the first closure. There's assisted primary, where you use balloons and things like that. There's secondary patency where you do a thrombectomy or a lysis, so the numbers are variable. I would say, on average, 80 percent.
Q. How about the ten-year patency for GORE-TEX for that particular fem-pop bypass graft?
A. I'd probably say, again, with the same considerations, 60 percent. It's lower

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than a vein.
MR. THOMAS: You said 60?
THE WITNESS: 60, yeah.
MR. THOMAS: Thank you.
BY MS. BOWERMAN:
Q. What is the five-year patency for a fem-pop, below-the-knee graft using vein?
A. Actually, the interesting thing is it's probably a little bit higher than above-the-knee, so I'd probably say a little above 90 percent.
Q. What about for ten years?
A. Anywhere from 80 to 90, depending.
Q. How about with using GORE-TEX for a below-the-knee fem-pop graft?
A. Probably in the range of 80 percent for a five-year and maybe 60 for ten.
Q. What is the five-year patency for a fem to peroneal artery bypass using vein?
A. Again, it depends on a lot of conditions, but I'd probably put it somewhere in the 70 to 80 percent range.
MS. SALTER-FERRIS: I'm sorry. Which one was this, again?
THE WITNESS: Peroneal.

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BY MS. BOWERMAN:
Q. What about using GORE-TEX? I'm sorry. That was the five-year patency. What is it, ten years?
A. Ten is probably down to 50 or 60 percent.
Q. And what is the fem-peroneal bypass using GORE-TEX? What's the five-year patency?
A. Not very good. So there's all sorts of tricks you use to keep it open. If you just put a piece of GORE-TEX into the peroneal artery, five years, dismal, 20 percent. Again, there's all sorts of adjuncts we use for that.
Q. What about the ten-year patency?
A. Less than that.
Q. And what is the five-year patency for a femoral plantar arch bypass graft with vein?
A. Plantar arch, there probably haven't been enough bypasses to the plantar arch to give you those numbers.
Q. Have you ever done one?
A. To the arch of -- the plantar arch?
Q. Yes.
A. Once.

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Q. Did it succeed?
A. Yes, ma'am.
Q. What was the circumstance?
A. The patient had a gangrenous toe, and everything was closed up to there, so we did a bypass as far down as we could go.
Q. It was -- I'm sorry. It was gangrenous up to what level?
A. The toe. If it was the mid-foot, we wouldn't be able to do a plantar arch bypass.
Q. Do you know what the patency of the posterior tibial and anterior tibial arteries were in that case?
A. They were occluded, or we wouldn't have gone where we did.
Q. Nonetheless, do you know what the literature says in terms of the five-year patency for femoral plantar arch bypasses with vein?
A. Again, I don't think I've even seen literature on bypasses to the plantar arch.
Q. Because it's so rare?
A. Correct.
Q. And just so I'm complete here, the -- do you know what the five-year patency

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for femoral to plantar arch bypass is with a GORE-TEX graft?
A. Again --
Q. Would somebody not attempt that?
A. Yeah, I don't think anybody would put a piece of GORE-TEX into the plantar arch.
Q. How many femoral-peroneal bypass grafts have you done?
A. In my career, hundreds.
Q. Has your success rate been what you've quoted above, here?
A. Yes, ma'am.
Q. Where have you performed these procedures?
A. In people's legs.
Q. I'm sorry. What institution?
A. Sorry. Mostly, Sewickley Valley.
Q. The one case of the bypass to the plantar arch, was that done at the same hospital?
A. No. I think we did that at Montefiore.
Q. So that was done in your Fellowship?
A. Yes, ma'am.
Q. So it's something you did yourself

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or you were an assistant in the procedure of a faculty member?
A. Well, there was a faculty member there, but I did the operation.
Q. And did you follow that patient for any period of time?
A. I think I did that my first, so a year.
Q. Do you know how long that graft stayed patent?
A. It was patent when I left New York so --
Q. So you know it was patent at a year. You don't know what it was at two years or three years or?
A. No, ma'am.
Q. I take it you've had experience performing bypass graft procedures from the ABF graft further down the legs?
A. Yes, ma'am.
Q. Can you tell me when procedures -- what graft procedures you've performed from the pelvis down?
A. You're talking if they have an aorta femoral graft in place or just from the pelvis

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down.
Q. From -- anywhere from the pelvis down?
A. I've done -- you're just talking bypasses?
Q. Bypass grafts, yes.
A. I've done femoral to femoral, femoral to deep femoral, femoral to popliteal, femoral to anterior tibial, femoral to posterior tibial, femoral to peroneal, femoral to dorsalis pedis, femoral to lateral tarsal, femoral to medial and lateral plantar arteries.
Q. I'm sorry. Femoral to what was the lateral?
A. Medial and lateral plantar arteries.
Q. Is that different from the plantar arch?
A. Yes, ma'am.
Q. What is the five-year patentcy rate for those procedures?
MS. SALTER-FERRIS: For each of them?
MS. BOWERMAN: Yes.
THE WITNESS: Well, they all probably fall in the same ballpark. You're

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talking about the way-distal or everyone we just talked about?
MS. BOWERMAN:
Q. I'm sorry. Let me start over, that question. You mentioned that you've done grafts from the femoral to the medial plantar arteries; is that correct?
A. Medial and lateral plantars, yeah.
Q. How many of those procedures have you performed?
A. Probably, 20, 25.
Q. Do you know what the five-year patency rate has been for those?
A. Pretty good, I think. Probably, in excess of 80 percent.
Q. You do you keep records?
A. I used to.
Q. All of these have been done at this hospital, Sewickley Valley Hospital?
A. Yeah. That's what I'm talking about, now. I'm not talking about my Fellowship.
Q. You ever had bypass grafts fail in the leg?
A. Never. Of course, I have.

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Q. When a graft fails after the initial one-to-two-month period, what is, generally, the reason these grafts fail?
A. Well, usually increase in the first 18 months, outside the first month or two, it's considered intimal hyperplasia.
Q. I'm sorry. It's considered?
A. Intimal hyperplasia. It can either be intimal hyperplasia to proximal anastomosis, to distal anastomosis, or within the graft, itself.
Q. Is that the only cause?
A. No. That's the predominant cause. I mean, you can certainly have someone who has arthroscleroses, either you bypass through a diseased artery and it just worsened, you could have people that, for some reason, develop compression on a graft. The big reason is, at that point, probably would just be intimal hyperplasia or progression of disease.
Q. The progression of disease you're referring to is the progression of the atherosclerotic disease; is that correct?
A. Correct. And, then, for GORE-TEX, as I tell my patients, sometimes, they close

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just do piss you off.
Q. You're a member of the Society for Vascular Surgeons?
A. Yes, ma'am.
Q. You don't have a problem if your testimony in this case is reviewed by the Society, I assume?
A. No, ma'am. I welcome it. I hope your experts feel the same way.
Q. Focusing on the May 2006 arteriograms, what was the condition of Mr. Boltz's arteries as of that arteriogram, starting from the pelvis going down to the bottom of the right foot?
A. Well, why don't we start a little higher than that in the aorta. That's sort of outside the pelvis. He had a nearly occlusive stenosis of his distal aorta. In his right leg he had moderately severe disease and stenoses of his common iliac and external iliac artery. I think he had some disease in his common femoral, but he had moderate plaquing in his superficial femoral artery. His anterior tibial artery was occluded. He had a small localized occlusion of his distal posterior

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tibial artery.
Q. Okay.
A. On the left side, his common iliac artery was totally occluded. He had some disease in his common femoral, his deep femoral, and his superficial femoral. His popliteal was open, anterior tibial was occluded. The other two vessels were patent.
Q. As of this May 2006 arteriogram, what was supplying, what arteries were supplying blood to his right foot?
A. His right foot?
Q. Yes.
A. I'm not sure I follow your question.
Q. How was blood getting to -- what major arteries were supplying blood to his right foot? Why don't we start -- well, start with, you know, as high up as you want to start?
A. Well, his common iliac artery was patent, so it was supplying blood. It was going down to his external iliac into his superficial femoral popliteal, peroneal, and then his posterior tibial went into his plantars.

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Q. He was receiving blood through the posterior tibial artery?
A. Yes, ma'am. It had just a localized occlusion, so it had collaterals around it and went into it, sure.
Q. So you're reading of that report is that the right posterior tibial artery reconstituted beyond the blockage?
A. I'm pretty sure it did. Let me see if I got it --
Q. I can read the last line says --
A. Yeah. Mine, for some reason, as I'm reading, is not where you'd expect it in the records. I remember that, but go ahead.
Q. It's under No. 6. Occlusion of distal right posterior tibial artery of calcaneus with a reconstitution of a right plantar artery. It doesn't say anything about reconstitution of the distal posterior tibial artery, does it, sir?
A. Okay. Well, the distal posterior tibial artery turns into the plantar, so where that fine line is, he had reconstitution at his foot. I mean, if you'd like to splice hairs, then let's get the pictures and look at them,

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and we can argue about it.
Q. Okay. Is it fair to say that he was not receiving blood directly through the posterior tibial artery, but through collateral, smaller collateral vessels that connected to the right plantar artery?
A. Yes. He had a distal posterior tibial occlusion, like I said.
Q. So is it fair to say that all of the blood feeding his foot were through the indirect pathways of collateral arteries?
A. Well, he had a fork at the end of his peroneal which was doing that. It does go through collaterals, sure.
Q. The fork at the end of his peroneal artery, the fork, in a normal foot goes to the anterior tibial artery; correct?
A. Or the dorsalis pedis, sure.
Q. Well, the dorsalis pedis is just the end of, the distal end, of the anterior tibial artery, isn't it, sir?
A. Sure. Kind of like the plantar is to the posterior tibia, yes, ma'am.
Q. And in this case that artery was completely blocked of, wasn't it, sir?

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A. The posterior tibial?
Q. The anterior tibial.
A. The anterior tibial, yes, ma'am.
Q. And the peroneal artery, the other fork, goes to the posterior tibial arterial and it was blocked off; correct?
A. Yes. There was a localized occlusion, sure.
Q. Can we agree, sir, that these blockages of the anterior tibial artery and the posterior tibial artery on the right were permanent blockages?
A. Sure.
Q. They aren't ones that could be reopened with TPA, for instance?
A. Well, not with TPA. That posterior tibial, with a fine balloon or atherectomy, might have been able to if somebody tried it, but it's not what we generally do that for unless the patient's foot is threatened.
Q. And it was certainly -- those two blockages of the AT and the PT were not ones that would open on their own; fair? It's not reversible -- it's not a reversible condition; is that fair?

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A. Again, as I said, with the balloon or a atherectomy it might be, but certainly it's not going to change on its own.
Q. Was Mr. --
A. Boltz.
Q. -- Boltz, in your opinion, ever a candidate for that type of balloon procedure to the AT or PT?
A. He didn't need it.
Q. He was -- so therefore, he was never a candidate for that; is that fair?
A. Correct. You would do that for limb salvage, and he wasn't at a point of needing limb salvage. He had good collaterals to his foot.
Q. And when you say, "He had good collaterals to his foot," are you talking about in 2006?
A. Yes, ma'am.
Q. Did he have good collaterals to his foot as of March 1, 2010?
A. I would say, yes, ma'am.
Q. What's that based on?
A. It's based on the fact that he was doing fine. He was walking. He had chronic

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neuropathy from a prior vascular insult, but he had adequate circulation, that his foot wasn't falling off.
Q. Is there no in-between his foot falling off and having good circulation, sir?
A. Well, he didn't have rest pain, he didn't have ulceration, he didn't have gangrenous changes, didn't have any worsening of his symptoms. He had adequate circulation.
THE WITNESS: Can we take a one-minute bathroom break.
MS. BOWERMAN: Sure.
(Recess taken.)
BY MS. BOWERMAN:
Q. Ready? Based on this arteriogram of 2006, in your opinion, was there any artery below the ankle on the right that was a candidate to receive a bypass graft?
A. Well, first off, there was none that was indicated to be done. You certainly could have put it to the plantar. And, again, that's why looking at the arteriogram was so important. He may have had a lateral tarsal branch that was open that could have received it, but without seeing the pictures, I can't

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tell you. In this clinical situation, it wasn't necessary.
Q. When you say, "In this clinical situation," which clinical situation are you referring to?
A. Mr. Boltz's clinical situation at the time. The fact that he had --
Q. I'm sorry. At what time?
A. We're talking about 2006.
Q. Okay. But at any time, would he have been a candidate for a bypass to the -- even in March of 2010, would he have been -- or up to the time of his April 2, 2010, surgery was he ever a candidate for a bypass graft to the plantar artery?
A. Well, again, it wasn't necessary. His problem was all proximal disease. He did not need a bypass to a distal vessel. So he wasn't a candidate because it wasn't clinically indicated. Could it have been done? Sure.
Q. Why did Mr. Boltz need this first surgery by Dr. Balkany in June 2006?
A. Well, at that point he had worsening claudication. He could barely walk, I think, 100-to-150- feet, if I remember correctly. He

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had, I think he said there was some rest pain. He was developing some numbness in his feet. I don't think it was going to help his erectile dysfunction, but, really, for his inability to walk and the fact that he was developing numbness, they thought it was significant disease.
Q. Is it fair to say that for Mr. Boltz, his claudication on his right leg began in -- sometime in 2006?
A. I don't know. I think -- I can't say that. I think he -- because I remember in the notes saying that he had been able walk a couple blocks then it worked down to 100, 150 feet. I don't remember that being in 2006. I thought it was going on for a couple years, but, you know, I'd have to dig out the records.
Q. When did you -- when, in your opinion, did he first develop claudication?
A. I have no idea.
Q. Did he have claudication as of the second surgery in May 2007?
A. Again, you asked me when he developed it. I mean, I thought you were talking about the first time. I mean, that's

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usually when it developed means, so --
Q. I understand. Perhaps -- let me ask another question. You say you have no idea when it developed. I'm asking you, did he have claudication as of June 2006?
A. Yes.
Q. And that was not cured, was it, in him, ever?
A. I don't have those intermittent notes so I don't know if it was or not. Again, the problems I focused on after that seem to be more of acute problems. Again, I don't have the records to show that.
Q. You don't know one way or the other?
A. Correct.
Q. But you know as of, at least, the first surgery of 2006, he had at least intermittent claudication; is that fair?
A. Yes, ma'am.
Q. Is it fair to say that it was severe atherosclerotic disease that resulted in his need for that first surgery in June 2006?
A. It's fair.
Q. And that surgery was an ABF; is that correct?

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A. Aorto-bi-femoral graft, yes, ma'am.
MS. BOWERMAN: Off the record.
(Discussion held off the record.)
BY MS. BOWERMAN:
Q. In your opinion, as of June 2006, was there any evidence that this patient had some form of a hypercoagulable state?
A. Well, it wasn't documented until later on, but I would say in someone as young as he was, you know -- people under 50, I generally send the coagulation workup, because about half of them do have some sort of a defect so -- other than the fact that he was young with atherosclerosis, there was never anything documented before.
Q. Is it fair to say, sir, that given his young age which this severe atherosclerotic disease developed, in all likelihood, he had hypercoagulable state?
A. No. I think the statistics, even my statistics are about 50 percent, so I don't know if that makes it in all likelihood. It's 50/50.
Q. Do you have any reason to believe

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that he did not have hypercoagulable state between 2006 and 2010?
A. We know that he was documented with the M-T-H-F-R mutation in 2007, so I assume he had that in 2006, also.
Q. And if that was positive, would that tell you that one of the contributing factors to his clotting off or failed bypass grafts in 2007, 2010, and in between was in-part because of hypercoagulable state?
A. No, ma'am. Basically, this speaks more of a veinous problem. It's in association with this, but it certainly hasn't been shown to close bypass and arteries, and it's heterozygous. If it's homozygous, it's a little bit worse. Plus, when he closed his grafts later on, like in 2010, he was fully anticoagulated. So it was more of a mechanical problem than it was a hypercoagulable problem.
Q. So you don't believe hypercoagulability played any role in any of his bypass grafts closing off at any time?
A. No. They always seemed to have a mechanical problem.
Q. Can we agree he was very young for

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someone needing an aorta iliac -- for having aortoiliac disease?
A. He was on the young end of the spectrum. He certainly wasn't the youngest person I've seen with something like this.
Q. Is it fair to say that when it develops as young as it did in his case, it's a poor prognosticator down the road for longevity of life?
A. Not necessarily in that way. I mean, it's a cardiac risk factor. We know it's a cardiac risk factor, so hopefully with that warning, his doctors will kick him in his him butt about cigarette smoking, make sure he stopped, make sure he's on some sort of statin medication which I think he is now, make sure he's either on some sort of a blood thinner or aspirin or something like that, make sure his blood pressure is controlled. You know, the nice part is now we know all this stuff and we can manage it.
Q. Can we agree, sir, that his smoking contributed to his severe atherosclerotic disease as of 2006?
A. Yes, ma'am.

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Q. Can we agree that it continued to be a significant contributing factor for -- to the advancement of his atherosclerotic disease through April 2010?
MS. SALTER-FERRIS: Object to the lack of foundation since he'd already testified that he did quit smoking.
A. Again, no. I think if he quit smoking, the effects of that, sort of, on the progression of atherosclerotic disease go away with a short period of time.
Q. I'm talking about up to his April 2 surgery, 2010, can we agree that his continuing to smoke up to that point was a significant factor in the advancement of his atherosclerotic disease?
MS. SALTER-FERRIS: Same objection.
A. Well, my understanding is if he quit, if he had one relapse or something -- if you're telling me that he continued to smoke on a daily basis up until 2010, I would tell you, yes, it had some contributing factor to his atherosclerosis.
Q. Even if he quit for short periods of

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time, the fact that he smoked at all during that time period would be a contributing factor to his advancing atherosclerotic disease?
MS. SALTER-FERRIS: Same objection.
Q. Is that fair?
A. I think it would depend on what you, sort of, mean by cheating. If you're saying he snuck a cigarette every three months, I'd say no. If you're saying he quit for a week and then would smoke for three months, and sort of did that cyclicly, I'd say, yes.
Q. Do you know what his smoking pattern was between 2006 and 2010?
A. No.
Q. I'm talking about April 2, 2010.
A. Yeah. I don't have an exact, how many packs per day he did per day, you know, if it went longer. There's just notations saying he had quit already. For somebody to say they quit, it means they're substantially not smoking. There's no good documentation about how many days a year he would smoke.
Q. You understand that he had hypertension?

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A. Yes, ma'am.
Q. Did that contribute to his advancing atherosclerotic disease?
A. Well, I think it was controlled but, I mean, it has a small factor, sure.
Q. How about his high cholesterol, did that contribute to his advancing atherosclerotic disease?
A. Elevated cholesterol does that.
Q. And he had high cholesterol; correct?
A. I think he did, yes, ma'am.
Q. So that was a significant risk factor and a contributing factor to his advancing atherosclerotic disease; correct?
MS. SALTER-FERRIS: Object to the compounding-term question. You can answer with my objection.
A. Yeah. High cholesterol is a risk factor for atherosclerosis.
MS. SALTER-FERRIS: Same objection.
Q. The ABF that was put in in June of 2006, what was the expected five-year patency for that graft?

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A. Well, most people get quoted about 95 percent, five-year patency. 90, 95 percent.
Q. Can you explain to me why his failed in less than a year?
A. Well, again, it's not well-documented what was going on but, you know, looking at his arteriographic pictures, he had some disease in his femorals, so there was probably some sort of outflow disease there. Again, his op note didn't clearly describe whether or not he had any intimal hyperplasia that developed there.
Q. Well, I'm sorry. It doesn't mention hyperplasia, period, does it?
A. Correct. It just mentions, you know, a narrowing. It mentions -- it doesn't mention atherosclerosis as a cause, either, but we know we it's there from the arteriogram. We know when you sew a piece of Dacron to an artery there gets to be some intimal hyperplasia. It's a fact of life.
Q. Okay. Is it fair to say that his needing -- I'm sorry. Is it fair to say that the fact that this graft failed in 11 months, this ABF graft, it was a sign of his advancing

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atherosclerotic disease?
A. Not necessarily. He had disease beyond that, so it may just have been a outflow problem that got a little bit worse. It could be atherosclerosis, it could be intimal hyperplasia. It wasn't described either way in the chart.
Q. Okay. So can we agree that as of the May arteriogram, May 2006 arteriogram, and his June surgery of 2006, his SFA was patent?
A. It had disease to it, but it was patent, yes, ma'am.
Q. His profunda was patent?
A. Again, it had some disease, but it was patent.
Q. The popliteal arteries were patent?
A. Yes, ma'am.
Q. The fact they had clotted off or were found to be clotted off, and I'm talking about now the SFA on the right, so let me start the question over. Can we agree that his SFA was found to be blocked off 11 months later in May 2007?
MS. SALTER-FERRIS: Object to foundation of question.

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A. Can you repeat it? Sorry.
Q. Sure. Can we agree that when Dr. Balkany operated on Mr. Boltz again in May 2007, he found that the SMA (sic) was completely occluded; is that fair?
MS. SALTER-FERRIS: Same objection.
A. It's the SFA, not the SMA.
Q. What did I say? I meant the SFA, yes.
A. Different artery.
MS. SALTER-FERRIS: Do you want -- do you have the report there?
THE WITNESS: I have his artery report -- I don't have an arteriogram report from that time, but I think, approximately, there was an occlusion that he couldn't get a catheter through.
BY MS. BOWERMAN:
Q. That would be a sign of rapidly advancing atherosclerotic disease, wouldn't it?
A. Not necessarily, no, ma'am. I mean, he had significant disease there to start with. If he ruptured a plaque or something then clotted it off, it doesn't mean his

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atherosclerosis progressed, it just changed. He just clotted the rest of the vessel off.
Q. Why did he require a fem-pop on the right in 2007?
A. Because --
Q. And I'm -- let me -- I'm referring to a fem-pop graft?
A. Okay. First off, I don't think he had a fem-pop on the right. He had -- it's listed as a common femoral to proximal superficial femoral artery. I don't think it moved down to the popliteal. What date --
Q. I'm sorry -- May 2007. So he had a fem-to-fem?
A. Well, sort of. See fem-to-fem, to us, usually means you went across the groin from one femoral to the femoral but, in effect, you're right. It is a fem to fem. It's from the common femoral to the superficial femoral. I don't want anybody to misread it. As I said, a fem-to-fem bypass has one connotation.
Q. Why was that required?
A. Well, because I think Dr. -- I'm blocking his name. The surgeon felt that there was outflow obstruction that led to the

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occlusion of the aorta by femorals, so to provide better what he thought was better outflow, he did a short jump graft in the superficial femoral.
Q. Why did he require -- was it a fem-to-pop graft on the left or a fem-to-fem on left, as well?
A. On the left -- he may have done a pop there. Let me get this right. No. Again, on the left he, said short common femoral to mid-superficial femoral Distaflo graft. So, again, I think the feeling was he had outflow problems that led to the occlusion of his graft, so they were giving him more flow, trying to help keep the graft open.
Q. What caused the outflow problems on the right?
A. Well, the same thing. He had moderately severe disease in the superficial femoral artery, and if it went to total occlusion, he probably clotted that last section of artery.
Q. And the same would be true on the left?
A. Yes, ma'am.

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Q. Can we agree that's a sign of advancing atherosclerosis disease?
A. No, we can't agree on that. We can agree that there was a change in the artery. Whether or not he reached a critical stenosis and just clotted it, that doesn't mean his atherosclerosis is worsening. It's just the nature of the disease. It's not like the plaque itself is growing and growing and growing. It occluded the artery, so no, not necessarily.
Q. Would you agree that the fact that the ABF clotted off in less than a year is a sign of aggressively progressive atherosclerotic disease?
A. For about the fourth time, no, I wouldn't agree with that. There's other causes for that.
Q. In this case, what were the most likely other causes, more likely than not?
A. The more likely causes are he had -- he was sown into a diseased vessel which we know. We know that his outflow was diseased. The outflow, for some reason, he had either reached a critical stenosis or there was a

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plaque rupture thrombosed. Plus, because the natural history when you sew a graft into an artery, is they do develop some intimal hyperplasia, he may have developed some of that, anastomosis. There's a variety of factors other than very aggressive atherosclerosis. I mean, we have no documentation that his atherosclerosis worsened, so, no. I don't agree with your statement, as said.
Q. Can we agree, sir, that continued smoking plays a significant role in plaque rupture?
A. Yes, ma'am.
Q. You have any reason to believe it didn't play a significant role in this case?
A. Well, again, I don't have documentation that he had plaque rupture. If he had plaque rupture, then I'd probably say it had a role in it. Again, that's not been documented anywhere in the record.
Q. What else would be the cause for his plaque rupture?
A. Well, what happens sometimes is people just have -- there's little vessels

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inside the plaque. If you bleed inside the plaque, it causes it to rupture. Sometimes it just happens because the plaque is there.
Q. That's not considered a form of advancing atherosclerotic disease?
A. No. I consider advancing atherosclerosis is just a form of more plaque and things like that. I mean, just because you, you know, in a (inaudible) artery, you blow the cap off the plaque. It doesn't mean atherosclerosis has changes. It just means that you bled into the plaque.
Q. Can we agree, sir, that as of June 2007, the profunda was patent?
A. I think it was but -- I think it was patent but diseased, yes.
Q. Do you know how diseased?
A. Excuse me?
Q. Do you know how much disease?
A. No. On the left, it had moderate plaquing. On the right, I forget what it was listed as. 2006 arteriogram --
Q. I have that arteriogram here. Perhaps you could point out to me where there's a mention, and I made have missed it?

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A. Probably.
MR. THOMAS: It's very important --
MS. SALTER-FERRIS: What?
MR. THOMAS: Nothing.
MS. SALTER-FERRIS: Talking to yourself, again?
THE WITNESS: I was going to say, if I put it in my picture, it's in that report, somewhere.
BY MS. BOWERMAN:
Q. I'm going to give you the arteriograms of May 2006. Is there any reference in there that the profunda or the deep femoral artery on the right has obstruction?
A. Again, I had said the left had plaque. I didn't say the right.
Q. I'm only talking about the right.
A. I was talking about the left. Then, all of the sudden, we changed sides. That's why I'm asking that.
MS. SALTER-FERRIS: That's exactly what -- just what was said. You want her to read it back?

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MS. BOWERMAN: No. If I was mistaken, I mean, you -- perhaps you caught me in a mis-question, and I apologize.
THE WITNESS: No problem.
BY MS. BOWERMAN:
Q. So just so we're clear, is there any evidence that -- or let me phrase it, again. Can we agree that as of the June 2007 surgery, the right profunda was patent?
A. We can agree to that, yes.
Q. And it's your understanding that less than three years later, that same profunda had a complete occlusion; correct?
A. You're saying less than three years later, so when are you talking about?
Q. From June 2007 to April 2, 2010. To me, that's two years, ten months?
A. Okay.
Q. Or close to that. I don't remember the date in June. Can we agree that the profunda as of April 2, 2010, was completely occluded?
A. Proximal part of it was occluded, yes, ma'am.
Q. That's a sign of aggressive --

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progressive atherosclerotic disease; is it not?
A. It is a sign of progressive atherosclerotic disease, yes, ma'am.
Q. But you would not consider that aggressive atherosclerotic disease or fast-moving, fast-progressing, advancing atherosclerotic disease?
A. Again, without seeing that arteriogram of 2006 and seeing what the -- there may have been disease in the common femoral impinging on the origin of the profunda, so I can't tell you that it was fast-moving. It'd could have been common femoral disease that caused the profunda to clot in the beginning, but you know, again, it's a relative term. I can tell you over the course of two years and ten months, there was a change. I just don't use the word aggressive.
Q. Again, there's nothing in this arteriogram report of 2006 that suggests that the RITE profunda was diseased?
A. There is absolutely nothing in there that says it wasn't. It says it was patent at its origin. Other than that, it doesn't say diddly.

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Q. And patent at its origin would be where it breaks off from the common femoral artery; isn't it?
A. Correct.
Q. Do you have any criticism of the care and treatment rendered by Dr. Balkany?
MS. SALTER-FERRIS: I'm going to object. First of all, I didn't ask him to review that. Second, this isn't a case of medical malpractice against Dr. Balkany, so the question is irrelevant.
MS. BOWERMAN: It's not irrelevant for discovery purposes.
BY MS. BOWERMAN:
Q. Do you have any criticism of Dr. Balkany's care?
MS. SALTER-FERRIS: You're not the Judge in this case, but I would say that it is irrelevant for purposes of discovery.
Q. I'll take an answer.
A. Do you agree that I can answer? No. Again, I didn't review it from that standpoint, but I didn't see anything in the notes that I saw. Again, I haven't looked at his arteriogram. Did I find anything wrong with

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his care? No.
Q. In your -- somewhere in your handwritten notes, and I can't remember exactly where it was, you made reference that there was some significance to Dr. Balkany's 10-7-2008 office note?
A. 10-7-2008.
Q. I thought I read that. Oh. On exhibit 8 under -- the page that has the diagram on it.
A. Uh-huh.
Q. You've just got something that says See Balkany 10-8-7. I assume that means 2007. Of note, what did you -- what's the significance of that notation in your handwritten notes?
A. I don't know. Probably a notation to go back and look at his notes. Let me see what it says. Just that -- okay. If we see that on 5-29-07 he did that common femoral to mid-superficial femoral artery bypass graft on the left. Yet, three months later, he's saying he made the good femoral pulse, will probably require some form of left-femoral popliteal bypass graft to a more distal landing zone

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sometime in the future. You know, I was just trying to make some sense of all that. He's already extending his bypass graft and, granted, he did have that graft closure in June, but he's already planning for his next procedure on him.
Q. What is the significance of the fact that in such a short period of time on the left, he would, Mr. Boltz, will require and, in fact, underwent a repair of a failed graft?
A. Again, that's something you would have to ask Dr. Boltz (sic). I mean, I don't know in this case --
MS. SALTER-FERRIS: Dr. Balkany.
A. Sorry. Dr. Balkany. You know, that's why I had the question there. Why is he doing that if he recently had a bypass, unless he's starting question whether or not he's got disease in that vessel that he didn't bypass. Those just something -- I couldn't figure out what he was -- why he would do a bypass one month and then a couple months later he's saying he'll probably need a more distal bypass graft in the future. I don't know.
Q. Would that have been the result of

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or was it a result of advancing atherosclerotic disease, sir, on the left?
A. I don't think so, no.
Q. Why do you not think so?
A. Well, again, if you look at that arteriogram from 2006, he had moderate plaquing of his entire superficial femoral artery and yet the bypass graft went into the superficial femoral artery. So I don't know what Dr. Balkany was thinking or doing without, again, comparing his operation to the arteriogram.
Q. As of March 1, 2010, can we agree that Mr. Boltz's SFA was chronically occluded by that time?
A. By that time, I think he was occluded, yes, ma'am.
Q. In your opinion, was his ABF open as of March 1?
A. March 1, I think his aorta-femoral graft was open, yes, ma'am.
Q. As of March 1, did he have pain at rest in the right leg?
MS. SALTER-FERRIS: As of March 1?

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A. I think he had chronic neuropathic pain that he was being treated for, but I don't think it was rest pain. I think it was ischemic pain from his -- or ischemic neuropathy from his rhabdomyolysis on in May/June of '07. I think that was just a chronic type of thing so --
Q. Wasn't there an EMG that showed he had a vascular neuropathy; sir?
A. I said ischemic neuropathy as a result of poor blood supply that had been corrected.
Q. On what basis are you able to say that the pain he had at rest in his right leg as of March 1, 2010, which required him to take methadone on an on-going basis, was not rest pain?
A. Well, my understanding was that it was from nerve damage from the ischemia that he had. You know, is it pain at rest? Sure, it's pain at rest, but it's not classic ischemic rest pain. His flow was adequate at that point.
Q. How do you know that?
A. Just from going through the records.

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It seemed like he was doing fine that at that point in time. He had changes that came about. He had, I think there was an EMG that showed nerve damage. Usually, rest pain does not have damage. It's just pain. You do an EMG and it's going to be normal.
Q. What evidence do you have as of March 1, sir, that he had adequate blood flow to his right foot?
A. Well, he was walking. He didn't have rest pain, as we talked about. He just had ischemic neuropathy. And, again, he had chronic problems there, but nothing had changed.
Q. He had chronic ischemic problems?
A. He had chronic ischemic neuropathy which is damage that has occurred to the nerves when he was ischemic. In fact, the end of May in 2007, he had rhabdomyolysis which is muscle death, so the nerves were injured at that point. It's a chronic problem, unfortunately.
Q. My question to you is did he have chronic ischemia as of March 1, 2010?
A. I guess it depends what you mean by ischemia.

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Q. How do you define ischemia?
A. Well, there's different kinds of ischemia. There's acute limb-threatening ischemia. No, he didn't have that.
Q. Maybe I can shortcut this and help us both. How do you define chronic ischemia?
A. Chronic ischemia is someone who has low blood flow that affects them. I mean, it can be anywhere in certain stages. It can be intermittent claudication that comes out at long distances. It can be short-term intermittent claudication that limits their lifestyle. It can be rest pain. It can be signs of ulceration and things like that that come out over a chronic basis. It's a very variable type of thing.
Q. Can we agree that as of March 1, 2010, Mr. Boltz had chronic ischemia?
A. He had peripheral vascular disease. I'm not sure he had chronic ischemia. I don't remember any documentation that he was still claudicating. His neuropathy was what it is. It wasn't a vascular problem at that point. It was a damaged nerve problem. So not that I'm aware of.

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Q. How do you define acute ischemia?
A. Acute ischemia, it's sort of a sudden change that comes on. I think for research protocols I think they use within two weeks, but that's just for research protocol. Again, it has to do with that Rutherford's classification we were talking about before. You have people who have blocked off an artery that now have -- Class 1 has pain, ischemic pain.
Q. How do you define ischemic pain?
A. Ischemic pain is pain that's usually distal in the foot, distal in the toes. It could be pain that's relieved with dependency, worse with elevation, or it could be constant. It could be severe. It could be mild. It depends on how bad the blockage is/or are. So, you know, Class I is, usually, loss of pulses, pain, sometimes coolness, sometimes pallor, but the main thing is just pain. Then we move on to II(a) which has sensory changes.
Q. What's the characteristic of the pain? Is it usually burning pain?
A. That's more of a neuropathic type of pain. It's more of a constant, gnawing type of

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pain. It can be very variable, depending if it's just affecting a nerve or something else. Burning type of pain makes me think of more of a nerve, you know, somebody's got a back problem or ischemic neuropathy or something like that. Do you want me to keep going through my classifications, or are you done?
Q. Sure. I didn't mean to interrupt you.
A. You know, you have pain -- and then II(a) would pain and sensory changes. Generally speaking, they have good Doppler signals.
II(b) would be pain, sensory change, and motor change. The motor is what pushes it over.
III is a mottled, insensate leg that's, you know, not going to make it.
Q. In your opinion did he have acute ischemia as of March 1, 2010?
A. No, ma'am.
MS. SALTER-FERRIS: I'm sorry. I didn't hear that question.
THE WITNESS: Did he have acute ischemia as of March 1, 2010?

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BY MS. BOWERMAN:
Q. You've mentioned this Rutherford classification. What was his Rutherford classification as of March 1, 2010?
A. He didn't fit in the Rutherford classification because he didn't have acute ischemia. I guess that's Rutherford zero. I don't know. We'll make up a new classification.
Q. Did he have a palpable pulse as of March 1, 2010, at the --
A. Groin or foot, take your choice.
Q. Foot?
A. It's not documented anywhere. What leg are you taking about?
Q. The right leg.
A. The right leg, I'd say judging from what his arteriogram looked like in the past, probably not.
Q. You would expect, judging from his arteriogram in 2006, that he would never have a palpable pulse in his -- at the level of his ankle; is that correct? Either the dorsalis pedis or the posterior tibial?
A. I'd say that's most likely. You

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could still, if you had a good collateral from your peroneal and good flow into that, you can feel a posterior tibial pulse or a distal pulse, and you might feel a lateral tarsal pulse if it was open, but generally speaking, I would not expect it.
Q. What was the status of his profundus as of March 1, 2010, on the right?
A. March 1, 2010, not having any imaging, it's hard to tell you. I would say, you know, looking forward to April, I would say that he, at the very least, he had some disease in his proximal, deep femoral on the right side, or at least, you know, it may have be common femoral. The problem is your common femoral, your profunda, the diseases can sort of go over the top. So it's either common femoral across the profunda or profunda disease but, you know, it's origin. I'd say there's probably something there.
Q. Okay. How much as of March 1, 2010?
A. Again, anything I would give you would be a guess.
MS. SALTER-FERRIS: You're not required to guess.

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A. There's no imaging to tell us for sure, so I'd be guessing.
Q. Is it your -- based on what you know about the patient and the disease in general, would you expect that, as of that time, he had significant atherosclerotic disease in his proximal profundus on the right?
A. Again, it's not clear. He's occluded for the first 3 to 4 centimeters in April. Again, we don't know if that's mostly clot that's formed in there or what. Was there, probably, some atherosclerosis? Probably, some. I just can't tell you the degree because it's not stated anywhere.
Q. You would not expect, sir, that had TPA been instituted on or after March 24 that it would have dissolved whatever that obstruction was in the profundus?
MS. SALTER-FERRIS: Objection. Form of the question.
A. Again, if it was more chronic-y type of clot, it's less-effective. I'd say, chances are, not.
Q. Is it fair to say that more likely than not in this case, the disease in the

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profundus from March 1 until his surgery of April 2 was chronic atherosclerotic disease?
MS. SALTER-FERRIS: I'm going to object to the form of the question, lack of foundation. Go ahead.
A. I think there was a combination of atherosclerotic disease and clot there.
Q. By clot, do you mean a ruptured plaque?
A. No. In mean clot in the blood vessel.
Q. Was there a description of clot by Dr. Heidenreich?
A. There was a description of nothing. It says, of note, after opening the deep femoral artery the first 3 to 4 centimeters were occluded, but more distally this vessel was patent, and this was the only possible outflow for the right lower extremity area to femoral bypass graft. So he doesn't say clot. He doesn't say atherosclerosis. He just says it was occluded.
Q. If it was clot, wouldn't you expect him, a vascular surgeon, to attempt to evacuate the clot as opposed to do a bypass?

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A. If it was fresh clot or if it was clot that didn't have some disease with it. He's trying to find the best vessel to go to so he's going to go downstream where it's a nice, clean vessel which is usually the case. He's not going to monkey around with any atherosclerosis or kind of clot.
Q. The fact of the matter is he does not describe clot in that profundus at all, does he, sir?
A. He doesn't describe anything except an occlusion.
Q. In your opinion was the profundus as of March 1 completely blocked off?
A. Trying to re-put this all together, I would say probably not.
Q. Okay. What is your best understanding of the extent of the blockage in the profundus as of March 1, 2010?
A. That it was not totally occlusive.
Q. Was it partially occlusive in your opinion?
A. Yes, ma'am.
Q. Can you give us an estimate, 10 percent, 50 percent, greater than 50 percent?

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A. I'd be guessing, you know, 50 percent, I don't know. Nobody knows.
Q. Is there a way to offer an opinion more likely than not, the status of that profundus blockage, as of March 1?
A. No. Nothing saw it. Nobody did any testing on it. Dr. Heidenreich didn't describe it, he didn't put anything on it, and any imaging they had on it would just show an occlusion, so there's no way to tell that for sure. I can tell you for sure it wasn't occluded because, according to Dr. Heidenreich, the fem-pop was chronically occluded. If his profunda was also occluded, his aorto-femoral would have shut down long before that and his leg would have been ischemic long before that so on March 1, it was patent.
Q. As of March 1, 2010, what was the pathway of blood flow from the common -- from the aorta into his right foot?
A. Well, it would go down his graft.
Q. Down which graft?
A. Aorta-to-femoral. Then it would go down his profunda and via the large collaterals we have in out thigh, it would reconstitute his

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popliteal artery.
Q. It's not the popliteal artery that's reconstituted, it's a plantar artery; is that correct?
A. No. You're absolutely wrong. The bottom line is popliteal arterial is patent. It's been patent, so what happens is the profunda goes down into the collaterals --
Q. I'm sorry. I apologize. You're talking about the popliteal artery, not the posterior tibial?
A. Right. I'm working way down from the top. So the profunda is going to give you large collaterals into his popliteal and then the popliteal is going to run into his posterior tibial and his and peroneal and via collaterals, go into his foot.
Q. Do you know how large any of those collaterals were?
A. Not without some sort of imaging.
Q. Any of those collaterals have names to them, considered named arteries?
A. There's superior geniculates, inferior geniculates. There's all sorts of branches that have names.

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Q. But you don't know what he had?
A. No, we don't. We just know it was adequate too keep his foot alive.
Q. Can we agree, as of March 1, Mr. Boltz had weakness in his right leg and foot?
A. Correct. He had chronic ischemic neuropathy.
Q. But you do not believe, as of March 1, he had chronic arterial ischemia?
A. No. I think he had -- he has chronic disease. I don't think he had symptomatic disease that I could tell, and he certainly didn't have acute.
Q. I want to make sure that you've answered my question.
A. Mm-hmm.
Q. It's your opinion that as of March 1 he did not have chronic arterial ischemia; is that correct?
A. Correct. I don't see any symptoms consistent with that.
Q. Did he have dependent rubor as of March 1, 2010?
A. Again, not that I'm aware of.

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Q. Wouldn't you expect, given the status of his leg even as of the arteriogram of 2006, that he would have dependent rubor?
A. In 2006 he may have had dependent rubor, but then they do bypasses, so I don't think he had it -- we're talking about 2010; right.
Q. Yeah. March 1, 2010. Is it your opinion that he did not have dependent rubor?
A. Not from an arterial standpoint. Certainly, if he had venous problems, it could look like dependent rubor but from an arterial standpoint, no. Usually, dependent rubor is a sign of a significant chronic problem, and he seemed to have adequate flow to his foot. I don't think he had it from that standpoint.
Q. Did he have cyanotic toes as of March 1?
A. Again, he may have had some discoloration of his toes from chronic venous type problems, but I don't think he had it from the standpoint of arterial.
Q. How about on the left? Would you agree that as of March 1 he had chronic -- he had cyanotic toes?

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A. Again, I don't have any reason to think he had cyanotic toes on March 1. Cyanotic toes are a sign of significant hypoxia, and there's no evidence that he had that.
Q. Did he have any significant swelling in his right foot as of March 1, 2010?
A. I think he did have some. In fact, I think he was seen in the hospital once for swelling. Yeah, he had right leg swelling. They checked and ruled out deep thrombosis, so possible ischemic neuropathy, because he had some swelling or because he had some operations there. A lot of times we have people who have had bypasses that have swelling. In fact, people that have had bypasses, swelling is a good sign because that means the graft's working.
Q. So your understanding is that he had had swelling, perhaps, all along in the year or two before April 2010; is that correct?
MS. SALTER-FERRIS: Object to lack of foundation. You can answer.
A. I know he had it in '07. I don't have reason to doubt he's had it straight on

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though. He's had multiple operations and he had ischemic insult. Sure.
Q. And as far as you know, chronically, he was unable to walk more than, perhaps, 100 or 200 feet without pain?
MS. SALTER-FERRIS: What period of time are you talking about?
Q. As of March 1, 2010?
MS. SALTER-FERRIS: Object to lack of foundation.
A. Again, I didn't see that in the records anywhere. I know he had pain from his nerves, but I don't know how much it limited his walking. I know it limited it a little bit.
Q. You're aware that as of March 1, 2010, he was smoking?
MS. SALTER-FERRIS: Object to lack of foundation.
A. Again, the record I had said he had quit. I just don't know if on March 1 he was smoking. I think even -- 2010, I thought they said he had quit smoking.
Q. Did you read his deposition, sir?
A. I don't think so. Hold on, maybe I

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did.
Q. So you don't know what the status of his smoking was as of March 1, 2010?
A. No, ma'am, other than then records I had keep saying he quit, he quit.
Q. Are you aware, sir, that as of March 1, 2010, he was permanently and totally disabled due to his severe atherosclerotic disease?
A. No. In fact, I would think he would be disabled because of his ischemic neuropathy, not because of his atherosclerosis, if he was disabled, but I'm not aware of that.
Q. It wouldn't surprise you, sir, that he was permanently and totally disabled because of his neuropathy?
MS. SALTER-FERRIS: You know, I'm going to object because now you're asking him to give a medical opinion based upon some type of a disability report, which there's no foundation that rises to the level of a vascular surgery review. So go ahead.
BY MS. BOWERMAN:
Q. You can tell me if you know, if you dont' know. Can you answer my question?

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A. I think your question, would I be surprised --
Q. Yeah.
A. Again, not knowing the degree of his neuropathy, I wouldn't know the answer to that. I've seen enough people with post-ischemic neuropathy that do get disabled from it, sure. It's possible.
Q. Would you consider that, as of March 1, 2010, that Mr. Boltz had a healthy blood supply and healthy blood flow to his right foot?
A. I think he had adequate circulation so if you want to call that healthy, fine.
Q. I'm sorry?
A. I said if you want to call that healthy, fine. It's just we refer to it as adequate circulation.
Q. You would agree that he had severe atherosclerotic disease as of March 1, 2010?
A. Most of which had been bypassed, yes, ma'am.
Q.
A. Most of which had been by passed yes, ma'am.

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Q. Can we agree, sir, that as of March 1, 2010, the peroneal runoff in the right foot through the AT and the PT were gone?
A. Again, I would give you the AT. We know they collateralized into either the distal posterior tibial or the plantar branch, where you draw that line, so he had collaterals into his foot.
Q. Where does the peroneal connect to the posterior tibial? Is it above or below the ankle?
A. It can actually be both.
Q. In this case, do you have an opinion?
A. Without seeing the pictures, I can't tell you.
Q. Isn't it most common that it connects above the ankles?
A. Sure, it's most common, but it certainly could be both. We'd have to see the pictures.
Q. And the status of his PT at the ankle was that it was blocked, wasn't it?
A. He had a short segmental occlusion, yes, ma'am.

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Q. When in March do you believe there was a change in his arterial system on the right leg or in the right leg or foot?
A. From the notes, it appears that -- they refer to 6 days before on the 24th, so I'd probably say 24 minus 6 is 18, so about March 18.
Q. Let's talk about March 18.
A. Sure.
Q. Is it your understanding that he had increased pain as of that date?
A. Yes, ma'am.
Q. What do you believe was the cause of the increased pain?
A. Poor circulation.
Q. Be more specific, if you would?
A. Well, because his flow had dropped down, the oxygen delivery to his nerves, especially his pain nerves was diminished, so he had pain.
Q. Flow had dropped down where, sir?
A. In his leg.
Q. Where in his leg? Which arteries -- artery or arteries and at what level?
A. Well, again, the oxygen gets sucked

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off high up, the effects are seen low down. What artery do I think closed down at that point?
Q. Yes.
A. Again, I would say that is probably where he closed his fem-pop bypass graft.
Q. I thought you said it was already closed, chronically closed, as of March 1?
A. Again, that was guesswork. I'm trying to put this all together. I think if you look at this, there's a couple sequences here. He had a fem-pop. He had a peroneal -- a posterior tibial -- he had a fem-pop, he had a deep femoral, and an aorta-bi-femoral graft. If he closed his aorto-bi-femoral graft, then everything down below that is going to be a problem. There's a possibility.
All I'm trying to do is figure out some sort of a sequence to put things together, because more than one thing happened in this case. So either his fem-pop closed then, or if it was chronically occluded, he may have closed his aorto femoral and just maintained collaterals through his profunda. I don't think he closed his profunda down with an

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occluded fem-pop because the aorto-fem would close. It would be a disaster. That's the end result. Whether he closed his fem-pop then -- again, we don't have any imaging to say that. Do I think it was chronically closed? Likely. So either he --
Q. Let me just make sure --
MS. SALTER-FERRIS: I don't think it's right for you to interrupt his answer.
Q. Here?
MS. SALTER-FERRIS: Don't interrupt his answer, please. Go ahead.
A. I've lost my train of thought.
Q. I didn't mean to interrupt you?
A. Ask your question.
Q. I'm happy for you to hear the answer you've given so far, if you want to complete it, before I ask my next question?
A. No problem. You're asking me to give you information about something that we don't know all the information. We just have to try to put the scenario together again.
Q. Is it your opinion that more likely than not, that as of March 1, his fem-pop graft

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had been occluded?
A. As of March 1?
Q. Yes.
A. Again, I'd say it's likely. Can I give you more likely than not? It's hard to say. We don't have the imaging to prove it one way or the other. We're just trying to put this together and say there's a sequence of events that happened here. Because, as I said, if his fem-pop was occluded, then along about March 18 he had the shut down of his aorto-femoral graft -- because he couldn't have shut down his profunda because then everything would have shut down because there's no place for it to go. So either the fem-pop closed around then or if the fem-pop was occluded, he may have closed his aorto-bi-femoral and maintained adequate collaterals to his -- through his profunda. Hard to say.
Q. Is it your opinion that as of March 18, he had occluded the ABF?
A. Again, I don't know. He either occluded his fem-pop at that point or occluded his aorta femoral. ABF implies both sides. I'm sorry. Go with AF.

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Q. I'm sorry. Let me rephrase so we're clear. When I'm using the term ABF, in the context of March and April 2010, I'm referring to the right limb --
A. Okay.
Q. -- of the ABF. Is it your opinion, sir, that more likely than not as of March 18 the right limb of his ABF was clotted off?
A. As of March 18, I don't know if we'd know for sure, because there was no documentation of femoral pulse on the 24th. It's one of the 2 possibilities.
Q. Okay. And if it was closed off as of March 18, can you explain to me what the pathway of blood flow was to his knee?
A. To his knee, sure. The blood would come through collaterals to his hypogastric artery.
Q. Okay.
A. Then it would go into his profunda femoral artery, and then the same collaterals began to take it down to the popliteal artery.
Q. It's your belief that he could have sufficient collaterals from his hypogastric artery in the face of a closed ABF right limb

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to provide adequate or sufficient blood flow to his right foot and viability to that right foot as of March 18; is that correct?
A. Yes, ma'am. He's had a long time to build up collaterals so sure, it's one of the possibilities.
Q. So in your view, as of March 18, one of the possibilities is that he had collaterals that bypassed the ABF right limb and the profunda, correct?
A. Well, that's not exactly what I said. Basically, he reverts back to what his picture looked like in June of '06. If you read there, it talks about how the collaterals come in the hypogastric, fill up the external iliac, go down the common femoral into the profunda and the superficial femoral. So he's already got those collaterals. They were there before, and when he loses his aorto femoral, his flow is not sufficient now. He's having the changes, the pain. Now that's rest pain. Now he's having rest pain in his foot because he's lost some flow.
Q. Is it your opinion that as of March 18 he's begun to have rest pain?

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A. Like I said, all I can say is from the note on the 24th that says the symptoms began six days before, whether it was the 19th, 18th, you know. I'm giving you the best shot I have, so about the 18th.
Q. Is it your opinion that he had rest pain as of March 24?
A. Yes, ma'am. He had increasing pain now in his leg.
Q. Is that rest pain?
A. Pain at rest, yes, ma'am.
Q. Where does it say it was pain at rest?
A. It doesn't. It says increasing pain.
Q. Is there anything in the notes that indicates it was rest pain as of March 24?
A. No, ma'am. It was such a poor-quality note there's nothing in it. There's not an examination. There's nothing. It just says increasing pain.
MR. THOMAS: Move to strike.
He's not qualified to offer standard of care testimony.
Q. So, basically, you don't know one

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way or the other, as of March 24, this patient had rest pain?
A. That's correct. We just know he had increased pain. It was not explained.
Q. In your opinion, as of March 18 when he began to have this increased pain, was his profunda completely closed?
A. I don't think so.
Q. Why not?
A. Well, again, because if his profunda was completely closed, and he closed down -- if it was chronically predating this, then the vascular change that he had if he closed down his fem-pop it would also shut down his aorto-bi-femoral and he'd have tremendous ischemia. So he had to have some outflow through there to keep things going through the collaterals.
Q. Do you have an opinion within a reasonable degree of medical confidence or certainty as of March 18 what was the source of the blood flow to his right foot?
A. We've gone over that. If you want the source of his blood flow, it's his heart. Then it goes down into the collaterals that

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we've described.
Q. From the level of his lower aorta, what was the source of the blood flow to his right foot?
A. On the 18th?
Q. On the 18.
A. Again, as I told you, one of two things happened. Either he closed his aorta femoral or he closed his fem-pop. If he closed his aorta femoral, it's the collaterals through the hypogastric, down the external to the profunda to the popliteal. If he closed his fem-pop it's just the collaterals down to the profunda to his popliteal. Again, not having any imaging or examination, I can't tell you for sure.
Q. In your opinion, sir, is it more likely than not that he did not have -- that's a way to -- too many negatives. In your opinion, more likely than not, were both the ABF and the fem-pop on the right closed as of March 18?
A. Again, I can't tell you for sure more than 50 percent. I would think that if they were both closed at that point in time

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that he'd probably have more ischemia, but it's hard to say. It's a potential.
Q. In your opinion, as of March 18, did he have chronic limb ischemia?
A. On the 18th, yes, ma'am. He had chronic limb-threatening ischemia. I'm sorry. He had acute -- as of the 18th, he had acute limb threatening ischemia.
Q. Let me ask the question again so you and I are both clear. In your opinion, as of March 18, did he have chronic limb ischemia on the right?
A. I would say he has acute ischemia on the right, not chronic.
Q. I didn't ask you that.
A. Well, I'm answering your question.
Q. My question is specific. Did he have chronic limb ischemia, in your opinion, as af March 18, 2010, on the right?
A. No. His symptoms were not consistent with chronic ischemia.
Q. And the reason you believe they were not consistent with chronic ischemia on that day is what, sir?
A. Again, as we talked about, he had

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ischemic neuropathy. There's nothing that I can see documented showing that he had symptomatic chronic ischemic symptoms. He does have chronic disease that but that doesn't imply chronic ischemia. On the 18th there was an acute change with increased pain, that puts it into the acute category not the chronic category.
Q. How long does acute limb ischemia exist before it becomes chronic? Is there a definition of acute, you know, the crossover between acute and chronic?
A. Well, as I said, if you look at research, you know, when they use tests on acute ischemia, they use two weeks, I think. Like I said, I never really thought about it that way. I guess rest pain starts from one point and goes to acute, and if it becomes chronic, two weeks.
Q. In your opinion, as of March 18, did he have impending limb loss?
A. I would say with acute ischemia that's always a possibility, yes, ma'am.
Q. How are you defining impending limb loss as of March 18?

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A. The fact he had acute changes. He had increased pain. We don't know which way it's going to go, so just impending limb loss.
Q. As of March 18, when was it expected his limb would die?
A. It could drag on like that for a long time depending on what happens next.
Q. A long time meaning months, years?
A. Again, if he opens up more collaterals, he could develop chronic rest pain, where it goes away with dependency and things like that. So if everything stayed the same at that point in time, he might open up more collaterals. Those collaterals might get bigger and turn this into a chronic situation. Stays like that, he takes pain pills for it, so that's hard to predict.
Q. Can we agree, sir, that the ABF whenever it starts to clot does so within a matter of hours? It's not something that drags out over days?
A. Well, I think -- I mean, if you have a totally occluded ABF, I think it's going to clot off very quickly, sure.
Q. I'm talking about the right limb of

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the ABF. Can we agree that when it begins to occlude, it will occlude within hours? It's not going to linger in this slow process of going from liquid to clot over days, is it, sir?
A. Generally speaking, if there's a problem with the graft, it's got a localized area that's blocked. It's going to clot off over hours, yeah.
Q. Unlike the arterial wall, there's not endothelium to dissolve the clot, is that fair?
A. That's one reason, but, I mean, endothelium's not going to help you, even an artery, if you have that situation. What it is is there's no branches for the blood to go down alternately so, basically, it's like a highway. If you have a three-lane highway and there's a major accident with three tractor trailer trucks across the highway, you're going to backup to the next exit. People are going to get off, but if you're one of the unfortunate people between that last exit and the accident, you're going to be stuck there for awhile.
Q. Are they any clinical indications

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for you that as of March 18 that ABF was clotted off?
A. Again, it's either the ABF or the fem-pop. Can I tell you which one? No. Are there clinical indications that there was a change in his blood flow? Yes. He's got increasing pain with no other cause.
Q. It doesn't have do with whether he had swelling or not, does it, sir?
A. No. Swelling has nothing to do with that.
Q. That's because swelling is not a classic finding of acute ischemia, is it:
A. Correct.
Q. Can we agree that dependent rubor is a classic finding of chronic arterial ischemia?
A. It's one of the findings of more advanced disease, yes.
Q. It's one of the classic findings of chronic ischemia; correct?
A. Of the more advanced forms, yeah.
Q. In your opinion, as of March 1, 2010, was the circulation to his right foot better than it had been as of 2008, for instance, or worse?

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A. Or the same? I mean --
Q. Or do you have an opinion one way or the other?
A. I can't tell you one way or another, worse, better, the same. I doubt it was better.
Q. What would be the reason why it could worsen?
A. It could worsen because he develops more atherosclerosis, because he develops intimal hyperplasia to grafts, because he clots off some area, because his cardiac output goes down, clots off a graft.
Q. Is it your opinion, sir, that more likely that not, none of the significant collaterals, collateral arteries downstream that fed his right foot, suffered from atherosclerotic disease that clotted them off as of March 18 or March 24?
A. Run that by me again?
Q. Sure. Do you have an opinion one way or the other whether the smaller collaterals that were actually feeding his right foot as of March 18, 2010, do you have an opinion whether any of those key collaterals

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feeding his foot suffered from advancing atherosclerotic disease causing blockage or obstruction?
A. Again, there is no evidence to suggest that. His pattern is most consistent with inflow-type problems. Could he have developed a little atherosclerosis over time? Sure. I can't rule that out. I didn't think it was significant.
Q. So your testimony is that he didn't have evidence of significant outflow problems?
A. No, I didn't say that. I said it didn't worsen.
Q. Can we agree that he had significant and sufficient evidence from 2006 onward of significant outflow problems?
A. Again, we've talked about that. You asked me if there was a change. I said I didn't think so unless it was small.
Q. What is your opinion based on?
A. Well, again, if he lost his collaterals to his foot, he was already living off just one artery. His foot would have gotten a lot worse faster. It would have been more localized to his foot. As opposed to all

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the things he developed later on, there's no evidence that that was the case. He closed everything up top that affected down below. Again, without imaging, it's hard to say. When you're living off one artery, if you lose that collateral going into the foot and you have no arteries going into your foot, your foot is going to be nonviable pretty fast.
Q. Does it strike you as unusual that there was no imaging done preoperatively to the April 2 surgery, to map out what was going on with his right leg and foot?
A. Well, Dr. Heidenreich imaged it with his fingers. When you don't feel the femoral pulse, you know where the problem starts. You've got to take care of the inflow first. I think he was in such -- they basically listed him as a Class III, Rutherford's acute ischemia, at which point there really isn't a whole lot of time to wait if you have any chance to do anything. I think he just did what most of us was going doing do. He knew there was a problem with the graft being occluded because he couldn't feel the femoral pulse anymore. He had to explore that to see

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if he could get it open. He needed to reestablish flow which usually means going to the profunda first. So no, it's not that unusual under those circumstances.
Q. What in your opinion was the cause of the outflow problem on March 18?
A. The outflow problem?
Q. Yeah, either the ABF shut down and/or the --
A. Fem-pop.
Q. -- fem-pop shut down. What was the cause, if you remember?
A. That's inflow. I'm sorry. Outflow is down low. Inflow is up top. You said outflow, that's why you confused me.
Q. Let's start with inflow?
A. Well, the problem with inflow is, obviously, he's got disease there. Again, whether he's developed more atherosclerosis, more intimal hyperplasia, has clot there, we just don't know. Obviously, there was something that was progressing that it was limiting the outflow in those grafts.
Q. Was what was the cause for outflow problems as of March 18?

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A. The outflow probably was the fem-pop. If that was open, you know, he's got a diseased artery sewed into to start with. He's got a graft that could have closed for multiple reasons, as we talked about. Down below that, I don't think there was any problem until later on when he clotted things. That was just low flow.
Q. As af March 18, what was the Rutherford classification for him, in your opinion?
MS. SALTER-FERRIS: I'm going to go object. Asked and answered.
A. I think it's the same as on the 24th, probably a number 1. I didn't see any sensory changes documented.
Q. What was the Rutherford classification as of March 24?
A. March 24? One.
Q. What's that based on?
A. The fact that he has increased pain, ischemic pain can cause that. He had no change in his sensory or motor function that it was documented or that they could find any evidence about, so without some sensory or motor changes

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that are new, puts him at a one in my book.
Q. Looking at March 24, other than the pain, the increased pain, am I correct that you're not aware of any difference in his right foot from three weeks before?
A. Again, from the classification we use, I saw no signs that there was any sensory change, any motor change, any ulceration, gangrene, or anything like that, so from those criteria, no, I'm not.
Q. So he had sensation on that date?
A. Yes. Again, it said no new sensory changes. I know he had some changes from this rhabdomyolysis insult from '07.
Q. I meant to say no new sensory changes, in your view?
A. Correct.
Q. As of March 24?
A. That's what my understand ing is, yes, ma'am.
Q. And he had no changes in his motor function as of March 24; is that right?
A. Correct. No new changes.
Q. Would you agree that dependent rubor is more common in chronic arterial ischemia

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than acute ischemia?
A. I think just because of sheer numbers of people that have chronic ischemia compared to acute ischemia, that's a true statement.
Q. Putting aside the sheer numbers of people, sir, how about let's talk about percentage of cases. So we take the volume out of it, the relative volume out of it. Can we agree that dependent rubor is a more common finding in chronic arterial ischemia than acute ischemia?
A. Again, I don't know the numbers it occurs in acute ischemia. I never really thought about which one had more, but if you had advanced chronic ischemia it can happen, if you had acute ischemia, it could happen. All it is is when you put your foot down, gravity takes more blood to your foot. If you have any ischemia it's going to happen. I've never seen anything comparing the absolute numbers, acute versus chronic.
Q. Is it your belief, sir, that as of March 24, 2010, Mr. Boltz had dependent rubor in his right foot and his left foot?

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A. Well, the right foot I'd say definitely. Left one, it's hard to say.
Q. Why is it hard to say on the left?
A. It really didn't get as ruborous as the one on the right. We know he's had venous problems -- actually, problems with swelling worse on the right than the left. You can get a little deoxygenated blood just from having venous backup. The classic change is the right foot certainly got more ruborous. I just can't tell you for sure about the left. I really wasn't too concerned about it when I was looking at it.
Q. Well, the ruborous changes on the right may just be because of his veinous insufficiency; correct?
A. Sure. It's a possibility.
Q. There's no way for you to tell one way or the other is there, sir?
A. Not without having something shortly before that, before he got his increase in pain. Again, it's really not germane to the classification.
Q. So in essence, sir, because you don't have comparative photos of what both his

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feet looked like before his complaint of increased pain on March 18, the photos don't help you one way or the other, tell you what his clinical picture or appearance was or the significance of that appearance on March 24; isn't that fair.
A. Correct. Dependent rubor doesn't factor into my opinion one way or another. Whether it was venous, whether it's arterial, that doesn't change the picture. Maybe I shouldn't say it that way because we're looking at pictures. It doesn't change my opinion.
Q. Well, it doesn't help your opinion or support your opinion one way or the other, fair?
A. It doesn't hurt my opinion, it doesn't help my opinion, it's not germane to my opinion. I really don't care. On that note, I'm going to go take a bathroom break.
Q. Okay.
(Recess taken.)
BY MS. BOWERMAN:
Q. Ready? Can we agree, sir, that if the ABF clotted off completely as of March 18, the graft clotted off, you would expect within

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hours to have loss of feeling and loss of movement?
A. Not necessarily. It depends on the collaterals.
Q. What collaterals are you referring to, specifically?
A. Do you want me to go through them for the fourth time?
Q. Where they come from and where they go to?
A. We've gone over that, considerably. They, basically, come down through the hypogastrics, the internal iliacs, go down the external iliac, into the common femoral to the profunda femoral to the collaterals to the popliteal and then down to the foot. Unless his fem-pop is open, in that case, they go down that, too.
Q. You don't really know if the profunda was closed as of March 24, do you?
A. Well, I can tell you if his profunda was closed, and his fem-pop was closed, and his aorta-fem was closed as of the 18th --
Q. Yes.
A. -- he would have lost his leg a long

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time before he did. I can tell you with absolute certainty those three things were not all closed.
Q. When do you believe this patient's foot was last salvageable more likely than not?
A. I think on the second, Dr. Heidenreich |said that his symptoms had been going on for four days. I'm not sure, exactly, what he meant by that. So definitely I'd say on the 29th he was salvageable. On the 30th and 31st, it's 50/50. I don't know for sure.
Q. Did the photos of March 30 or March 31 offer any support one way or the other to your opinion that as of the 29th -- as you testify, as you're looking at specific photos, would you identify the Exhibit number and photos you're referring to?
A. Exhibit 4, April 2, that foot was long gone. April 1, probably not salvageable. 31st, he's got some blebs on it, again, not knowing his sensorimotor function, I would say just looking at the foot there's a chance it's salvageable. Exhibit 3, doesn't look that bad on the 30th, I'd say probably more than likely not it's salvageable on the 30th, at least on

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the pictures. 31st, I'd have to go 50/50.
Q. Okay. Now, what other information that -- do you have other than the pictures that allows you to say that as of the 30th more likely than not his foot was salvageable but not so on March 31?
A. Again, the only information I have -- the question you asked me was based on the pictures. So I based it on the pictures. The only information I have is Dr. Heidenreich's statement on the second of April that his symptoms had been going on for four days. If he had loss of motor function and loss of sensory function on the 30th, then, you know, chances are he's not salvageable, but if he still had some, without getting that gradation, it's hard to tell for sure. There's some transition in there. Like I said, looking at the picture it looks like he worsened between the 30th and the 31st. That's all.
Q. Okay. And you have no idea what symptoms Dr. Heidenreich is referring to as being ongoing for four days; is that fair?
A. Correct.
Q. You don't know in he's simply

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talking about what he considers increase or significant pain?
A. I have no ideas what he's mentioning. He wasn't specific until there's a history in the physical. There is really no good definition of that. The only thing that is more which we can see in the picture is he started to blister on the 31st. There's no good history about that.
Q. What is it about the blisters that allows you to say that more likely that not his foot was no longer salvageable?
A. I just said they mentioned the blisters as being different on the 31st. I think the entire -- his foot is looking more mottled its and discolored in general, plus the blisters. That's all.
Q. He certainly didn't have evidence of tissue loss on March 24; is that correct?
A. Correct.
Q. And he didn't have any evidence of blistering?
A. Correct.
Q. In your opinion, his foot was viable as of March 24?

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A. Yes, ma'am.
Q. Can we agree there was not evidence on March 24 that he lacked adequate profusion to his foot?
A. Other than the fact that he had increasing pain, a sign of decreasing profusion affecting the nerves, but from looking at the foot, you know, if that truly is dependent rubor, that's a sign that his circulation was diminished. Other than the symptoms, no.
Q. How would you characterize the dependent rubor as of Mach 24? Would you say it's mild dependent rubor?
A. I just say it's either there or it's not. I wouldn't know how to -- I guess it depends if you go from sheet white to bright red. I'm looking at one isolated thing, it may not even be -- totally declared itself yet. So it's there.
Q. And again, you don't know how long it had been there before March 24; correct?
A. Correct. We know that he had symptoms as of the 18th, so I'd assume this is from new onset ischemia that's been there from since at least the 18th.

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Q. May have been there before then;
correct?
A. May have been, sure.
Q. May have been there a year before;
correct?
A. Correct.
Q. Can we agree that are not all
patients with dependent rubor have impending
limb loss that requires immediate vascular
surgical intervention?
MS. SALTER-FERRIS: Object to
form of question unless you can relate it to
this patient.
A. Not all dependent rubor is arterial
so I guess that's true.
Q. You can't tell whether the dependent
rubor in this case was arterial or venous;
correct?
A. Without having further history, I
can't tell that. I'd have to get more history
out of him.
Q. He didn't have power on March 24,
did he?
A. I don't know if anybody elevated his
leg to check for it. There's nothing

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documented, so I can't tell you one way or
another. I would say most likely if you have
ischemic pain then if you elevate his leg it's
going to have pallor. It's not documented in
the records and there's no photographs of his
leg being elevated.
Q. You don't know one way or the other
if this patient had pallor, arterial ischemic
pallor, as of March 24?
A. I'd say more likely than not, if he
elevated his leg he had pallor, because of his
symptoms and what we know. Again, it's not
documented.
Q. More likely than not, he would have
had pallor if the leg was elevated because of
his symptoms of increased pain?
A. His symptom of increased pain which
are a sign of ischemia, yes, ma'am.
Q. In your opinion as of March 24, more
likely than not, the increased pain was the
result of arterial ischemia?
A. Yes.
Q. Can we agree, sir, that had a
vascular -- an arterial Doppler been performed
on March 1, it would have been abnormal in his

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right foot?
A. In his foot?
Q. Yeah.
A. I think he didn't have absolutely
normal circulation in his foot. He had
adequate circulation in his foot on the first.
Q. In your opinion if an arterial
Doppler had been performed on March 1, is it
your opinion it would have been a normal
Doppler exam?
A. It couldn't have been because we
know his dorsalis pedis was occluded. So he'd
have an occluded dorsalis pedis, so, no.
Q. How about his calf?
A. His calf? His anterior tibial was
occluded in his calf so if you do a Doppler of
all three vessels, you would notice that the
anterior tibial was occluded. It's not going
to be normal.
Q. How about his thigh?
A. Well, if fem-pop's open, you're
going to see a patent graft. Hard to say, you
know. Sure, it's not normal because you're
looking at graft. We know his artery is
closed. His flow could be normal.

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Q. Do you have an opinion, sir, in what
way an arterial Doppler performed on March 24
would have been different that what it would
have been had it been done on March 1?
A. Sure. March 24 there would have
been a change. If he closed one of those two
grafts, they wouldn't have been patent. So
number one you'd have change in whatever graft
that was that was closed. Number two, the flow
pattern downstream would be very different. If
his grafts were open and you scanned his
popliteal, you're going to get triphasic
waveform. That's what it looks like, it's
normal. With inflow obstruction, you're going
to get a monophasic waveform. It's totally
different and you'd notice a difference. If
you measured pressure, you'd notice a
difference.
Q. That's differences would only be
their more likely than not if his increased
pain was a result of some arterial change;
correct?
A. Correct.
Q. Do you have an opinion as of March
24 what this patient's anatomy was in terms of

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his inflow?
A. Again, not knowing if his aorta-fem closed or fem-pop closed, no.
Q. Okay. Same question about in terms of his outflow. Do you have an opinion what the anatomy of his outflow was as of March 24?
A. I think his popliteal artery was open, his peroneal artery was open, his posterior tibial artery was open, except for a localized obstruction distally, and then he collateralized into the plantar branches or branch.
Q. You believe as of March 24, all of his outflow and arteries and grafts were open?
A. well, I started at his popliteal, so he had no grafts done in his popliteal. His anterior tibial is occluded and he has a localized occlusion of his posttibial tibial.
Q. Okay. What was his outflow as of the ABF graft, right limb?
A. I have no idea what you're talking about.
Q. Let me phrase it a little better because it was not my best effort.
A. Probably your worst of the day.

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Q. I'll accept that. What was the anatomy of Mr. Boltz outflow from the right limb of his ABF as of March 24?
A. As of March 24, if we assume that the aorta-fem was open?
Q. Whatever you want to assume.
A. You can't have outflow from an aorto-bi-femoral graft if it's not open, it's got no blood going through it. Assuming that the aorta-fem was open, then the other scenario comes in where his fem-pop was occluded. His outflow was to a profunda femoral artery that went down, collateralized into his popliteal, then into the vessels that we talked about before.
Q. It's your opinion as March 24, he still had acute ischemia?
A. Yes, ma'am.
Q. Therefore, as of March 24, his acute ischemia had been ongoing without treatment for six days; correct?
A. That is correct.
Q. How likely is it for a Doppler signal on March 24 to have picked up the PT or the dorsalis pedis in acute ischemia of

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six-days duration?
A. Well, we know it's not going to pickup the dorsalis pedis because that's been chronically occluded. As for the posterior tibial, if you're above that localized occlusion, you're going to hear a signal. Again, Class I ischemia or Class I acute ischemia you do have Doppler signals in your foot. You're going to go hear something. It just means something is moving down there.
Q. Only if you're above the PT; correct?
A. No, no. You're going to hear above the PT.
Q. Above the occlusion of the PT?
A. Again, yeah, below it, if you know where to listen in that plantar branch, you're going to hear flow in that.
Q. And that's true even that, in your opinion, this patient had had acute ischemia as of March 24 for 6 days duration?
A. Correct, ma'am. The only way he's not going to have Doppler signals in his foot is if he had more advanced ischemia.
Q. If the foot is still viable after

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six days of acute ischemia as of March 24, how likely is it for there to be detectable PT or dorsalis pedis pulses on Doppler?
A. As I keep saying, leave the dorsalis pedis out, because there hasn't been a Doppler pulse in there since at least '06. It ain't coming back, we already talked about that. You know, again, the degree of ischemia is going to dictate whether you get a Doppler pulse. If you're above that blockage, you're going to hear a posterior tibial pulse. Below, you're going to hear a plantar pulse. Class I ischemia, there's going to be Doppler signals.
Q. Is it your opinion that as of March 24 this patient had impending limb loss despite the fact he had no change in either sensation or motor function?
A. Correct. He's got acute ischemia. The potential that he could lose that leg is real.
Q. Would you consider his situation as of March 24 emergent?
A. Yes, ma'am. Urgent as opposed to emergent. He's still Class 1 so if it was 3 in the morning he wouldn't have to run to the

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hospital to take care of it, but it needs to be taken care of urgently.
Q. In your opinion, had this patient been seen by a vascular surgeon on or before March 30, what treatment do you believe he would have undergone, that he would have had to have undergone to salvage the foot?
A. At the very least, he would've had to have that aorta-fem graft opened up either with lytic therapy or a balloon, thrombectomy. Pretty much what Dr. Heidenreich did, restore flow to his profunda femoral artery. That may habe been all he needed. You just have to have adequate circulation. You don't have to have perfect circulation. So if he restored flow to that profunda, and he hadn't clotted outflow vessels as he did later on when he went to Class 3, his leg was probably salvageable.
Q. It's your opinion that he had not, as of March 30, clotted any of the microvessels further down in his leg and his foot?
A. Yes, ma'am.
Q. And the reason you've drawn that conclusion is what, sir?
A. Well, the picture doesn't show that.

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Usually, when you have microcirculation at occlusion, you get more mottling and things like that so -- didn't have that.
Q. As of March 30, do you have an opinion about the level of occlusion of the profunda, right profunda?
A. As of the 30th?
Q. Yes.
A. I think his profunda was either in the process of occluding or had just occluded.
Q. What makes you draw that conclusion?
A. From experience, trying to put this all together, that's usually the final thing that breaks the back, lose that last collateral. If he lost his profunda, he probably lost his last collateral there.
Q. Do you have an opinion, sir, had this patient been treated by a vascular surgeon as of March 30, what the limb expectancy was?
A. The limb expectancy?
Q. Yeah. His limb expectancy on the right?
A. Yes. I think if they had gotten that all open, put him in a surveillance program where they followed this along, his

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limb could go on indefinitely. The thing that usually kills us is when we lose all the tibial vessels. He still had popliteals and pretty good tibia runoff.
Q. I want to make sure I'm clear here. It's your opinion, sir, that the only thing this patient needed up until March 30 was the surgery that Dr. Heidenreich did in bypassing the profunda and opening up the ABF?
A. Yeah. All you have do is get that to adequate circulation. There is always a chance that it would have taken care of the whole problem to put a fem-pop in, but generally speaking, restoring the inflow to a good profunda with an open popliteal is going to be enough to do it.
Q. You do not believe he needed TPA, do you, as of the 30th or up until the 30th? TPA, preoperative TPA or interoperative TPA would play no role, is that fair?
A. Again, it depends on how bad his symptoms were on the 30th. If he's got sensory changes and starting to get motor changes, you don't have time for the TPA. It's a timing issue. On the 30th -- let me get my days right

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before I mess up. Let's say on the 24th in there when he doesn't have sensorimotor changes, you've got time. TPA, you can take a day to open up a graft. When you're getting on the 30th, things had moved along, it's faster to do the operation.
Q. Is it your opinion, sir, that had TPA been instituted anytime after the 24th that that in and of itself would have opened up the ABF?
A. No. That's not my opinion at all. He needed some outflow. Whether or not they could happen ballooned the profunda, it's hard to say if that was a localized blockage, but he probably needed either patch or something on his profunda, localized jump graft. He needed to have outflow restored at the outside of that graft. TPA, you don't know until you put the TPA in there, what you uncover. Might be able to get the graft open and not get the profunda opened or you might be able to.
Q. Well, prior to the surgery of -- or let me start again. As of the 30th, where would the TPA be inserted?
A. As of the 30th, I told you the 30th

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wasn't enough time. I wouldn't have put the TPA in there.
Q. Anytime after the 24, where would the TPA be inserted?
A. Not including the 30th. So the 24th to the 29th.
Q. Whenever you believe he would have been a candidate for TPA, where would it be inserted, sir?
A. Inserted into the aorto-femoral graft.
Q. That's the only place?
A. That's where you start. You've got to open the top to get to the bottom.
Q. Okay. Would it be inserted anyplace else?
A. Again, you can't get to anyplace else because you've got to get through the upper clot.
Q. You don't know one way or the other whether TPA would've gotten through that ABF clot?
A. Correct.
Q. How long would you wait to find that out, sir?

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A. It depends on the patient's symptoms. If the patient's in pain and the sensorimotor is okay, give it a day or two, if it looks like you're making progress. A lot of times you can tell pretty quickly if the TPA is going to work or not. Sometimes it just sits there, and you say it's not working, let's take him to the OR, or you can take them straight to the OR, whatever your surgical choice is.
Q. When you inject TPA into is a fresh clot, how long does it take to dissolve, sir?
A. It very variable. Some fresh clot is very liquid, it goes away pretty quickly. If you get some flow out through the graft, it works better. If you can't get any flow through it, it just sits there, sort of mixing. Again, I've seen TPA work in a matt of minutes, seen TPA not work over a couple of days. Who knows?
Q. What are the variables or the factors that determine how fast it works or whether it works at all?
A. Well, there used to be -- UCLA had a test. If you could get a wire through the graft and into an open vessel, he was fairly

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sure he could get it open with TPA. There's no place for anything to go, it's just going to keep clotting.
Q. At what point in time is TPA most effective?
A. The understanding is the earlier the clot. However, there is a guys out of Chicago, that for chronic iliac occlusions, there for years, he would dissolve the clot to expose the stenosis that he could balloon. So there is evidence that even older clot can be dissolved. Obviously, the younger the clot, the better off you're going to do.
Q. It's unlikely that a clot of six days duration in the ABF could be dissolved by TPA, isn't that fair?
A. No, I don't think that's fair. If there's decent outflow and you can get a wire through it, there's a good chance it could be occluded. Most the clot inside a graft, let's say, there's a problem at the bottom of the graft that caused it to clot, or a problem at the top of the graft that caused it to clot. TPA a lot of times can uncover that. Most of the blood in there is surprisingly liquid, so

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it dissolves and once you can open up that lower part where the stenosis was, it opens up. If you de-clot a graft, like a femoral-popliteal bypass graft, usually there's a stenosis at the bottom, you put a balloon up, and there's usually a little plug at the top. Before you pull that stuff out, it's liquid blood in there, it already dissolved itself.
Q. Would you expect TPA to be effective in a clot that's 12 days old?
A. It's possible.
Q. But unlikely?
A. I don't know. It depends on the symptoms. If I think there's a chance it's going to open up without an operation -- this guy's had his groin opened up a few times -- and you have time, certainly worth a shot.
Q. It's possible but not more likely than not?
A. I don't know about that. It all depends on what your outflow is, whether you get a wire through it, dilate the lower part.
Q. So if we look at the ER visit at Allegiance on April 1, can we agree, sir, that the ER physician was able to palpate the

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popliteal and the femoral arteries? I'll be more specific if you can give me a second. You are aware, are you not, that as of April 1, the ER physician made a finding of positive right popliteal and femoral pulses, both appear to be 2 plus, on the right. You're aware of that?
A. That's what he says.
Q. Do you have any reason to believe that's not accurate?
A. Yeah.
Q. What's the basis of you believing it's not accurate?
A. Prospectively, he has cold, purple, pulses, right foot, loss of motor function, which usually comes from the calf, loss of sensation, blistering, no Doppler pulses in the foot and, you know, it just doesn't fit. Plus, that's prospectively. Retrospectively, knowing what Dr. Heidenreich found, there is no way this guy had a pulse there.
Q. So you think that the ER physician was just dead wrong when he made that finding?
A. Yes. If you look at the perception of pulses, I think it's the kappa value, it shows it's about 60 percent accurate. If you

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try hard enough to find a pulse in this table right here, you'll feel a pulse, because you have pulses in your own fingers. Yes, I think he was incorrect in his findings.
Q. Isn't it the correct case, sir, that femoral pulses are unmistakably found?
A. No, not in someone who's had multiple scars, who's in pain. I don't know how big he is, but no. I try to feel femoral pulses all the time. I struggle, and I'm a vascular surgeon. I disagree with that 100 percent.
Q. What was his Rutherford Class on April 1?
A. Emergency room?
Q. Yes.
A. 3.
Q. And based on what?
A. The fact it was cold, purple, pulses, right foot, with no motor function, no sensation, blistering. That's pretty classic.
Q. Do you have an opinion, sir, about this patient's life expectancy?
A. I don't generally refer to life tables. It's pretty much the average. In his

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case, I'd probably knock a few years off just because of his risk factors. I think, at this point in time, hopefully he's had a wake-up call, he's going to take his statin medication, not smoke, have his heart followed, have his legs followed. Take the average, take a few years off it.
Q. What did you mean by a few years?
A. About five.
Q. So it's your opinion that more likely than not, his life expectancy, based on all his comorbidities, the history of his peripheral arterial disease, gives him a life expectancy of a normal white male, less five years, for his given age?
A. Yes. Bottom line is he's got peripheral vascular disease. That's just a marker for cardiac disease. Peripheral vascular disease may cost you your legs, but it doesn't cost you your life. Again, you know, this man should be seen and followed and taken care of. He's had his wake-up call.
Q. Can we not agree, sir, that severe peripheral arterial disease is a significant marker for coronary artery disease?

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A. I think I just said that, so I guess we agree.
Q. Can we agree, sir, that this patient's carotid artery disease with a 70-percent stenosis is another significant marker for coronary artery disease?
A. Two things about that. Number one, I think it's more peripheral vascular disease. Number two, if you read that report, they actually say the numbers don't stack up to a 70 percent. They don't believe it's a 70 percent. It wouldn't surprise me if he developed carotid disease in the future.
Q. Can you answer my question?
A. I just did. I said it's more peripheral vascular disease. It's one marker for heart disease.
Q. You would agree with me that the presence of his carotid artery disease is a significant marker for coronary artery disease?
A. Yes, ma'am.
Q. And can we also agree, sir, that the mere fact that he's had a below-the-knee amputation does not change or shorten his life expectancy?

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A. Also the fact -- if you look at, maybe a year comes off because of the increased energy expenditures you have with that. It does shorten it a little bit, I think.
Q. When you say a little bit, you're referring to potentially a year or two?
A. Yeah.
Q. Let's talk about hypercoagulable state. What are some of the manifestations of hypercoagulable state in a patient like this, sir?
A. Most hypercoagulable states predispose you to be in this disease. You're talking more about deep vein thrombosis, superficial phlebitis, pulmonary embolism, things like that. Very few of them predispose you to arterial type blockages. His heterozygous M-T-H-F-R, I think that's the initials, really doesn't factor into that. It's sort of a tagalong to premature atherosclerosis.
Q. In hypercoagulable state, sir, do you tend to see certain types of clot?
A. The only one that you really see a distinctive clot is HITS, and that, you get the

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white clot, more platelet clot. Other than that, it's just regular old clot.
Q. What is the difference between a white clot and red clot, sir?
A. I think the short answer is the color, but the big answer is the white clot is platelets. It's usually associated with HITS, which is a platelet clotting problem. Red clot has more to do with clotting factors.
Q. Is it your opinion, sir, that this patient has HITS?
A. No, ma'am.
Q. He's never had HITS, has he?
A. Not that I've seen, no.
Q. HITS is heparin-induced --
A. Thrombocytopenia syndrome. Of course, there's just HIT where it's not bad, HITS where it's bad.
Q. In your opinion, this patient has never had heparin-induced thrombocytopenic syndrome, correct?
A. Call it HITS, it's easier. Not that I'm aware of, no, ma'am.
Q. If a patient has hypercoagulable state, are they more likely to have white clot

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than red clot?
A. Again, HITS is the only one that's notorious for white clot. The rest is, best I know, red clot, so run-of-the mill, garden-variety clot.
Q. Okay. Do people who have early onset of atherosclerotic disease, peripheral arterial disease, tend to more likely have hypercoagulability?
A. Again, I think I told you three hours ago, that about half the people, less than 50, with premature atherosclerosis will be found to have some sort of defect.
Q. About 50?
A. If I see somebody under 50, I always get a coagulation profile.
Q. But in your opinion, Mr. Boltz does not fit into the 50 percent who have had hypercoagulability as at least one explanation for his disease state, correct?
A. No. I said he has an abnormal protein. We know that, but it's just or of a marker. It doesn't necessarily cause the atherosclerosis.
Q. But it could account for why he is

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hypercoagulable; correct?
A. He has a hypercoagulable condition. If you're asking me, could it account for why he closed his grafts? No, he has mechanical problems that do that. He gets obstructions.
Q. In your opinion, the hypercoagulability plays no role at all and has played no role at all in the clotting off of any of his grafts; is that correct?
A. Again, he was also on Coumadin, so any effect of the hypercoagulable state is negated. So, yeah. Correct.
Q. What is so your explanation for why he clotted off in the surgery of April 2 with an INR of 4?
MS. SALTER-FERRIS: I'm going to object to premise of that, that he did clot off.
A. I have no idea what you're talking about. What did he clot? He was clotted. He came in clotted. Where do you have that clotted during the surgery?
Q. Are you aware he had some clotting problems in the middle of surgery?
MS. SALTER-FERRIS: Same

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objection.
A. Let me read it. So would you like to point to me what you're looking at or would you like me to read the whole note?
Q. Is it your understanding that despite pulling out clot, he continued to clot, have active clotting during that surgery of April 2?
A. Again, if you could tell me exactly what you're talking about because there's other things that go on there. He may not have gotten all the clot out which begets clots. So if you tell me -- it's a four-page operative note, if you want to point me to me what you're looking at?
Q. Why don't you read it? Your reading will be faster than mine, sir. I can point you, now I think I can point you to Page 3 of the op note.
A. Okay.
Q. Right in the middle of the page where he says, first the distal anastomosis was performed. Of note --
A. Hold on.
Q. Of note there was some clotting of

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blood -- its my Page 3.
A. Not mine.
Q. Maybe I can find it for you in your note. Right here (indicating).
A. Mark it. All right.
Q. Okay. Just so we're on the same page.
MS. SALTER-FERRIS: Can I have my highlighter?
MS. BOWERMAN: Of note --
MS. SALTER-FERRIS: Wait, wait. Okay. Of note --
BY MS. BOWERMAN:
Q. No, actually -- of note, there was some thrombus again present in the bypass graft, despite having what appeared to be --
A. Hold on, hold on. I've got a different -- mine says, of note, there was approximately four --
Q. Go up five lines. There's another of note.
A. Too many of notes. All right, okay. Of note, there was some thrombus present in the bypass graft. Hold on. Okay. So he's talking about the aorta-fem graft?

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Q. My question is what is the significance of that statement in terms of hypercoagulable state?
MS. SALTER-FERRIS: Can we read it?
Q. Here's the question. In Dr. Heidenreich's April 2 note, operative note, he says, quote, of note, there was some thrombus again present in the bypass graft despite having what appeared to be full anticoagulation doses. In your opinion, does that not suggest that he has some element of hypercoagulability that is contributed to his clotting?
A. Well, to the uninitiated it might, but more likely since this is a big graft, he just didn't get all the clot out of it. If you had some clot left behind, that's where it would be common. Unless you do an arteriogram you'd be surprised how ratty it looks up there. It's most likely he just didn't have a complete thrombectomy. More clot formed. It happens more likely than -- more times than we can count.
Q. Can we agree, sir, that for this

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patient, if he was taking Cultursene for gout, there is no contraindication to taking aspirin or do you not have an opinion on that?
A. I don't really have ab opinion. I'd have to look it up. Probably have had people on it, I just never thought about it before.
Q. In your opinion, assuming that Mr. Boltz failed to take or decided to stop talking his aspirin for three or four days, immediately prior to his admission on April 1, would that play any role in the clotting off of his ABF or other areas?
A. No. It had no impact.
Q. Why not?
A. Two reasons. One, INR was 4 which is tremendously high. Number two, aspirin is a non-reversible acetylator of platelets. The half-life is like seven days. So four days, his platelets aren't back to normal.
Q. Can you agree, sir, that poor outflow into the right foot is a bad prognosticator for longevity of the foot in the face of peripheral arterial disease?
A. I think it depends on what you're looking at. If you're looking at somebody,

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say, with ulcering gangrene and you can't restore good flow into the foot, that' sa bad thing. His outflow was adequate for what he needed.
Q. It certainly isn't a good prognosticator, is it, sir?
A. Well, again, it depends on the circumstances. You only need adequate circulation, you don't need perfect circulation. A diabetic with severe tibial disease and ulcers that aren't going to heal, it's a lot worse than somebody who doesn't have that, adequate flow down there.
Q. Is it your opinion, sir, given what you believe was going on as of March 24, had this patient been referred on March 24 to a vascular surgeon, is it your opinion that he would have suffered no consequences at all? In other words --
A. Tell me what you mean by no consequences.
Q. Is it your opinion that he would have no additional deficits or problems over and above what he had as of March 1?
A. Correct.

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Q. So the fact that he to undergo another major surgery, opened this graft, it neither -- it would neither cause nor contribute any significant additional deficits or losses for this patient?
MS. SALTER-FERRIS: I think it was just asked an answered.
A. That's correct, yes.
Q. Do you have any other opinions you intend to offer that we haven't gone over in detail?
MS. SALTER-FERRIS: I'm going to object to over-broadening nature of that question.
A. In my opinion, had they appropriately taken care of him on the 24th, he got to a vascular surgeon, he would be fine. I guess that's my main opinion. It took you a long time to get to it, but, yeah.
MR. THOMAS: Let me --
Q. Other than an objection to foundation to whether the care was appropriate or not on the 24th, since that's not something you can comment on.
A. Correct. Had he had the appropriate

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vascular care been given to him --
Q. Okay -- (inaudible).
A. Well, I'm not taking about that. I'm talking about after he goes to a vascular surgeon, he would have done fine.
MS. BOWERMAN: That's all I have. Thank you.
- - - - -
EXAMINATION
BY MR. THOMAS:
Q. I don't have much. You testified -- you were asked some questions about TPA, whether or not TPA could dissolve 12-day-old clot, and I think Ms. Bowerman started to ask you the question, while it's possible, it's not probable, and you said, no. So I want to make sure I understand your opinion. Is it your opinion that, more likely than not, TPA would dissolve 12-day-old clot?
A. Just as a general statement, if you look at studies like the Topaz which is thrombolysis or operative intervention, up to 14 days, yeah, it's more likely. Again, there are certain factors that go into it.

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Q. Sure. Thank you. Again, more for purpose of clarification, I'm trying to avoid going over the same material. It's your opinion that when there was this change, March 18, it was either the fem-pop going down or the right limb of the ABF; right?
A. Yes.
Q. One or the other?
A. One or the other.
Q. As we sit here, you can't say more likely than not it was the fem-pop versus the right limb of the ABF; correct?
A. Correct. We know there is a change.
Q. On what was marked as Exhibit 7 which was the first page of your notes, and you have the notation that 31 through 17, foot fine then change; right?
A. Correct.
Q. And I think that was your testimony, too, that the records showed the patient was doing fine, as of March 1, 2010. I want to know what records you're relying on?
A. I'm just relying on the fact that the record says six days ago he had a change.
Q. So if I understand correctly, it's

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not that you are relying on any records that document that he was doing fine, but rather that there was a change and it's described as worsening pain?
A. Correct.
Q. You can't point to me any records, specifically, or cite any records that specifically say he was doing fine?
A. I don't think there are any records, so, no. I can't cite you anything.
Q. You were asked some questions regarding the most likely causes of the arteries going down a the short period of time, 11 months, 18, months. You were asked whether or not that was evidence of rapidly progressing atherosclerosis. I think you indicated no, and in your opinion, that this was intimal hyperplasia; correct?
A. I think there was, sure.
Q. Do you have any documentation or can you point or cite any documentation in any of the materials that you reviewed that show intimal hyperplasia?
A. Again, there's nothing there, there's no description of why these grafts

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closed.
Q. Ms. Bowerman asked you to read in Exhibit 7. I'm going to ask you to read in Exhibit 8. Would you read that, slowly?
A. All right. At the top it says increased blood pressure. It says Toledo 2006. Decreased walking distance, decreased to 100-to-150- feet. Some numbness. Erectile dysfunction. Cigarettes, one pack per day, quit. No femoral pulse. Leriche syndrome. On the left there's a picture of the arteriogram. 6-14-06, it says aorto-bi-femoral bypass graft. A 12 HEMASHIELD. It says left SFA out. PT out distally, one vessel run off. I wrote that there before I drew the picture. 4 Fogarty in the right leg goes the length which basically means he could put the entire length of the 4 Fogarty so it probably went down to his peroneal or posterior tibial. Who knows. Left SFA open 12 centimeters which means on the left side he could only get the Fogarty down 12 centimeters and then it wouldn't go down any further.
5-29, I assume that's '07. I didn't put a year in there. It says short left common

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femoral artery to mid-superficial femoral artery Distaflow, and that's just a type of bypass graft. Right common femoral to proximal superficial femoral thrombectomy with a Dacron patch. Then we've got, it looks like, 1 cc or 1 mg of TPA down both legs. Aorto-bi-femoral thrombectomy. Intraoperative arteriogram, and then a right femoral popliteal PTFE on May 30. Bilateral anterior compartment fasciotomies. Postoperatively, he had bilateral posterior tibial pulses by Doppler and a right anterior tibial by Doppler. Interesting. Discharge summary 6-5-07, rhabdo, which is rhabdomyolysis. He was known to have a heterozygous MTHFR mutation. He is on Coumadin, and it says see Balkany 10-8-7 note. It says February 6, 2008, left fem-pop distaflow. Says the left posterior tibial Doppler signal.
Q. Okay. Leriche Syndrome?
A. Leriche.
Q. Leriche. What is that?
A. It's a syndrome described by Rene Leriche, who was a Frenchman. Basically, it usually is for distal-aortic occlusion, and

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the findings are, classically, absence of femoral pulses, buttock claudication, which wasn't really here, and impotence. Only a Frenchman would describe that; right?
Q. Generally related to atherosclerotic disease?
A. Yes, it has to do with the aorta being occluded distally.
Q. 12 HEMASHIELD? What does that refer to?
A. That's a type of graft. A HEMASHIELD is a coated Dacron graft so you don't have to pre-clot it. 12 is just the upper limb, 12 millimeter bifurcated graft and it goes into two 6 millimeter looms.
Q. Thank you. Just a couple more. Because you destroy your invoices after you receive payment, are you able to tell me or even give me a close estimate of how much time you've spent reviewing materials in this case?
A. It would be a pure guess. The problem is if I had a pure stack of records, that could usually give you a good idea, but CD-ROMS, I have no idea.
Q. The CD-ROMS, briefly can I just see

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that one. These ones are all labeled CDs of all St. Joseph's Mercy Hospital films, disk 1, disk 2, and disk 3. Are you sure there's records and not films.
A. No. I don't think there's arteriograms in there.
Q. Are there imaging studies?
A. I don't know if they were chest x-rays or what they were.
Q. It's your recollection --
A. I thought they were records and I don't think there was any arteriograms. I would have drawn the pictures of all of them.
Q. It's your recollection there's medical charts?
A. I think there was some in there, yeah.
Q. After we're done, let's mark those. I'd like to get a copy of those. Beyond understanding that you looked at CD-ROMs, you can't give me an idea if you spent 5 hours on this case, 10 hours, 15 hours, 20 hours?
A. It probably wasn't 15 or 20, no.
Q. Probably less than 15 or 20?
A. Definitely less than 15 or 20.

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Q. Do you do plaintiff reviews in Pennsylvania?
A. Yes, sir.
Q. What happened to make you stop, not that it should have a negative connotation, but made you stop doing general surgery?
A. Main thing is, my hospital, you have to have coverage. I had two covering people, one was my old chief resident, and I had Dr. Solow, moved to West Virginia a year before than, then Emily decided to -- she was a single mom, wanted to have more kids, and being an intern for the hospital wasn't a good lifestyle so she moved and I was left with no coverage. The only deal I could get for coverage was from my ex partners, and basically it was, you give us general surgery, we'll cover your vascular. I probably should have done it ten years before. I sleep every night and I don't get called every night. I was mad for about a day.
Q. Has general surgery ever been equal or larger percentage of your practice than vascular surgery?
A. There were times when it might be close to equal. My job was to build vascular, so, no.
Q. Vascular has also been the bigger percentage of your clinical practice?
A. Yeah.
Q. You said thoracic is part of general surgery?
A. You know, some people do, some people don't. I was trained to do thoracic surgery.
Q. But you classified the thoracic surgery that you did under your guise of general surgery?
A. Yes.
MR. THOMAS: All right, thank you. That all I have at this point.
MS. SALTER-FERRIS: I don't have any questions.
(Signature was waived.)
(Whereupon, the above-entitled matter was concluded at 5:03 p.m., this date.)
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COMMONWEALTH OF PENNSYLVANIA)
COUNTY OF ALLEGHENY)

I, ENA R. MARINO, a notary public in and for the Commonwealth of Pennsylvania, do hereby certify that the witness Paul Collier, M.D., was first duly sworn to testify the truth, the whole truth, and nothing but the truth; that the foregoing deposition was taken at the time and place stated herein; and that the said deposition was recorded stenographically by me and then reduced to typewriting under my direction, and constitutes a true record of the testimony given by said witness, all to the best of my skill and ability.

I further certify that the inspection, reading and signing of said deposition were waived by counsel for the respective parties and by the witness.

I further certify that I am not a relative, or employee of either counsel, and that I am in no way interested, directly or indirectly, in this action.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal of office this 1 day of May, 2014.

S/Ena R. Marino

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CURRICULUM VITAE

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Date of Birth: December 24, 1953

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EDUCATION

St. Joseph Regional High School Montvale, New Jersey	High School Diploma 1967 – 1971
University of Pennsylvania Philadelphia, Pennsylvania	B.S. Biology 1971 – 1975
Yale University School of Medicine New Haven, Connecticut	M.D. 1975 – 1979

TRAINING AND RESEARCH EXPERIENCE

Resident in General Surgery Allegheny General Hospital Pittsburgh, Pennsylvania	1979 – 1982
Chief Resident in General Surgery Allegheny General Hospital Pittsburgh, Pennsylvania	1982 – 1984
Fellow in Vascular Surgery Montefiore Medical Center Bronx, New York	1984 – 1986

CURRENT STATUS

Board Certified in General Surgery	1985
Medical Director, Non-Invasive Vascular Laboratory, Sewickley Valley Hospital	1986 – Present
Added Qualification in Vascular Surgery	1987
Fellow of the American College of Surgeons	1987
Recertified in General Surgery	1995, 2004
Recertified in Vascular Surgery	1996, 2006
Chief of Surgery, Sewickley Valley Hospital	1997 – 2001
Director, The Sewickley Vein Center	2006 – Present
Grove City Medical Center	2013 - Present

LICENSED

Pennsylvania	MD 025094E

ORGANIZATIONS

Allegheny Vascular Society
Peripheral Vascular Surgical Society
Society for Clinical Vascular Surgery
Eastern Vascular Surgery Society
American College of Surgeons
Society for Vascular Surgery

BOARD POSITIONS

Board of Directors, Pittsburgh Zoological Society	1996 – 2003
Exam Consultant, American Board of Surgery	1997 – 2003
Chairman, Department of Surgery, Sewickley Valley Hospital	1997 – 2001

OFFICERS POSITIONS

Secretary, Allegheny Vascular Society	1991 – 1994
President, Allegheny Vascular Society	1994 – 1996

SEWICKLEY VALLEY HOSPITAL COMMITTEES

Critical Care Committee	1986 – 1996
Chairman, Utilization Review Committee	1990 – 2000
Clinical Management Committee	1992 – 1998
Chairman, Distinguished Service Award Committee	1992 – 1995
Surgical Committee	1992 – Present
Value Analysis Committee	1993 – Present
CME Committee	1993 – Present

EXTERNAL COMMITTEES

Society for Vascular Surgery Membership Committee	1997 – 2001
Chairman	2000 – 2001

EDITORIAL REVIEWER

Journal of Vascular Surgery	http://journals.elsevierhealth.com/periodicals/ymva
Pediatrics	http://pediatrics.aappublications.org/
American Journal of Kidney Diseases	http://journals.elsevierhealth.com/periodicals/yajkd

AWARDS

Salutatorian, St. Joseph Regional High School	1971
Alpha Epsilon Delta, Premedical Honor Society	1974
Phi Beta Kappa, University of Pennsylvania	1975

Summa Cum Laude, University of Pennsylvania 1975

Merck Award for Clinical Excellence,
Yale University School of Medicine 1979
First Place, Resident's Presentation, Southwestern Pennsylvania Chapter of the American College of Surgeon's "Axillary Vein Thrombosis" 1983
First Place, Original Paper by a Resident, Contemporary Surgery, "Streptokinase and Percutaneous Angioplasty for Salvage of Hemodialysis Fistula" 1984

PRESENTATIONS

1. Collier PE. Streptokinase and percutaneous transluminal angioplasty for reclamation of subcutaneous hemodialysis fistulas. Presented to the *National Kidney Foundation's Interdisciplinary Strategies in Renal Care*. September, 1983.
2. Collier PE. Axillary vein thrombosis. Presented to the *Southwestern Pennsylvania Chapter of The American College of Surgeons*. November, 1983.
3. Collier PE. Is percutaneous insertion of the intra-aortic balloon pump via the femoral artery the safest technique? Presented to the *Pennsylvania Association for Thoracic Surgery*. September, 1984.
4. Collier PE. Re-operations on failed anatomic and extra-anatomic prosthetic reconstruction. Presented to the *Joint Annual Meeting of The New York Society for Cardiovascular Surgery and The New York Regional Vascular Society*. May, 1985.
5. Collier PE. Re-operations on failed infrainguinal prosthetic reconstructions: Factors influencing long-term, graft patency. Presented to the *Peripheral Vascular Surgery Society*. June, 1985.
6. Gupta SC, Veith FJ, Samson RH, Scher LA, Ascer F, White-Flores SA, Collier PE, Nunez A. Application of microcomputers in surgical education and research. Presented as a scientific exhibit at the *American College of Surgeons, 71st Annual Clinical Congress Meeting*. Chicago, IL. October, 1985.
7. Ascer E, Collier PE, Veith FJ. The influence of dextran 40 and graft diameter on low flow bypass graft patency. Presented to the *Society for Clinical Vascular Surgery, 14th Annual Symposium on Vascular Surgery*. Orlando, FL. April, 1986.
8. Collier PE, Ascer E, Gupta SK, Veith FJ. Re-operation on failed PTFE bypasses: The importance of proper technique and outflow site. Presented to the *Society for Clinical Vascular Surgery, 14th Annual Symposium on Vascular Surgery*. Orlando, FL. April, 1986.
9. Gupta SK, Veith FJ, Ascer E, Scher LA, White-Flores SA, Collier PE, Nunez A, Wengerter K, Samson RH. Use of microcomputers in peripheral vascular laboratory research. Presented at the *Symposium on Noninvasive Diagnosis of Vascular Disorders: Review and Update*. Orlando, FL. April, 1986.
10. Collier PE. Role of duplex scanning in distal bypass evaluation: Detection of failed grafts. Presented at the *2nd Annual Vascular Fellows Abstract Presentation*. New York, NY. May, 1986.
11. Collier PE, Ascer E, Gupta SK, Veith FJ. Reoperation for PTFE bypass failure: The importance of distal outflow site and operative technique in determining outcome. Presented at the *34th Annual Meeting of the North American Chapter of the International Society for Cardiovascular Surgery*. New Orleans, LA. June, 1986.
12. Nunez A, Collier PE, Veith FJ. Duplex scanning of bypass grafts and anastomoses related to infrapopliteal arterial reconstructions. Presented to the *Peripheral Vascular Surgery Society*. New Orleans, LA. June, 1986.

13. Nunez A, Collier PE, Ascer E, Veith FJ. Use of middle and distal thirds of the deep femoral artery for origin of insertion of limb salvage bypasses. Presented at the *2nd International Vascular Symposium.* London, England. September, 1986.
14. Collier PE, Ascer A, Veith FJ. Reoperations on failed anatomic and extra-anatomic prosthetic bypasses. Presented at the *2nd International Vascular Symposium.* London, England. September, 1986.
15. Collier PE, Laffey S, Dalton T, Wilcox G, Brooks DH. Angioplasty for claudication: Improved patient selection with color doppler imaging. Presented to the *Society for Clinical Vascular Surgery.* Palm Desert, CA. March, 1990.
16. Collier PE, Laffey S, Dalton T, Wilcox G, Brooks DH. Limb salvage surgery without arterigraphy, is it possible? Presented to the *Eastern Vascular Society.* Boston, MA. May, 1990.
17. Collier PE. Use of the non-invasive vascular laboratory. Presented at the *Update on Vascular Disorders of Lower Extremities.* Pittsburgh, PA. February, 1991.
18. Collier, PE. Atraumatic vascular anastomoses using a tourniquet. Presented to the *Peripheral Vascular Surgery Society.* Boston, MA. June, 1991.
19. Collier, PE. Surgery for chronic venous disease. Presented at the *2nd Annual Allegheny General Hospital Vascular Symposium: Venous Duplex Imaging and Treatment of Venous Disease.* Pittsburgh, PA. June, 1991.
20. Collier PE. Non-invasive evaluation of the carotid artery. Presented at the *Advances in Diagnosis and Treatment of Carotid Artery Disease.* Pittsburgh, PA. February, 1992.
21. Collier PE. Carotid endarterectomy: A safe, cost-effective approach. Presented to the *Eastern Vascular Society.* New York, NY. May, 1992.
22. Collier PE. Improving efficiency for carotid endarterectomy. Presented to the *Southwest Pennsylvania Chapter of American College of Surgeons.* Pittsburgh, PA. May, 1992.
23. Collier PE. Surgery for chronic venous insufficiency. Presented at the *Advances in Diagnosis and Treatment of Venous Diseases Symposium.* Pittsburgh, PA. March, 1993.
24. Collier PE. Follow-up examination of lower extremity bypasses. Presented at the *New Modalities in Vascular Technology Symposium.* Pittsburgh, PA. March, 1994.
25. Collier PE. Are one day admissions for carotid endarterectomy feasible? Presented to the *Society of Clinical Vascular Surgery.* Ft. Lauderdale, FL. March, 1995.
26. Collier PE. How the non-invasive vascular laboratory can help in the diagnosis of peripheral vascular disease. Presented at the *Advances in Diagnosis and Treatment of Arterial Disease.* Pittsburgh, PA. April, 1995.
27. Collier PE. One-day admission for carotid endarterectomy. Presented to the *Southwestern PA Chapter of the American College of Surgeons.* Pittsburgh, PA. April, 1995.
28. Mantia A and Collier PE. Does cervical plexus block for carotid endarterectomy affect hospital length of stay? Presented to the *Society of Cardiovascular Anesthesiologists.* Philadelphia, PA. May, 1995.
29. Collier PE. Surgical options for lower limb salvage. Presented at the *2nd Annual Symposium on Peripheral Vascular Disease: New Horizons in Patient Management.* Pittsburgh, PA. December, 1995.
30. Collier PE. Changing trends in the use of preoperative carotid arteriography: The community experience. Presented to the *Southwestern PA Chapter of American College of Surgeons.* Pittsburgh, PA. April, 1996.
31. Collier PE. Cost efficient carotid surgery: A clinical pathway. Presented at the *Symposium on Advances and Treatment of Carotid Artery Disease.* Pittsburgh, PA. April, 1996.
32. Collier PE. Carotid angioplasty or endarterectomy: A cost analysis. Presented at the *10th Annual Eastern Vascular Society Symposium.* Washington, DC. May, 1996.
33. Collier PE. Changing trends in the use of preoperative carotid arteriography: The community experience. Presented at the *1996 Joint Annual Meeting of the N.A. Chapter of the ISCVS and the Society for Vascular Surgery.* Chicago, IL. June, 1996.

34. Mantia AM, Collier PE, O'Day TL. Does anesthetic choice following a defined clinical pathway for carotid endarterectomy affect length of stay? Presented at the *American Society of Anesthesiologists Annual Meeting*. New Orleans, LA. October 1996.
35. Collier PE. Carotid endarterectomy: What's new in 1996? Columbus, OH. July, 1996.
36. Collier PE. The nursing aspects of carotid endarterectomy. Presented to the *Western Pennsylvania Perioperative Nurses Society*. Pittsburgh, PA. February, 1997.
37. Collier PE. How essential is the intensive care unit after carotid endarterectomy? Presented at the *Symposium on Vascular Surgery*. Naples, FL. March, 1997.
38. Collier PE. Do clinical pathways for major vascular surgery improve outcomes and reduce cost? Presented at the *Symposium on Vascular Surgery*. Naples, FL. March, 1997.
39. Collier PE. Office removal of silastic catheters and ports is safe and cost effective. Presented at the *Symposium on Vascular Surgery*. Naples, FL. March, 1997.
40. Collier PE. Are preoperative antibiotics administered preoperatively? Presented at the *Symposium on Vascular Surgery*. Naples, FL. March, 1997.
41. Collier PE. Do clinical pathways for major vascular surgery improve outcome and reduce cost? Presented at the *American College of Surgeons 43rd Annual Meeting*. Pittsburgh, PA. April, 1997.
42. Collier PE. Venous complications of central venous catheters and their treatment. Presented at the *7th Annual Vascular Conference* at Sewickley Valley Hospital. Pittsburgh, PA. April, 1997.
43. Collier PE. Cardiac tamponade from central venous catheters: A totally preventable complication. Presented to the *Society for Clinical Vascular Surgery*. San Diego, CA. March, 1998.
44. Collier PE. Current results for aortic surgery-the results of a clinical pathway. Presented at the *8th Annual Vascular Conference*. Pittsburgh, PA. April, 1998.
45. Collier PE. Efficiency in the OR: Developing critical pathways for vascular surgery. Presented at the *Symposium for Controlling Costs in Surgery: Strategies for Cost Reduction and Outcomes Improvement*. Washington, DC. September, 1998.
46. Collier PE. Update on carotid artery surgery. Presented at the *14th Annual P.O.M.A. Seminar*. Hidden Valley, PA. January, 2001.
47. Collier PE. To drain or not to drain. Presented at the *29th Annual Symposium on Vascular Surgery of the SCVS*. Boca Raton, FL. April, 2001.
48. Collier PE. Peripheral vascular disease. Presented to *P.O.M.A.* Hidden Valley, PA. January, 2002.
49. Collier PE. Counter incisions improve primary healing of inframalleolar bypass wounds. Presented to the *16th Annual Eastern Vascular Society Meeting*. Boston, MA. May, 2002.
50. Collier PE. Carotid endarterectomy under siege. Presented to the *2nd Annual Pittsburgh Vascular Symposium*. Pittsburgh, PA. September, 2003.
51. Collier PE. Bypass strategies in the absence of saphenous vein. Presented to the *3rd Annual Pittsburgh Vascular Symposium*. Pittsburgh, PA. September, 2004.
52. Collier PE. The carotid endarterectomy: The venerable standard or outdated surgery. Presented at the *Pittsburgh Vascular Symposium*. Pittsburgh, PA. September, 2005.
53. Collier PE. Carotid endarterectomy vs. stenting: Where do we stand? Presented to *P.O.M.A.* Farmington, PA. January, 2006.
54. Collier PE. Modern results of distal bypass surgery: Do patients really still need this operation? Presented at the *Pittsburgh Vascular Symposium*. Pittsburgh, PA. September, 2006.
55. Collier PE. Limb salvage surgery. P.O.M.A. Farmington, PA. January, 2007.
56. Collier PE. New advances in chronic venous disease. Presented to *P.O.M.A.* January, 2008.
57. Collier PE. Vascular Ultrasound. Presented to the *American College of Osteopathic Surgeons' In-Depth Review 2009*. San Antonio, TX. February, 2009.
58. Collier PE. Ankle-Brachial Index and Transcutaneous Oxygen. Presented to the *American College of Osteopathic Surgeons' In-Depth Review 2009*. San Antonio, TX. February, 2009.
59. Collier PE. Medical and Surgical Prophylaxis/Treatment for Deep Vein Thrombosis: The Surgical Patient. Presented to *Heritage Valley Health System*. Sewickley, PA. February, 2009.

60. Morrison, S, Collier PE, Marinelli R, et al. Methodology for Retrospective Inquiry of Perioperative Glycemic Control in Vascular Surgery Patients. Presented to the *American Association of Nurse Anesthetists.* Las Vegas, NV. August, 2013.

PROGRAM DIRECTOR

1. Update on Vascular Disorders of Lower Extremities. Pittsburgh, PA. February, 1991. *Program Director and Organizer.*
2. Advances in Diagnosis and Treatment of Carotid Artery Disease. Pittsburgh, PA. February, 1992. *Program Director and Organizer.*
3. Advances in Diagnosis and Treatment of Venous Diseases. Pittsburgh, PA. March, 1993. *Program Director and Organizer.*
4. Advances in Diagnosis and treatment of renal, aortic and mesenteric vascular disorders. Pittsburgh, PA. March, 1994. *Program Director and Organizer.*
5. Symposium on New Modalities in Vascular Technology. Pittsburgh, PA. March, 1994. *Program Co-Director and Organizer.*
6. Advances in Diagnosis and Treatment of Arterial Disease. Pittsburgh, PA. April, 1995. *Program Director and Organizer.*
7. Symposium on Advances and Treatment of Carotid Artery Disease. Pittsburgh, PA. April, 1996. *Program Director and Organizer.*
8. Symposium on advances in diagnosis and treatment of venous disease. Pittsburgh, PA. April, 1997. *Program Director and Organizer.*
9. New approaches to intraabdominal vascular problems. Pittsburgh, PA. April, 1998. *Program Director and Organizer.*
10. Advances in diagnosis and treatment of lower extremity arterial disease. Pittsburgh, PA. April, 1998. *Program Director and Organizer.*
11. Advances in diagnosis and treatment of lower extremity arterial disease. Pittsburgh, PA. October, 1999. *Program Director and Organizer.*
12. Advances in diagnosis and treatment of cerebrovascular diseases. Pittsburgh, PA. April, 2001. *Program Director and Organizer.*
13. Vascular surgery in the 21st century. Pittsburgh, PA. May, 2002. *Program Director and Organizer.*
14. 2nd Annual Pittsburgh Vascular Symposium. Pittsburgh, PA. September, 2003. *Program Director.*
15. 3rd Annual Pittsburgh Vascular Symposium. Pittsburgh, PA. September, 2004. *Program Director.*
16. 4th Annual Pittsburgh Vascular Symposium. Pittsburgh, PA. September, 2005. *Program Director.*
17. 5th Annual Pittsburgh Vascular Symposium. Pittsburgh, PA. September, 2006. *Program Director.*

PUBLICATIONS

1. Curtis AM, Ravin CE, Collier PE, Putman CE, McLoud T, Greenspan RH. Detection of metastatic disease from carcinoma of the breast: Limited value of full lung tomography. American Journal of Roentgenology. 134:253-255, 1980.
2. Curtis AM, Ravin CE, Collier PE, Putman CE, McLoud T, Greenspan RH. Detection of metastatic disease from carcinoma of the breast: limited value of full lung tomography. American Journal of Roentgenology. 134:253-255, 1980.
3. Collier PE, Diamond DL, Young JC. Nontraumatic clostridium septicum gangrenous myonecrosis. Disease of the Colon & Rectum. 26:703-704, 1983.
4. Collier PE, Diamond DL, Young JC. Axillary vein thrombosis. Journal of Vascular Surgery. 18:174-178, 1984.

5. Collier PE, Ryan JJ, Diamond DL. Cardiac tamponade from central venous catheters. Report of a case and review of the English literature. Angiology. 35:595-600, 1984.
6. Collier PE, Saracco GM, Diamond DL. Streptokinase and transluminal angioplasty in reclamation of AV fistula. What is Cont. Surg. 24:69-71, 1984.
7. Collier PE, Turowski P, Diamond DL. Small intestinal adenocarcinoma complicating regional enteritis. Cancer. 55:516-521, 1985.
8. Collier PE, Saracco GM, Young JC, Fragola JA, Contractor FM, Diamond DL. Non-operative salvage of subcutaneous hemodialysis fistulae. The American Journal of Nephrology. 5:333-337, 1985.
9. Collier PE, Liebler GA, Park SB, Burkholder JA, Maher TD, Magovern GJ. Is percutaneous insertion of the intra-aortic balloon pump through the femoral artery the safest technique? Journal of Vascular Surgery. 3:629-634, 1986.
10. Collier PE, Ryan JJ, Fazi B, Diamond DL. Can aortography precipitate mesenteric infarction in patients with chronic intestinal ischemia? Vascular and Endovascular Surgery. 20:262-268, 1986.
11. Collier PE. Small bowel lymphoma associated with AIDS. Journal of Surgical Oncology. 32:131-133, 1986.
12. Ascer E, Collier PE, Gupta SK, Veith FJ. Reoperation for polytetrafluoroethylene bypass failure: The importance of distal outflow site and operative technique in determining outcome. Journal of Vascular Surgery. 5:298-310, 1987.
13. Nunez AA, Veith FJ, Collier P, Ascer E, Flores SW, Gupta SK. Direct approaches to the distal portions of the deep femoral artery for limb salvage bypasses. Journal of Vascular Surgery. 8:576-581, 1988.
14. Collier PE, Wilcox G, Brooks D, Laffey S, Dalton T. Improved patient selection for angioplasty utilizing color doppler imaging. The American Journal of Surgery. 160:171-174, 1990.
15. Collier PE. Atraumatic vascular anastomoses using a tourniquet. Annals of Vascular Surgery. 6:34-37, 1992.
16. Collier PE. Carotid endarterectomy: A safe cost-efficient approach. Journal of Vascular Surgery. 16:926-933, 1992.
17. Collier PE. Are one-day admissions for carotid endarterectomy feasible? The American Journal of Surgery. 170:140-143, 1995.
18. Collier PE. Are one-day admissions for carotid endarterectomy feasible? The American Journal of Surgery. 170:140-143, 1995.
19. Collier PE, Goodman GB. Cardiac tamponade caused by central venous catheter perforation of the heart: A preventable complication. The Journal of the American College of Surgeons (JACS). 181:459-463, 1995.
20. Collier PE, Friend SZ, Gentile C, Ruckert D, Vescio L, Collier NA. Carotid endarterectomy clinical pathway: An innovative approach. American Journal of Medical Quality. 10:38-47, 1995.
21. Mantia AM, Collier PE, O'Day TL. Does anesthetic choice following a defined clinical pathway for carotid endarterectomy affect hospital length of stay. Anesthesia and Analgesia. 1996.
22. Collier PE. Do clinical pathways for major vascular surgery improve outcomes and reduce cost? Journal of Vascular Surgery. 26:179-185, 1997.
23. Collier PE. How essential is the intensive care unit after carotid endarterectomy? Vascular and Endovascular Surgery. 31:563-566, 1997.
24. Collier PE. Office removal of silastic catheters and ports is safe and cost effective. Vascular and Endovascular Surgery. 31:567-569, 1997.
25. Collier PE, Rudolph M, Ruckert D, Osella T, Collier NA, Ferrero M. Are preoperative antibiotics administered preoperatively? American Journal of Medical Quality. 13:94-97, 1998.
26. Collier PE, Blocker SH, Graff DM, Doyle P. Cardiac tamponade from central venous catheters. The American Journal of Surgery. 176:212-214, 1998.
27. Collier PE. Fast tracking carotid endarterectomy: practical considerations. Seminars in Vascular Surgery. 11:41-45, 1998.

28. Collier PE. Changing trends in the use of preoperative carotid arteriography: The community experience. Cardiovascular Surgery. 6:485-489, 1998.
29. Scott W, Collier PE. The vessel dilator for central venous catheter placement – forerunner for success or vascular misadventure? Journal of Intensive Care Medicine. 16:263-269, 2001.
30. Race TK, Collier PE. The hidden risk of deep vein thrombosis-the need for risk factor assessment: Case reviews. Critical Care Nursing. 30:245-254, 2007.

BOOK CHAPTERS

1. Veith FJ, Gupta SK, Ascer E, Sprayregen S, Collier PE. Reoperations and other reintervention for thrombosed and failing polytetrafluorethylene grafts. Reoperative Arterial Surgery, 377-392, 1986. J.J. Bergan and J.S.T. Yao. Grune & Stratton. New York, NY.
2. Collier PE, Ascer E, Veith FJ, Gupta SK, Nunez A. Acute thrombosis of arterial grafts. Vascular Surgery Emergencies, 517-528, 1987. J.J. Bergan and J.S.T. Yao. Grune & Stratton. New York, NY.
3. Collier PE, Ascer E, Nunez A, Gupta SK, Veith FJ. Arterial reconstruction after previous femorotibial bypass. Reoperative Vascular Surgery, 211-224, 1987. H.H. Trout. Marcel Dekker, Inc. New York, NY.
4. Collier PE. How can I balance patient safety and cost-effectiveness in planning early postoperative care and hospital discharge? Carotid Artery Surgery, A Problem Based Approach, 354-357, 2000. A.R. Naylor and W.C. Mackey. W.B. Saunders. London.

ABSTRACTS

1. Veith FJ, Samson RH, Ascer E, Gupta SK, White-Flores S, Sprayregen S, Collier PE, Scher LA. Tibiotibial vein bypass grafts: A new operation for limb salvage. The Journal of Cardiovascular Surgery. 26:29, 1985.
2. Mantia AM, Collier PE, O'Day TL. Does anesthetic choice following a defined clinical pathway for carotid endarterectomy affect length of stay? Anesthesiology. 85:A938, 1986.

Hand-written notes on backs of photographs

Re: George Boltz v. Coreen Garcia, PA-C, Larry Jennings, M.D., and Larry Jennings, M.D., P.C.
Case No. 12-2490-NH

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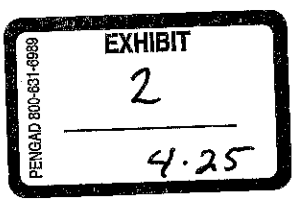

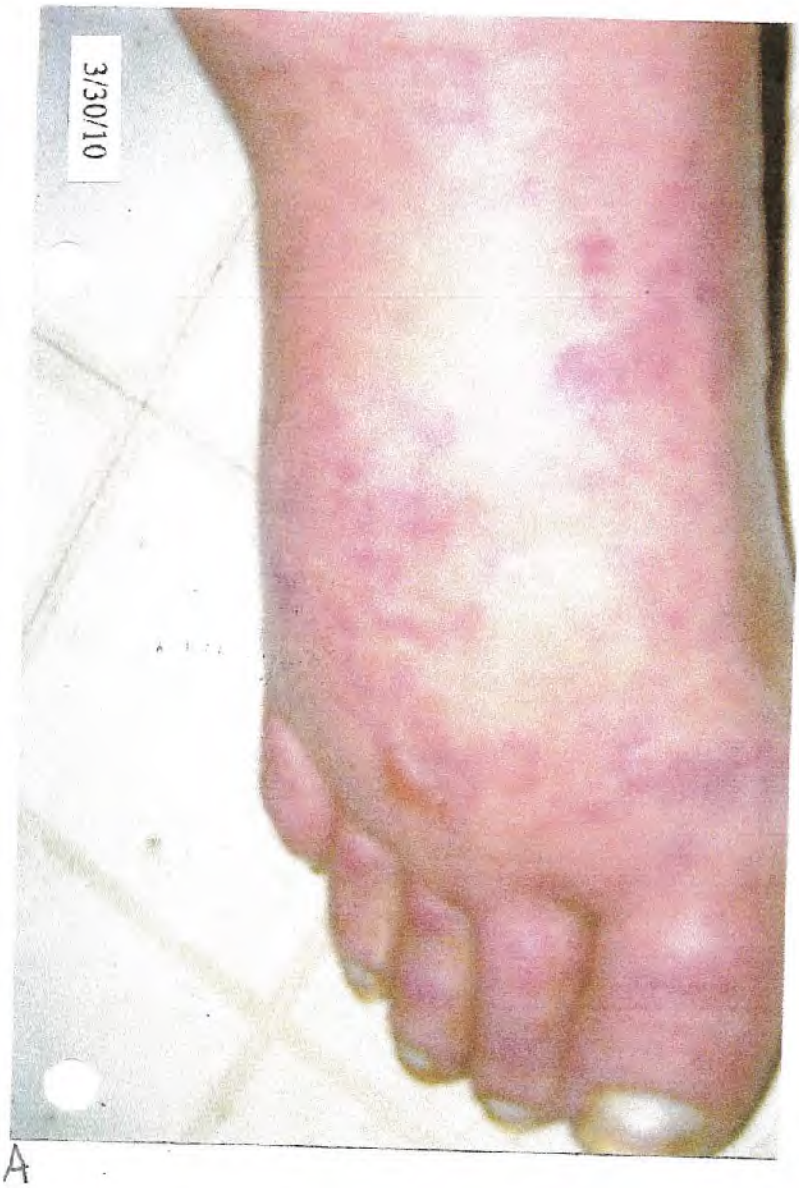

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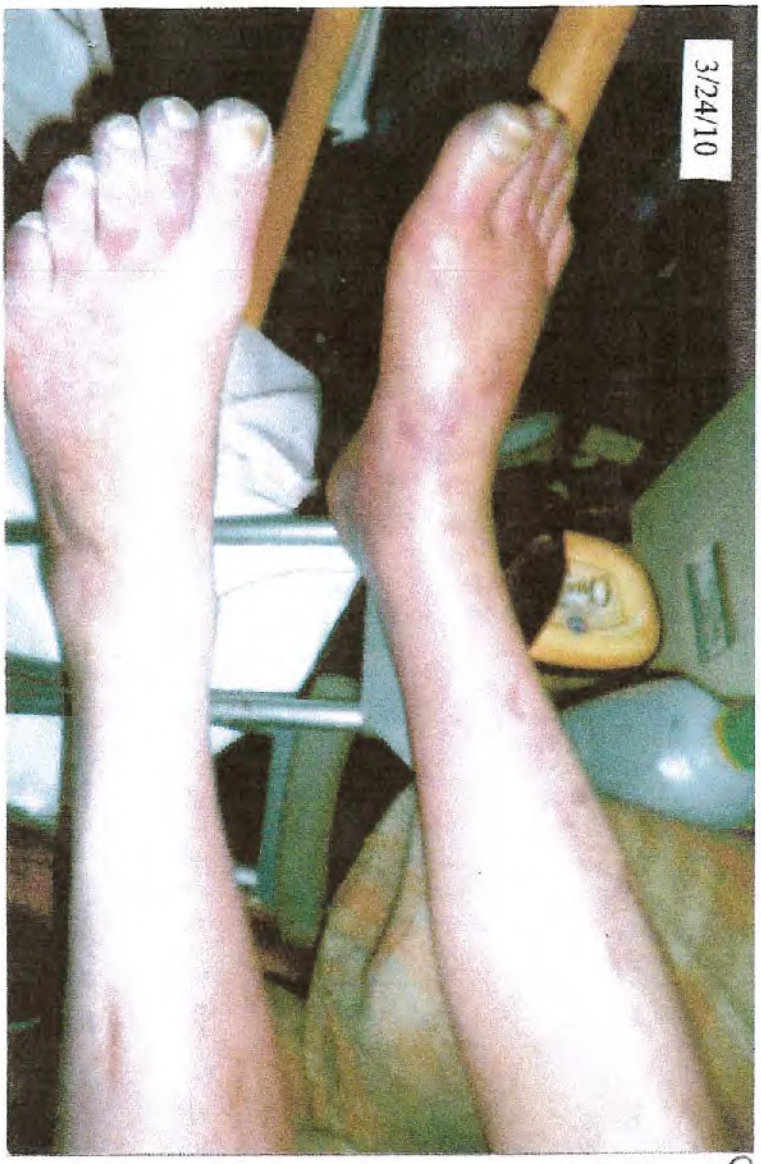

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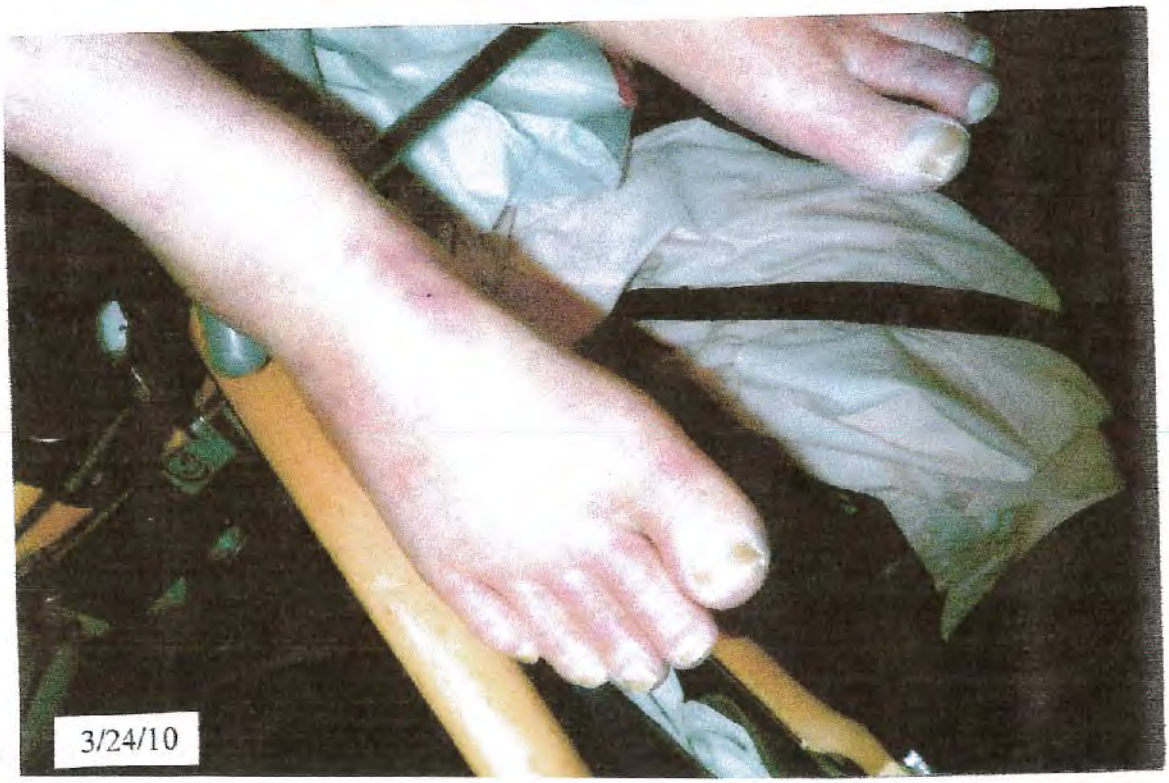

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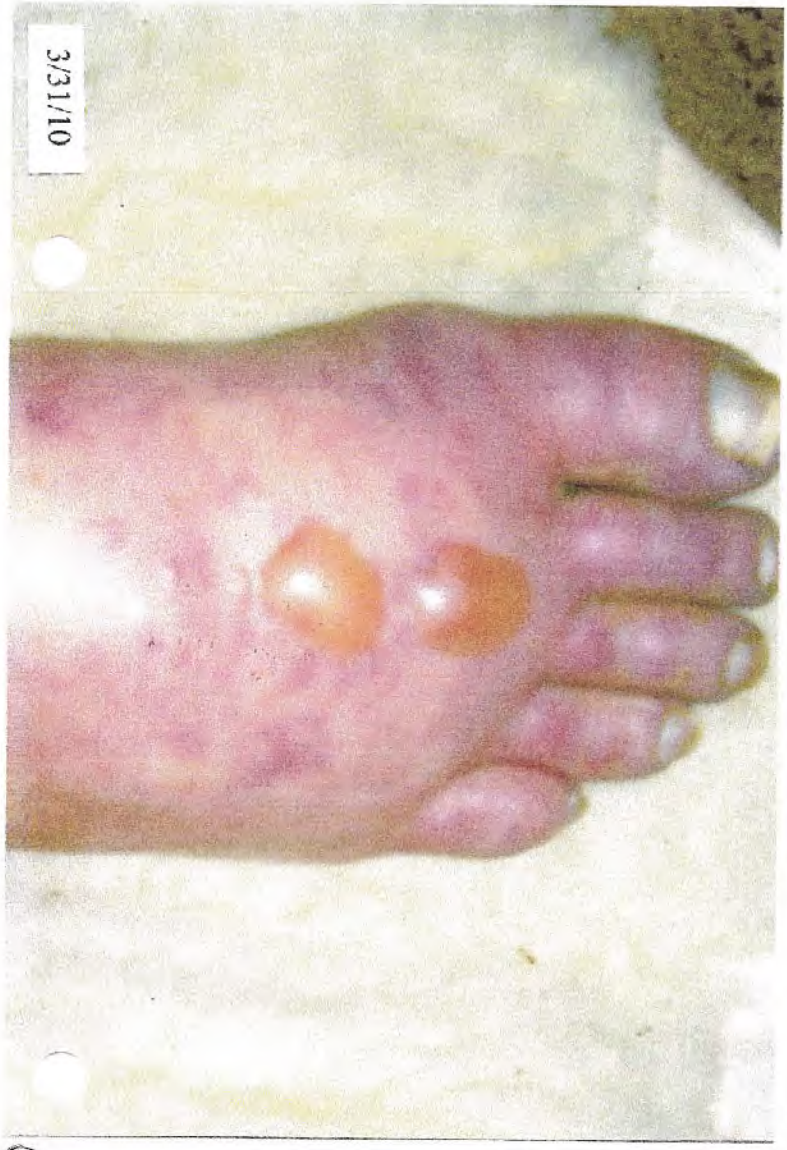

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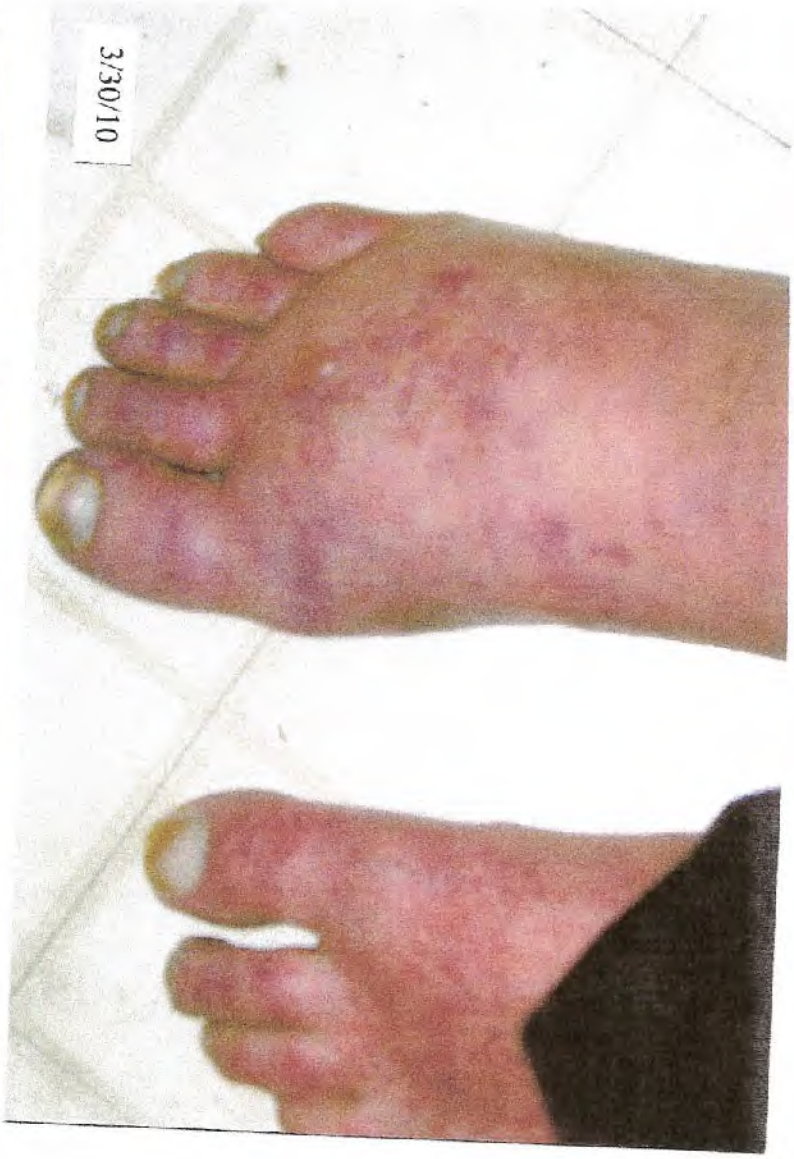

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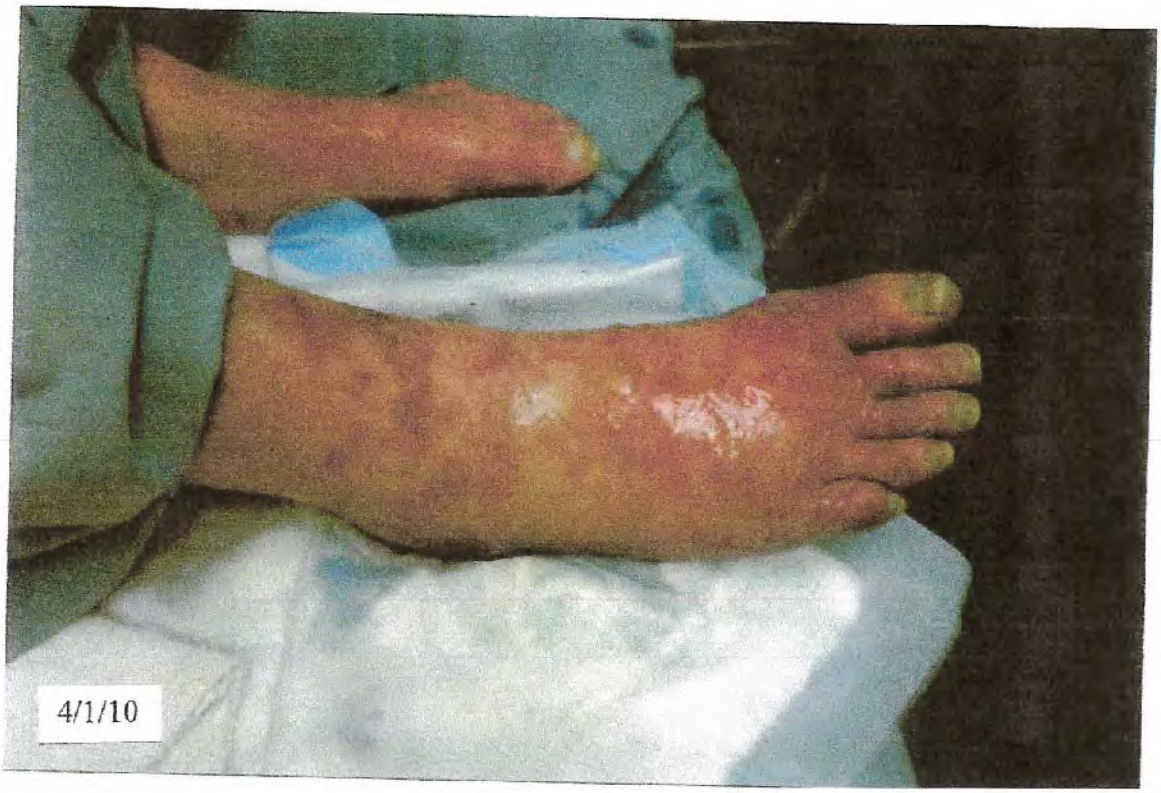

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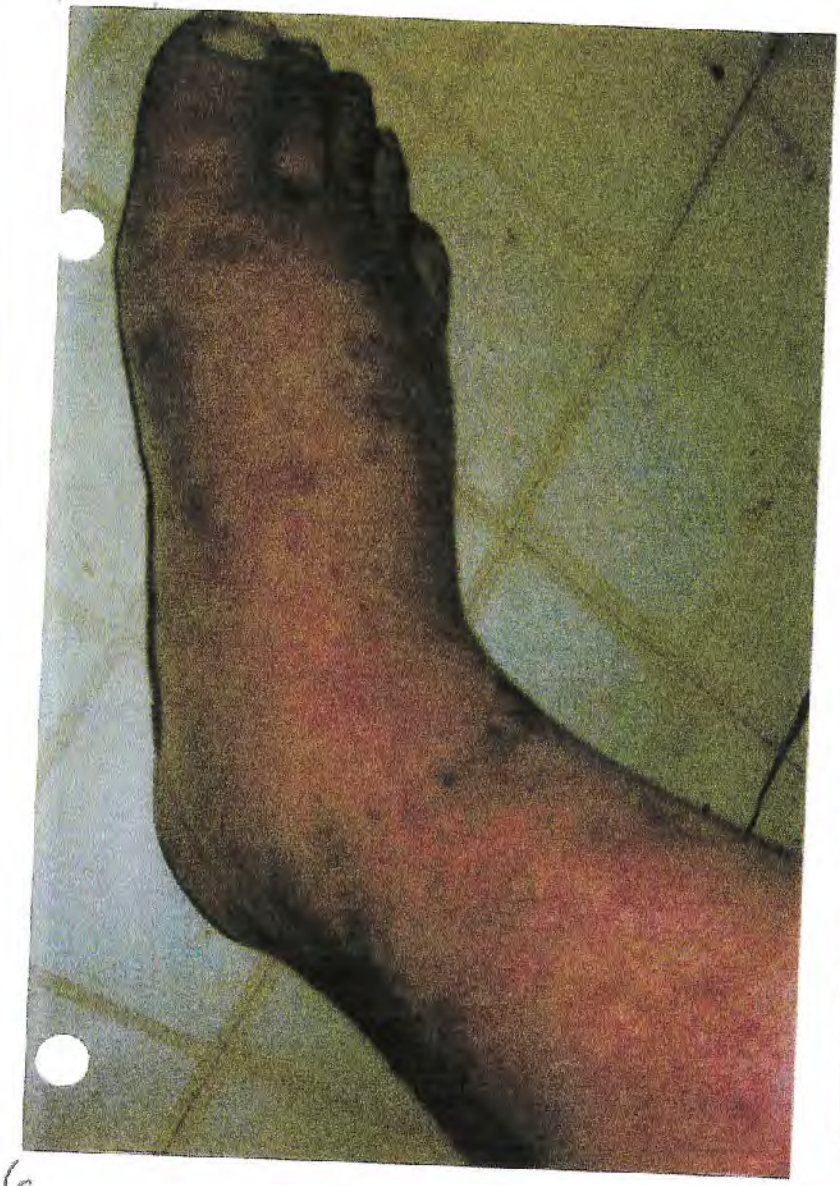

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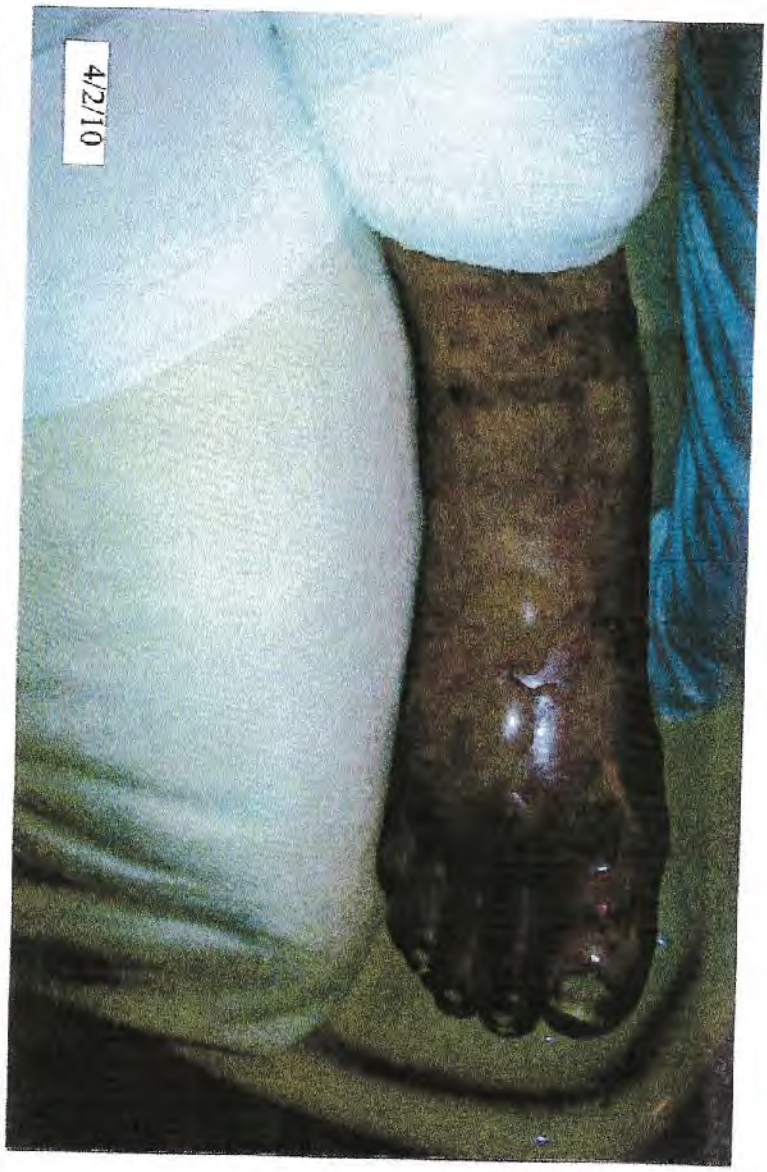

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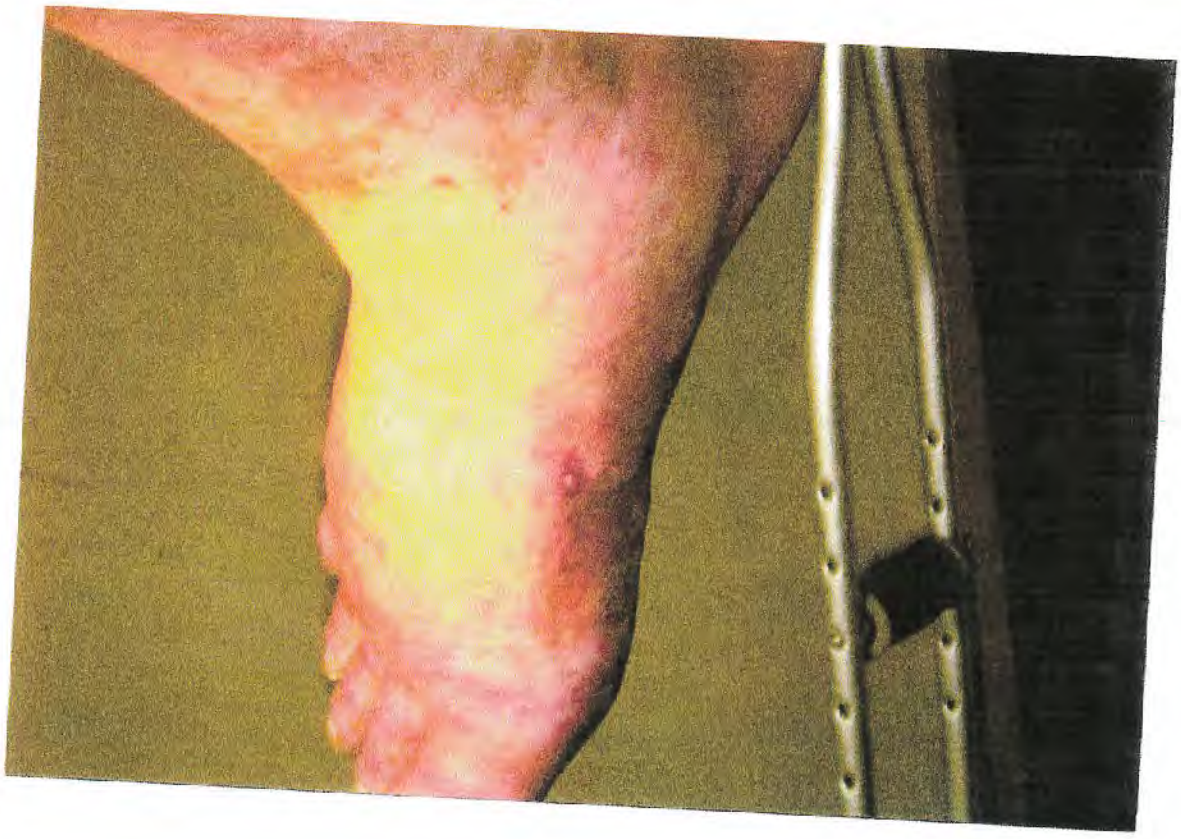

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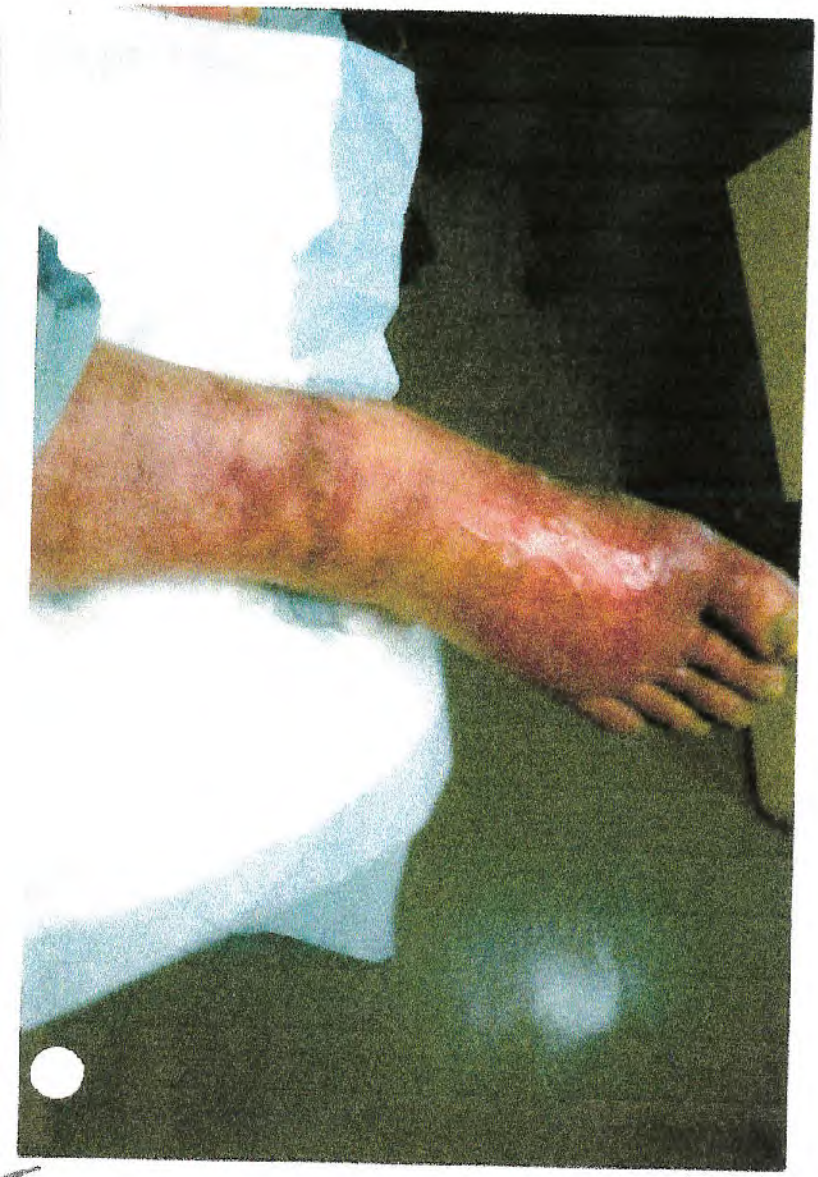

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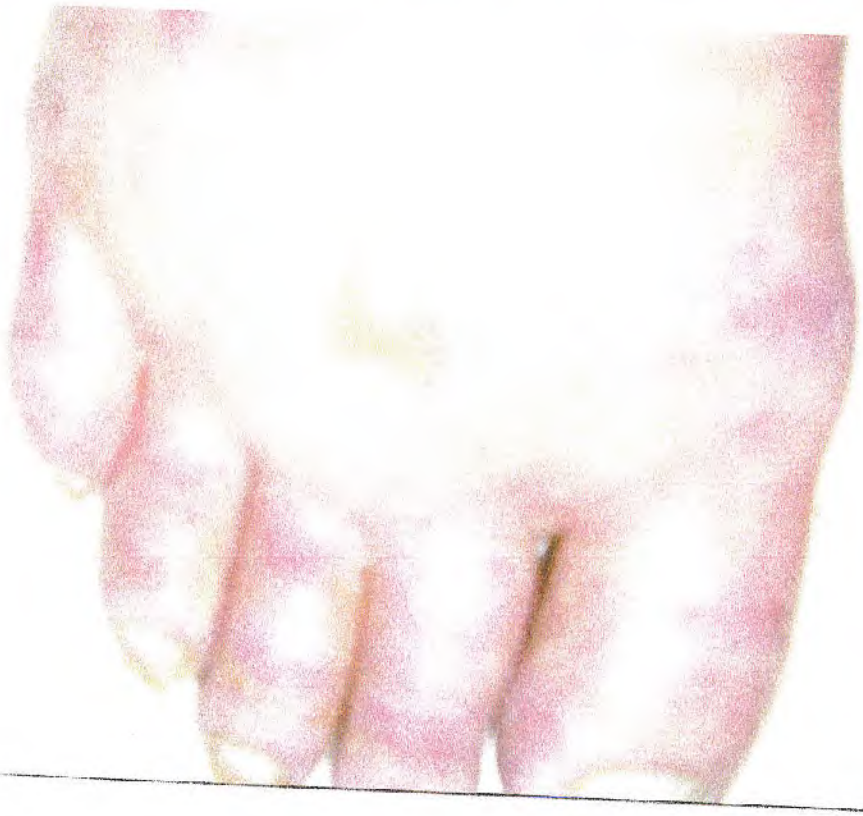

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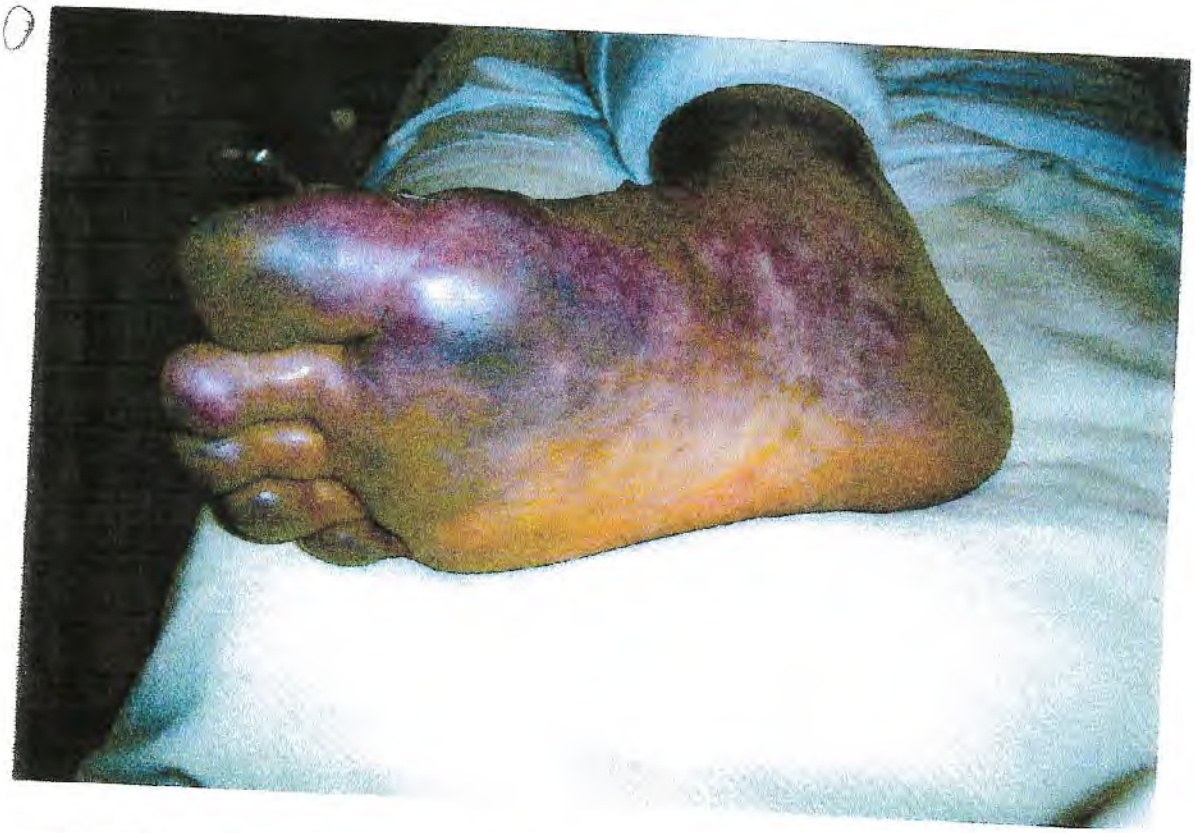

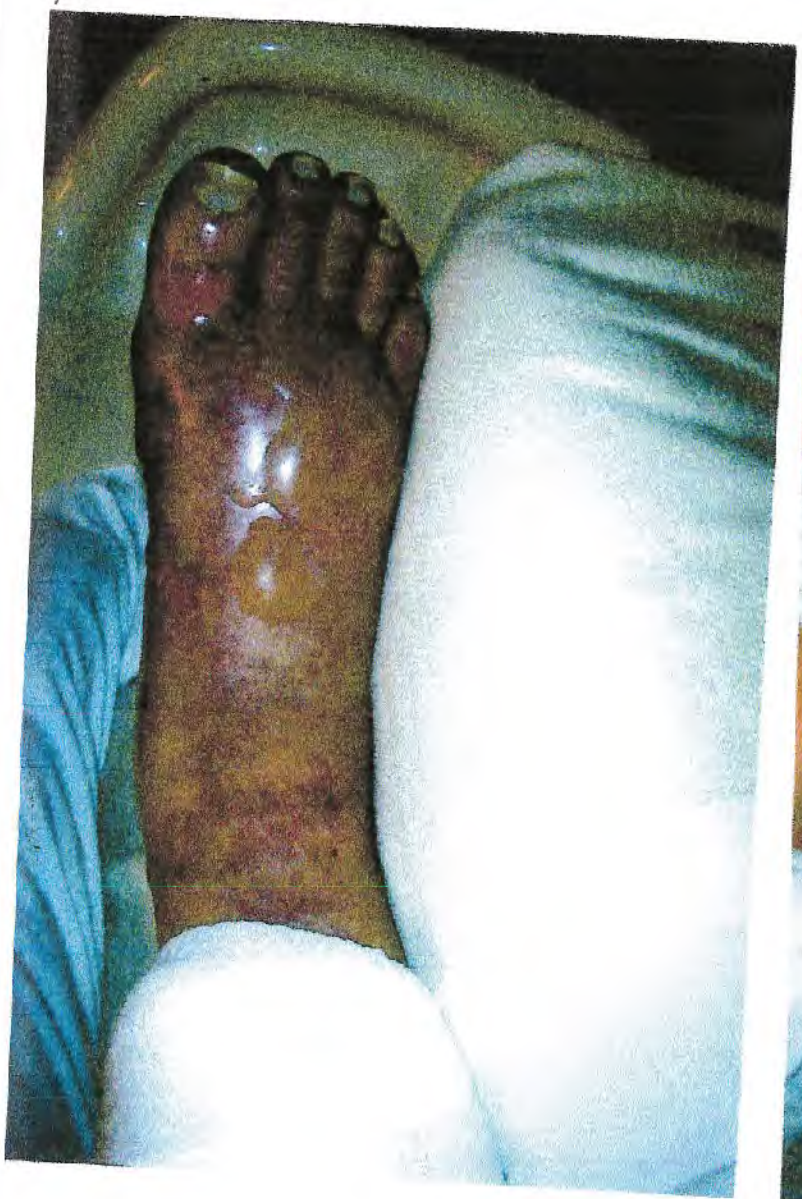

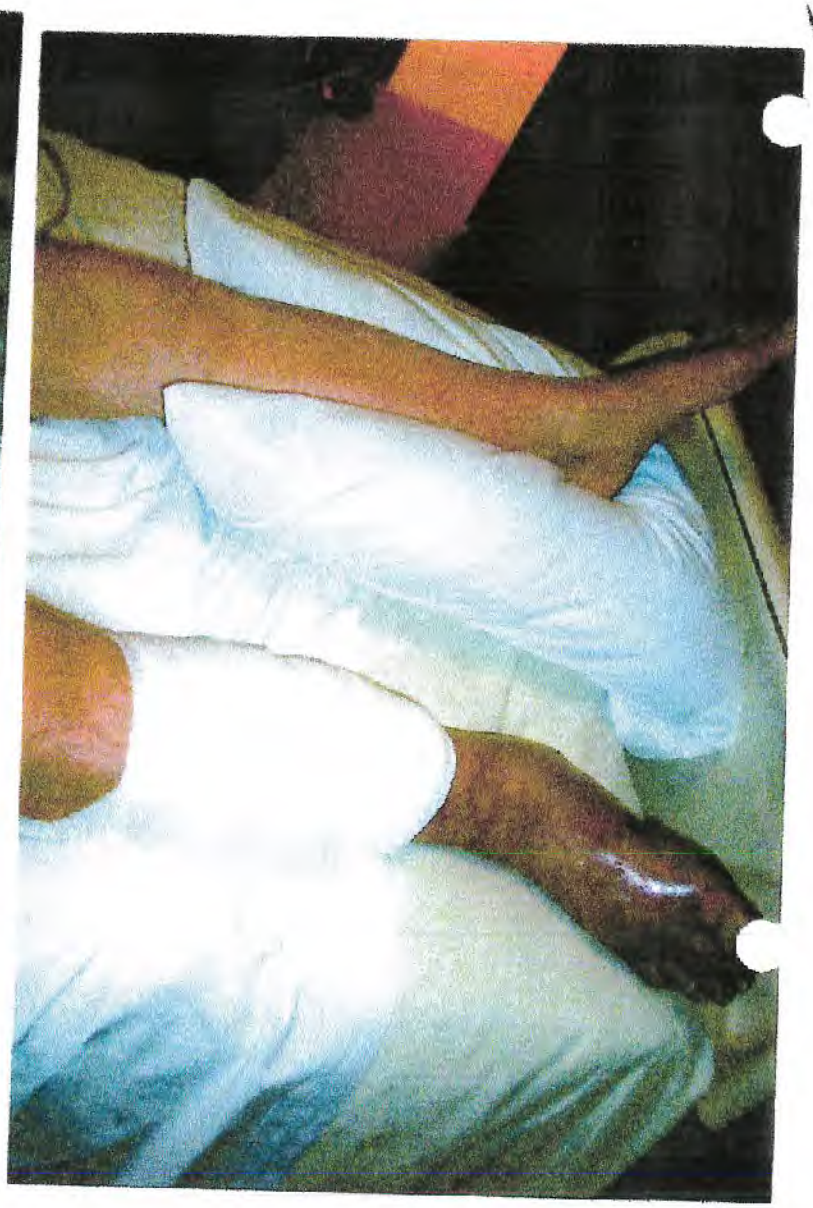

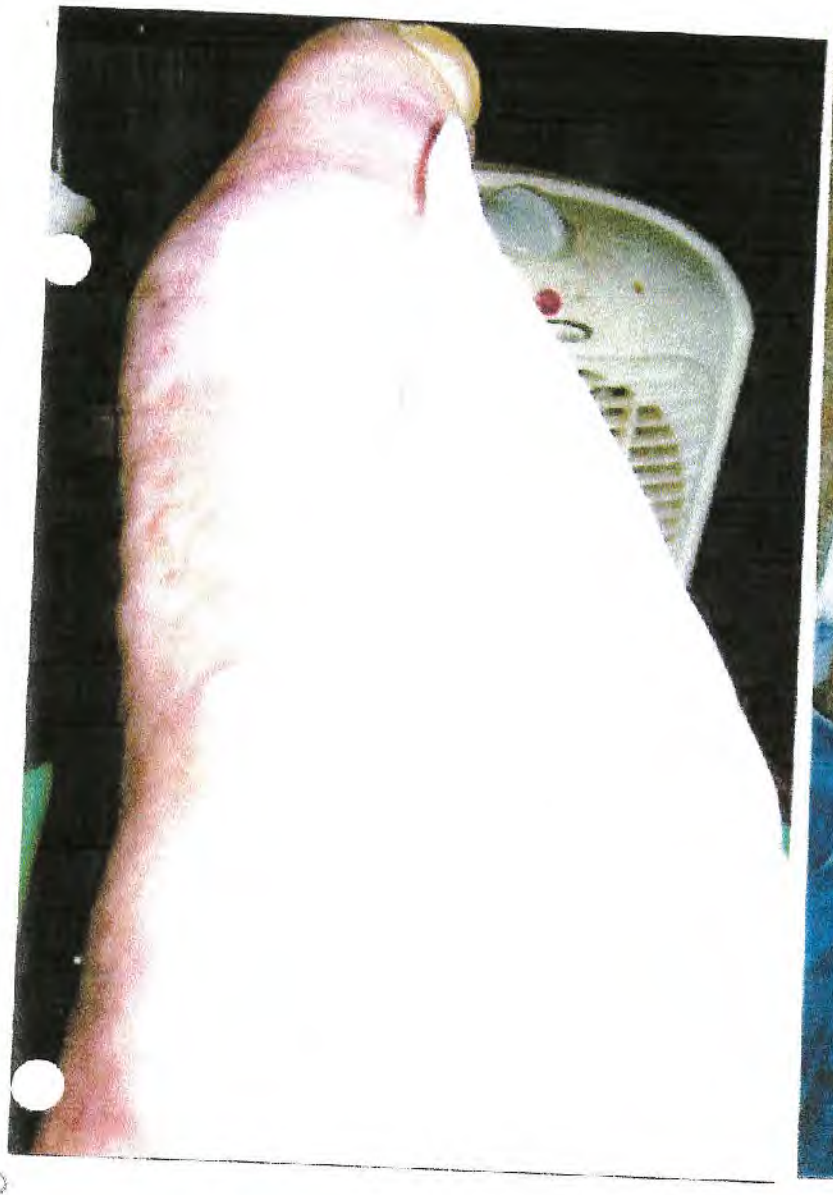

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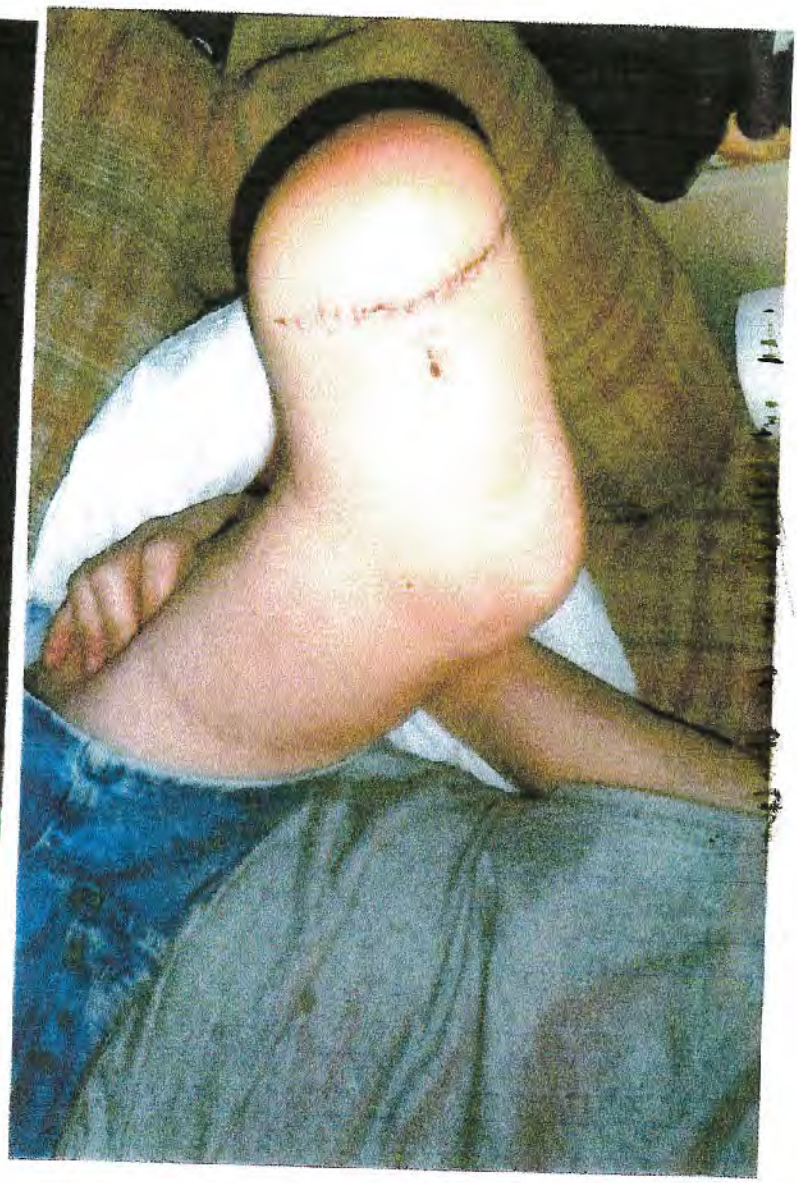

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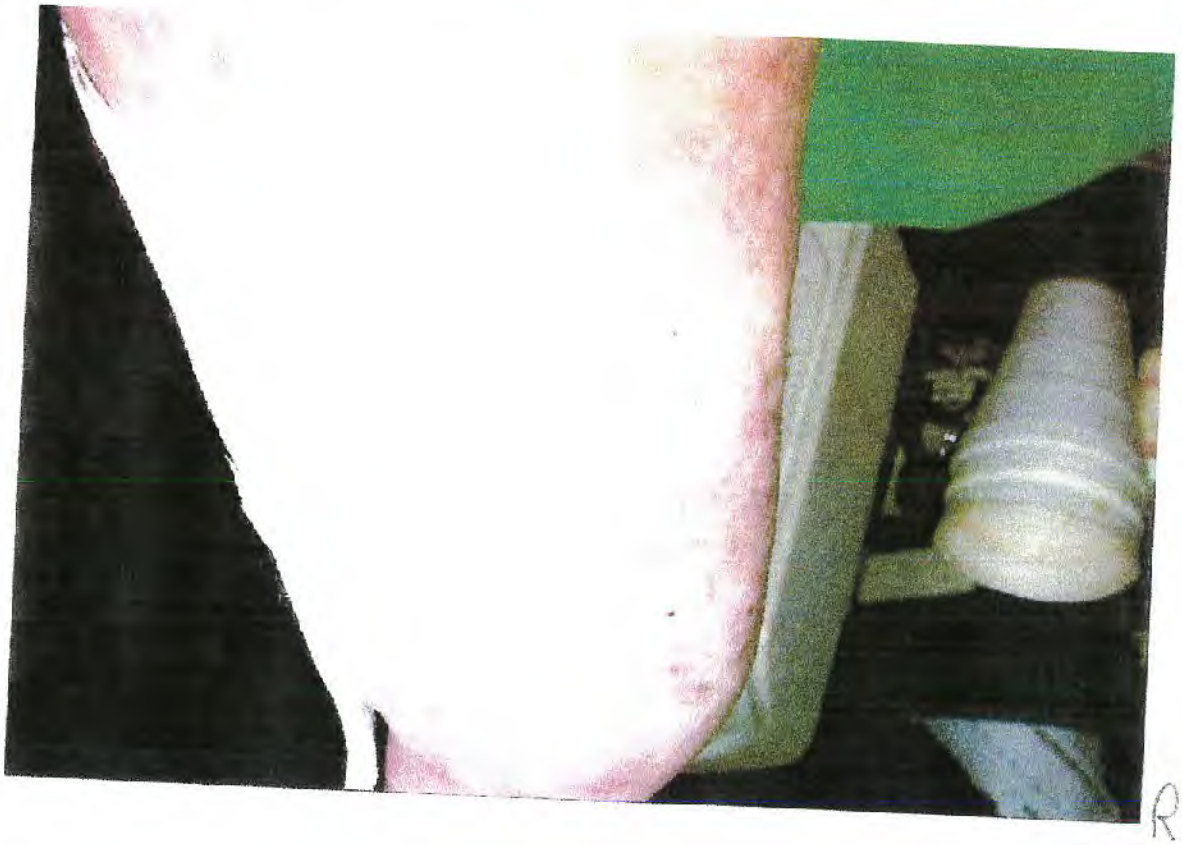

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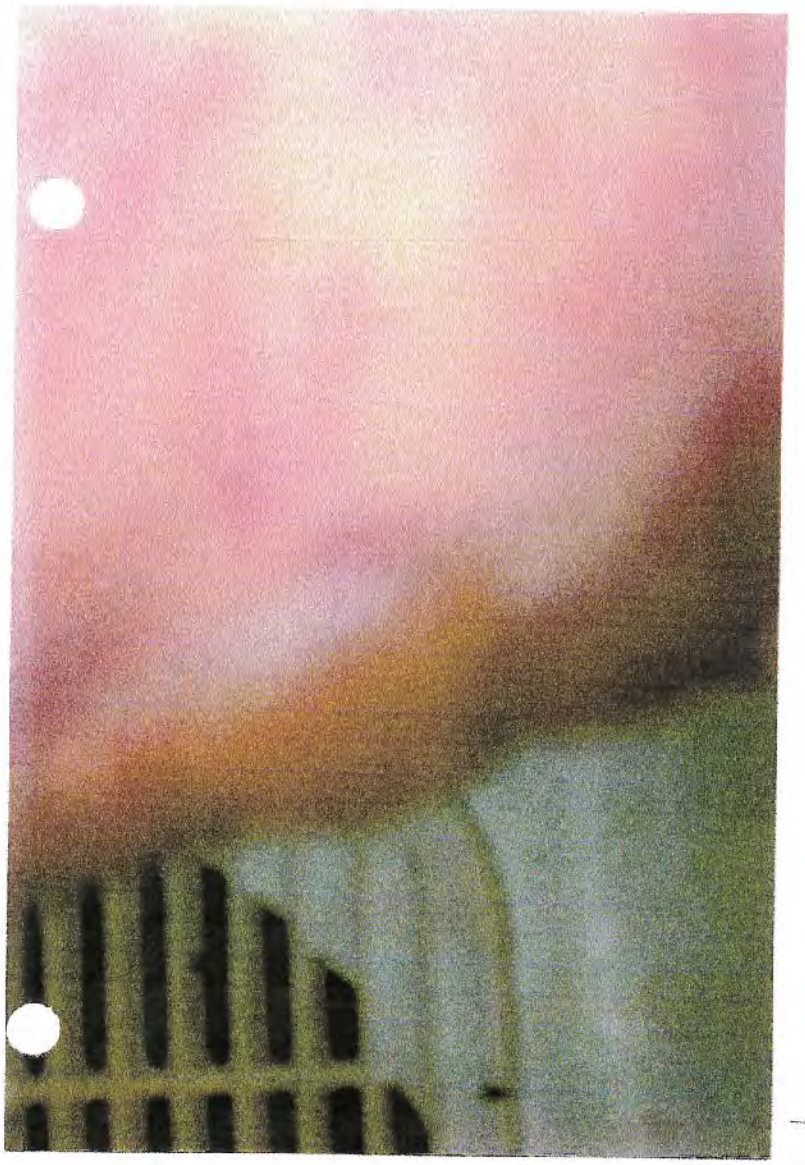

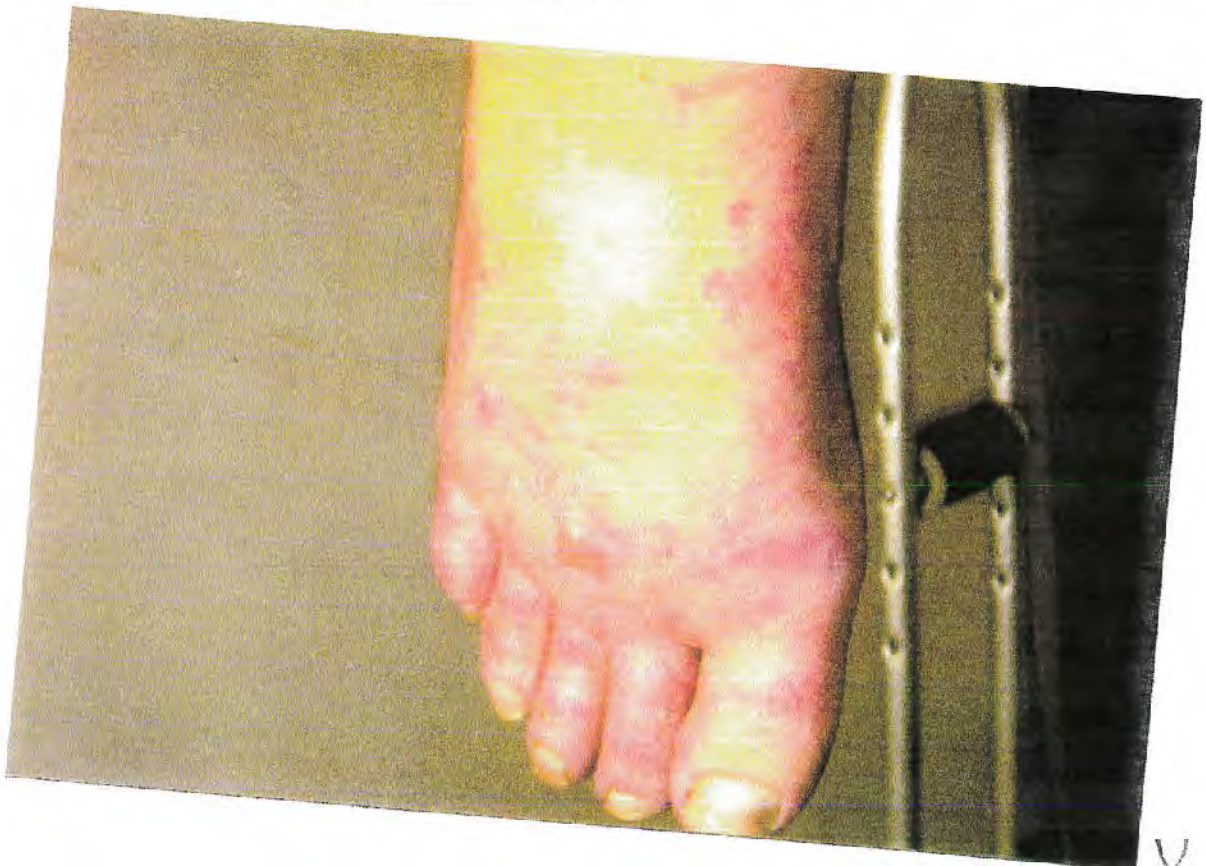

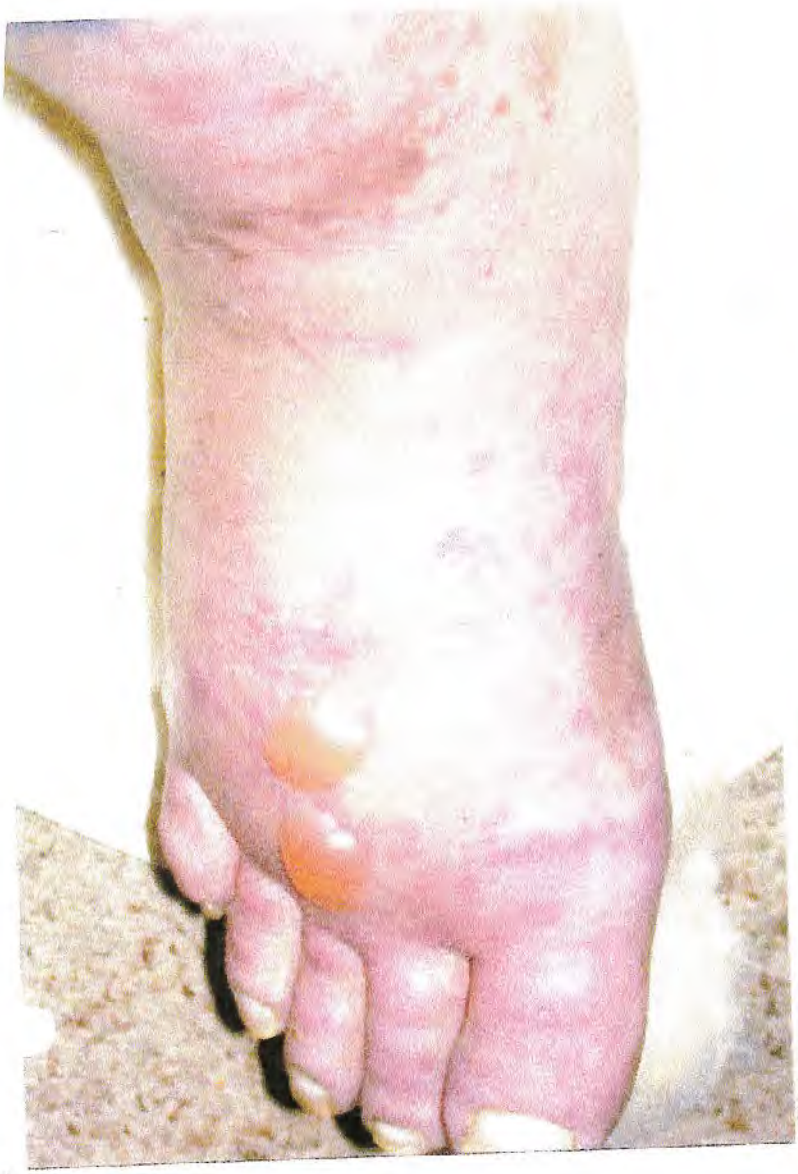

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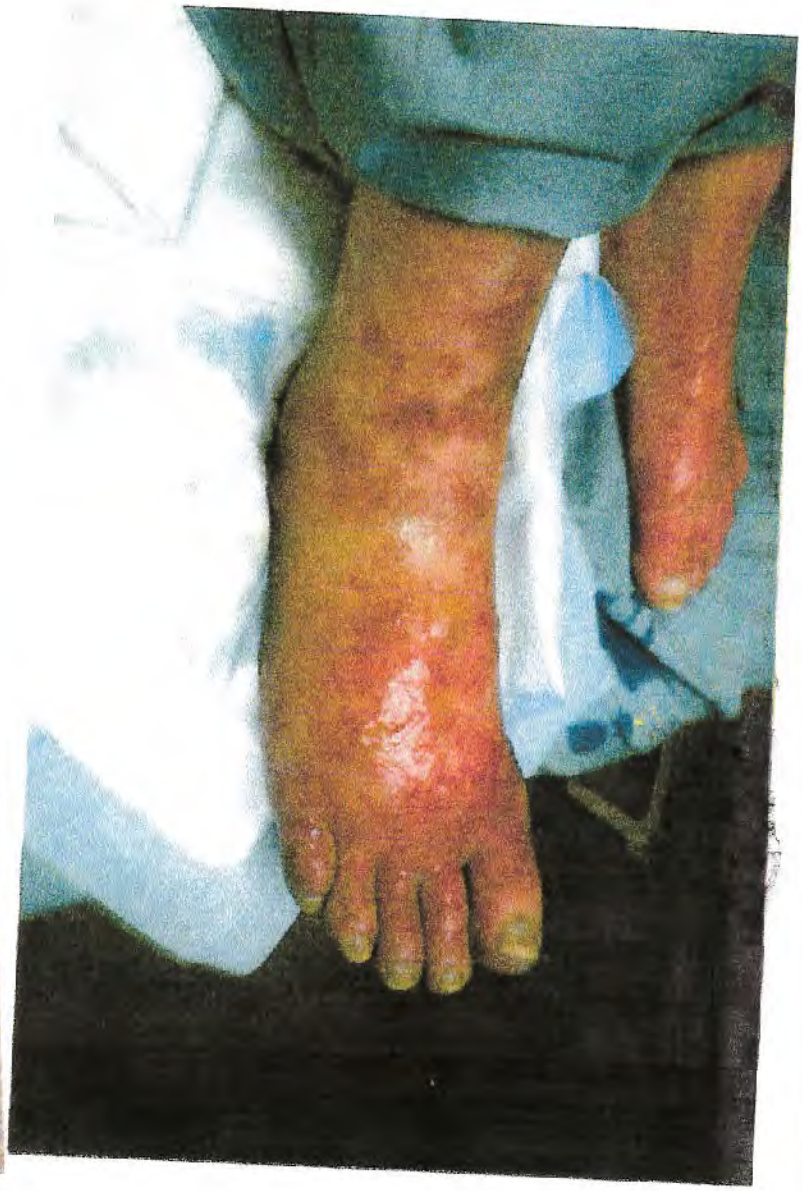

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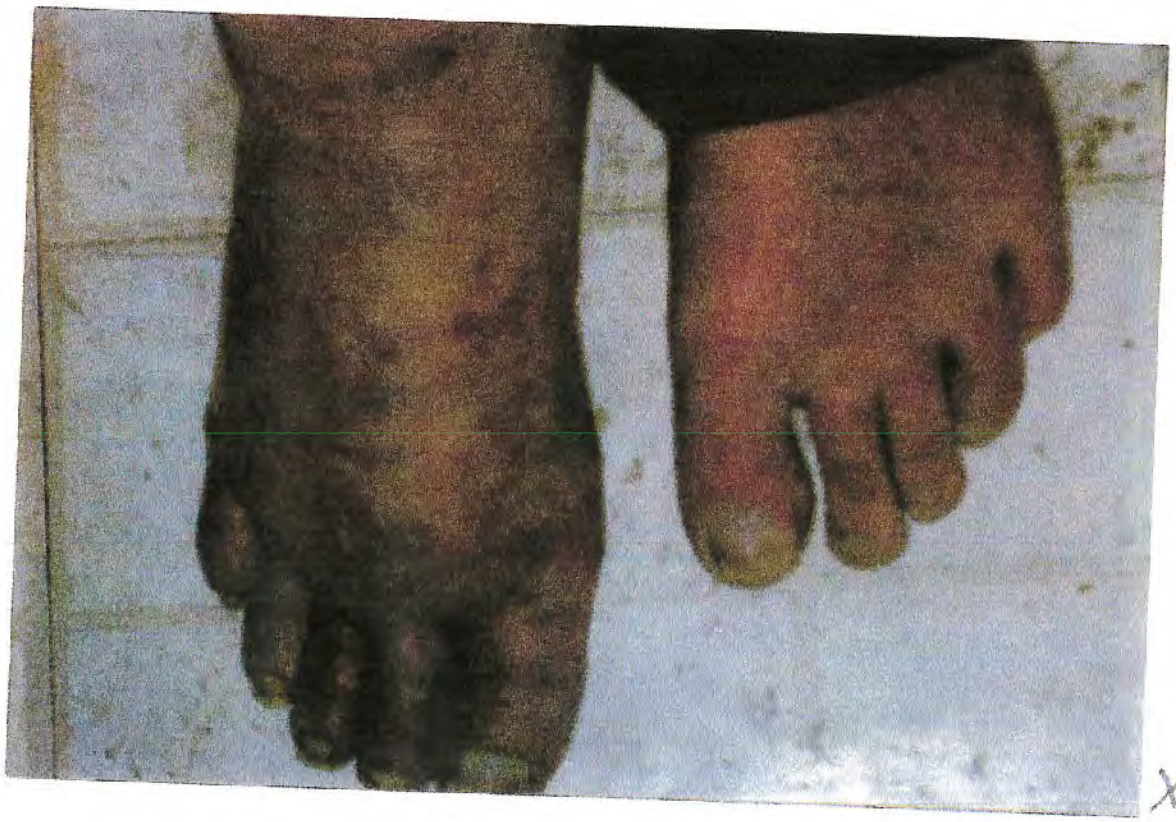

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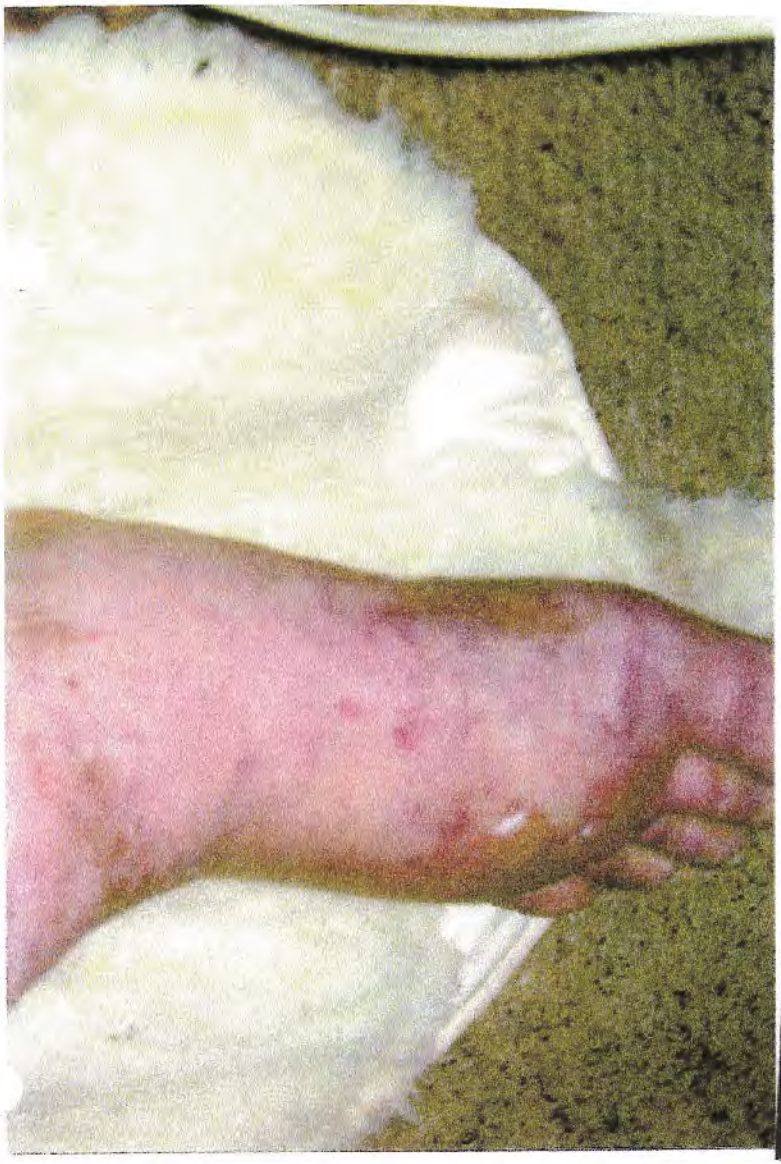

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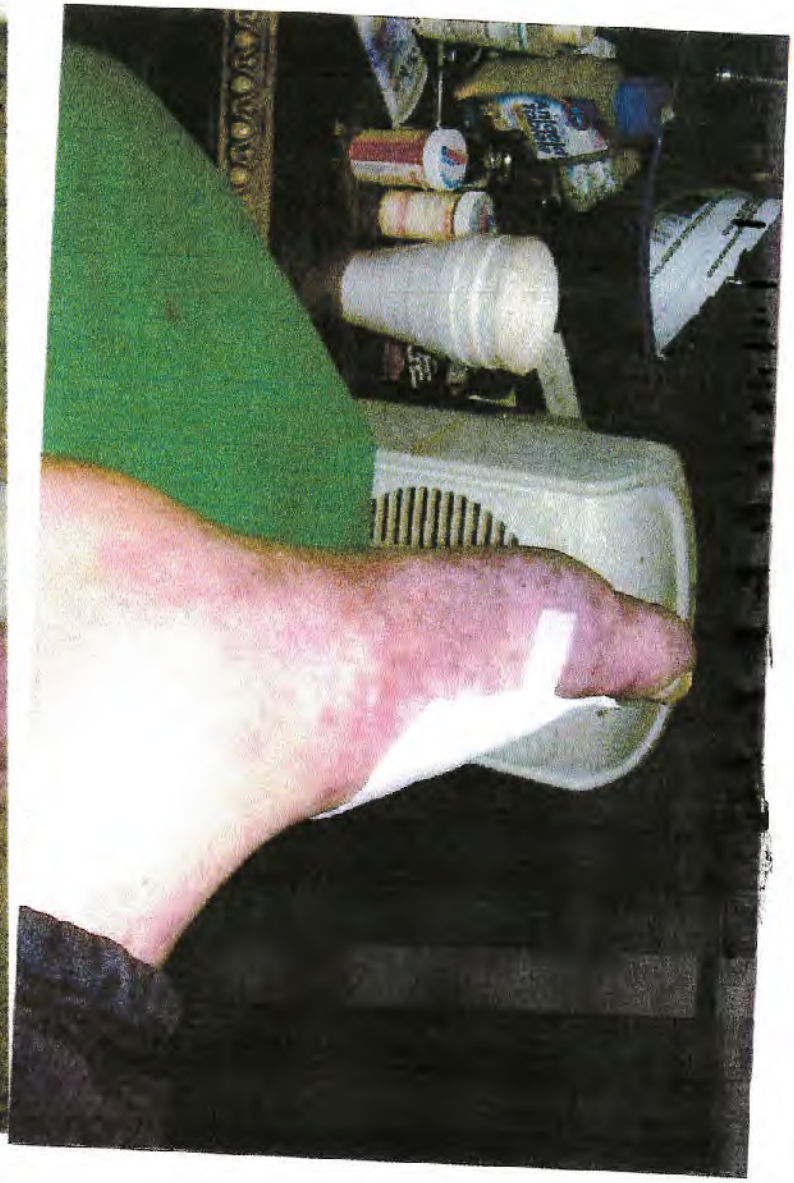

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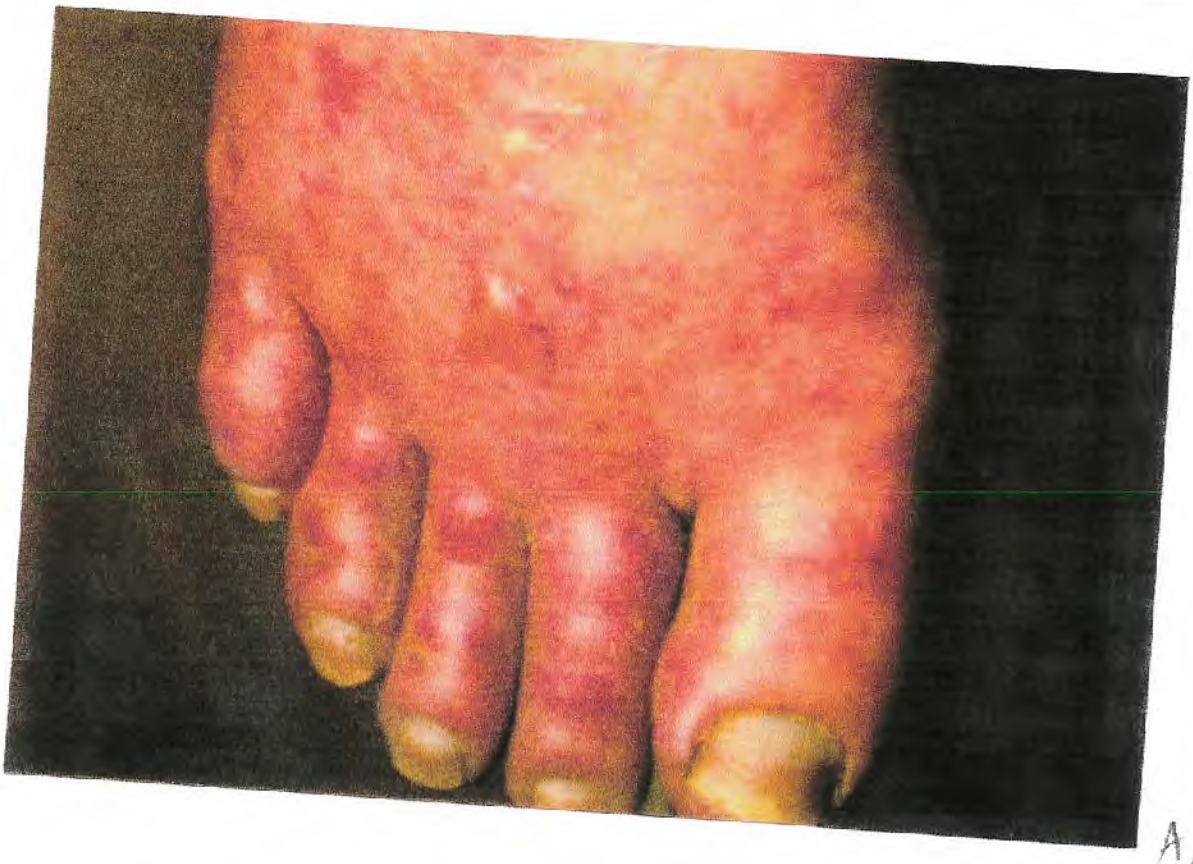

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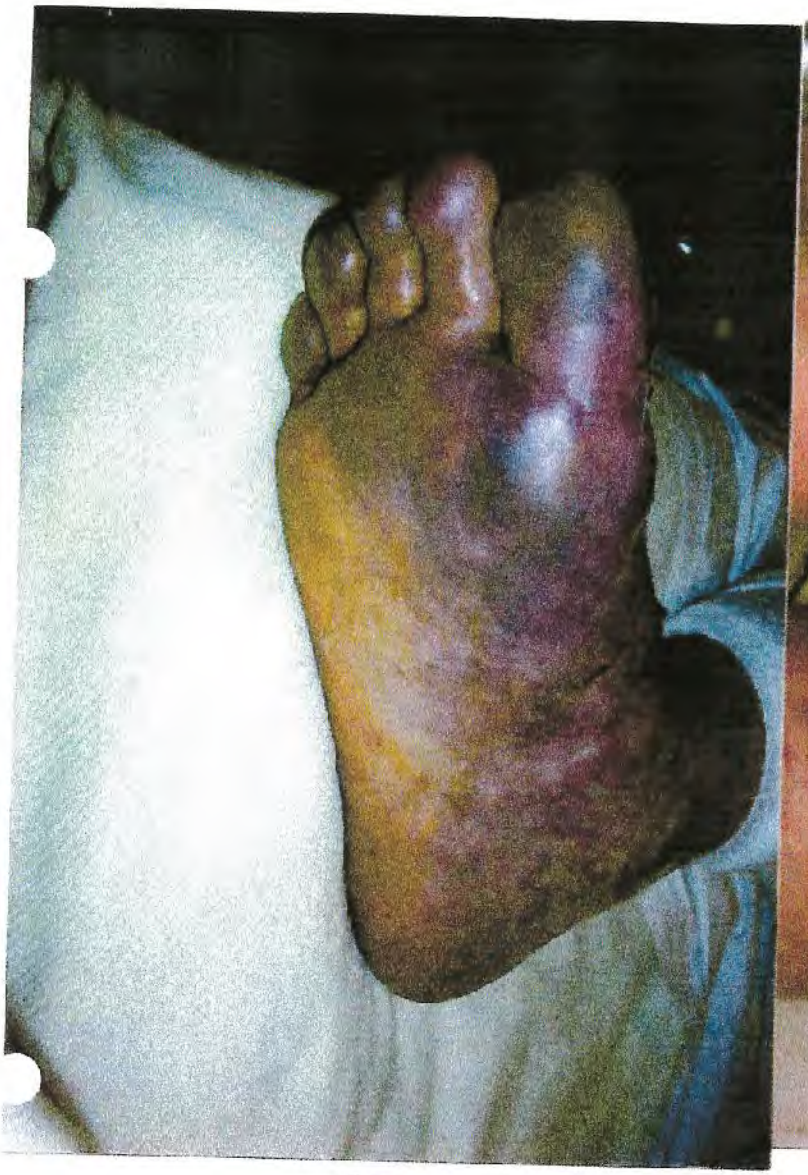

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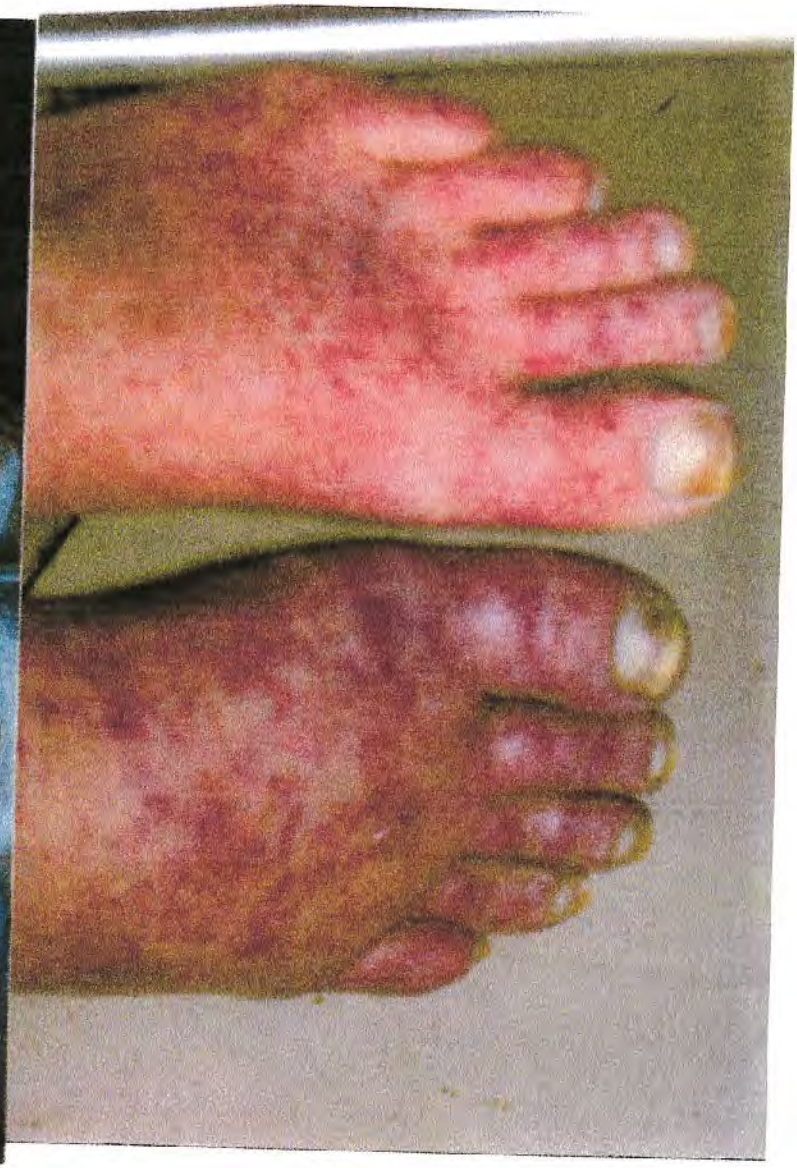

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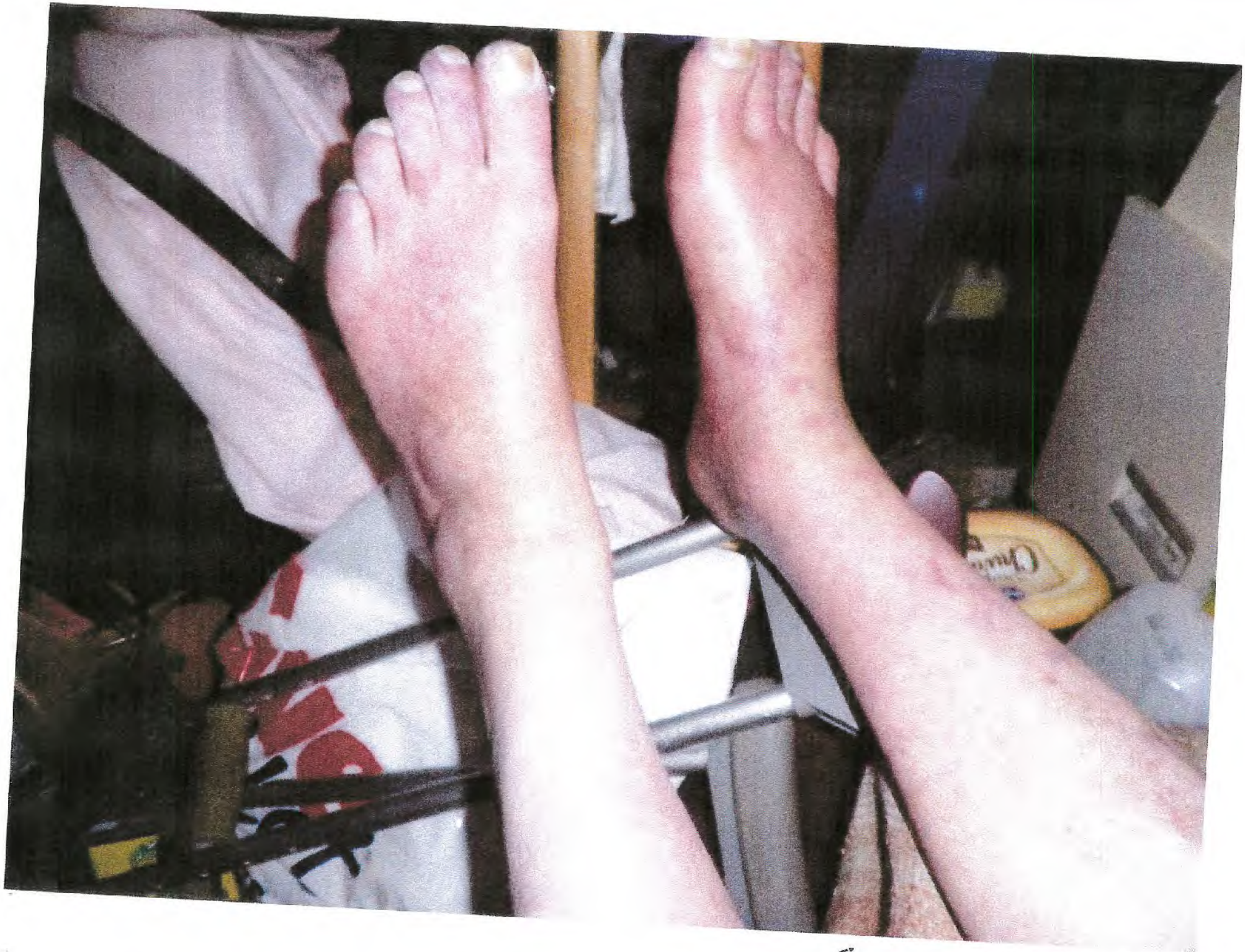

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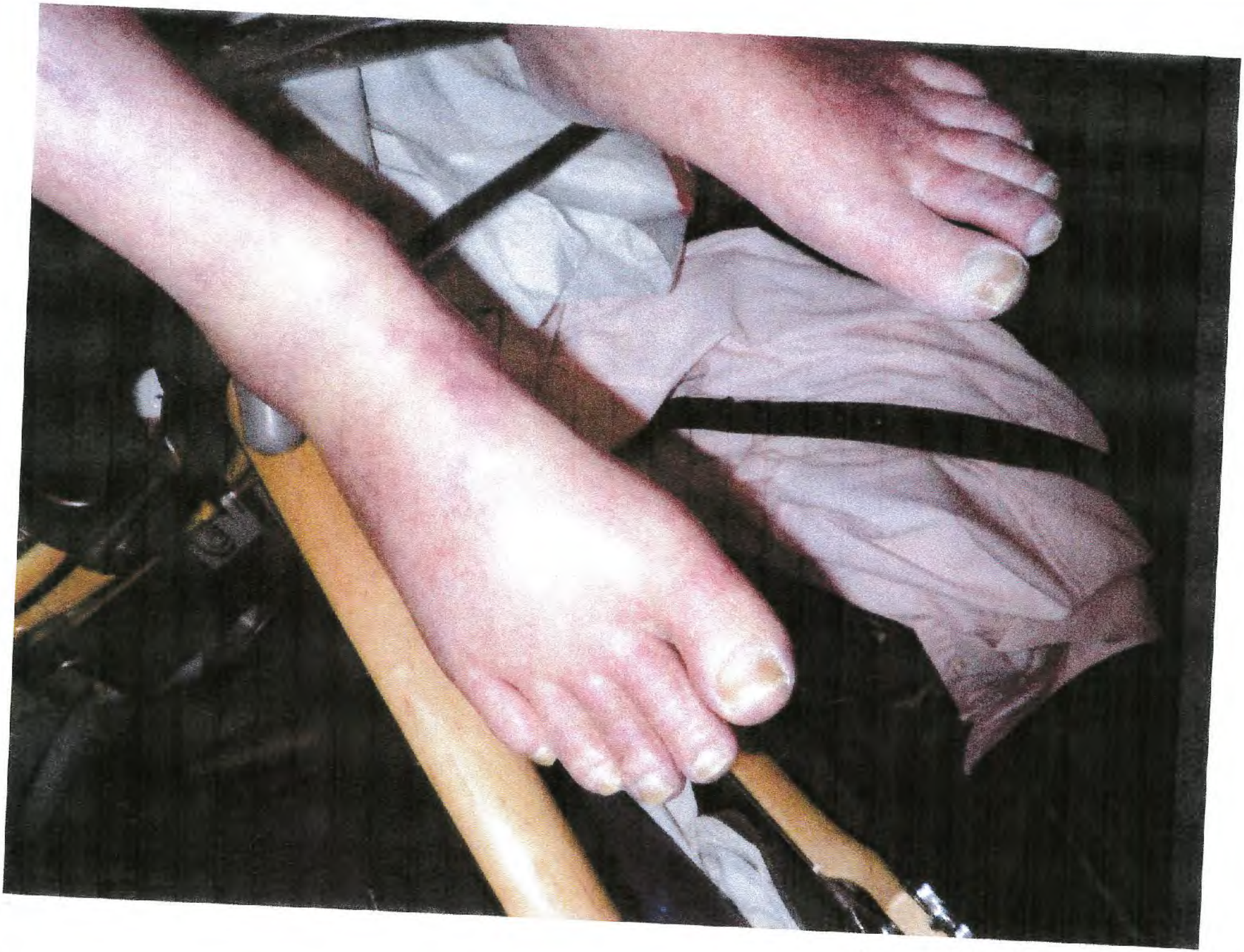

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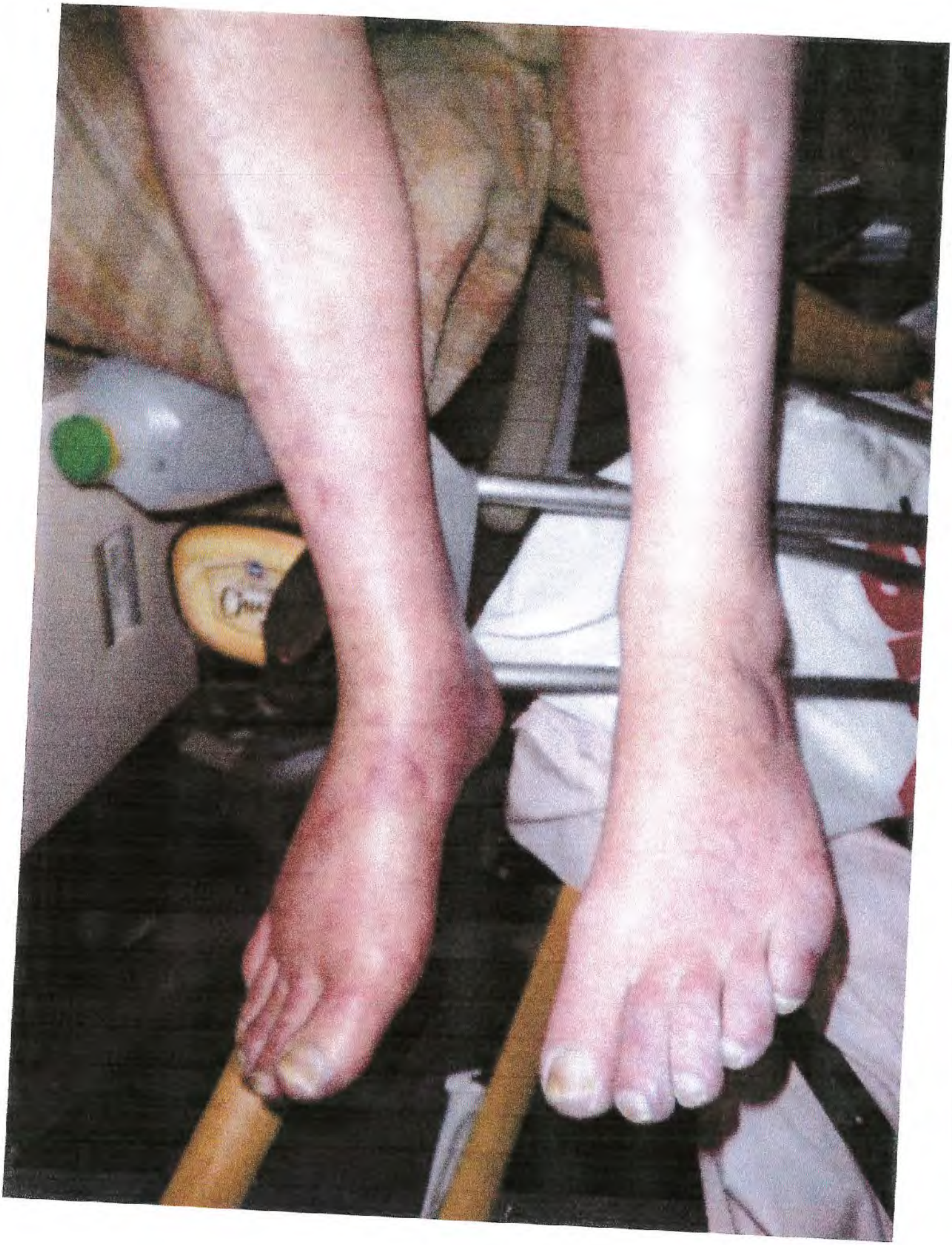

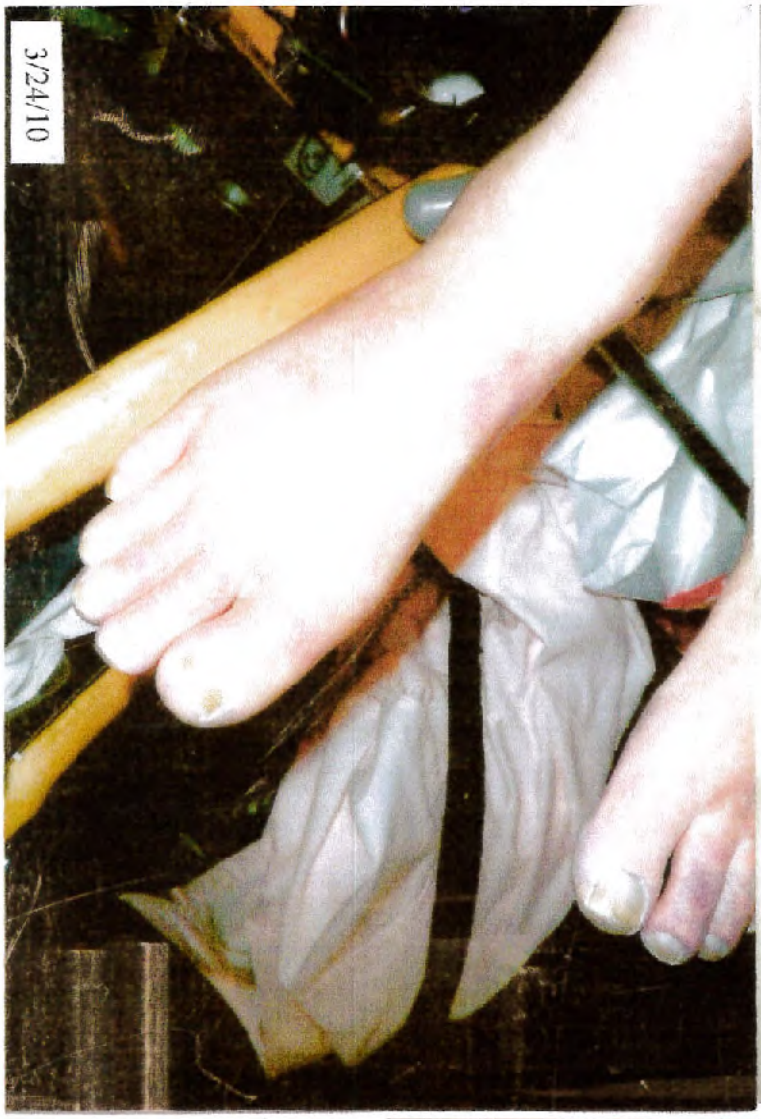

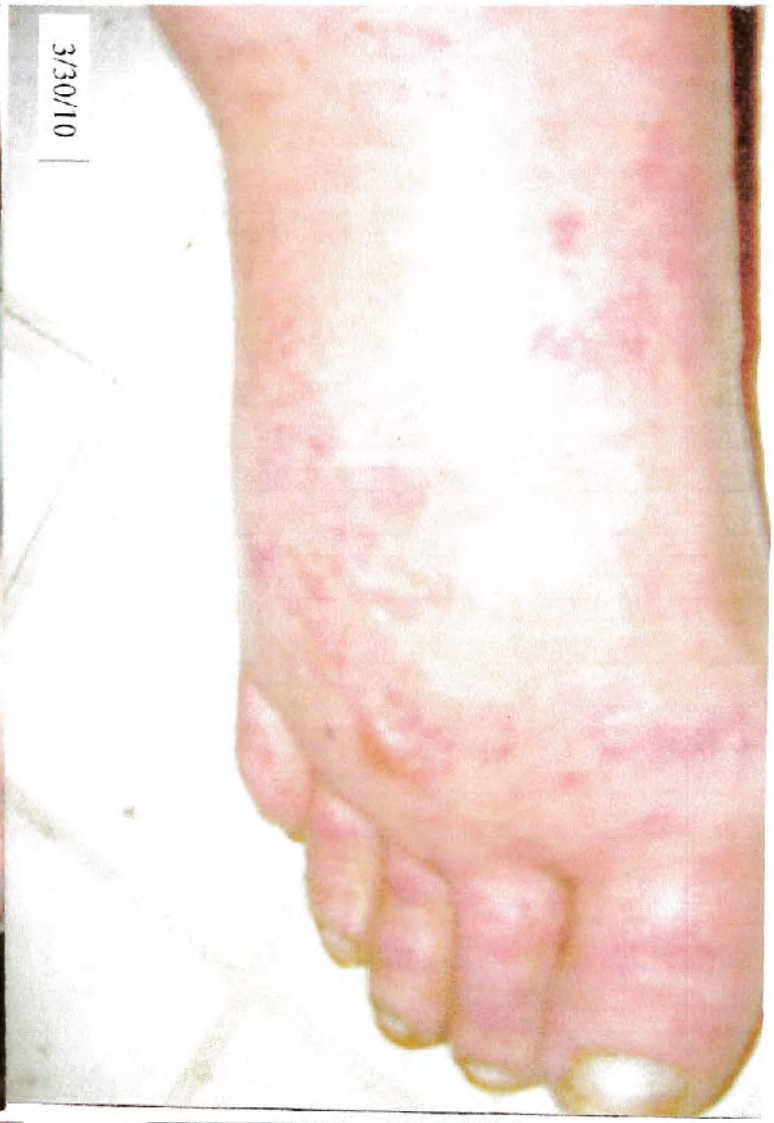

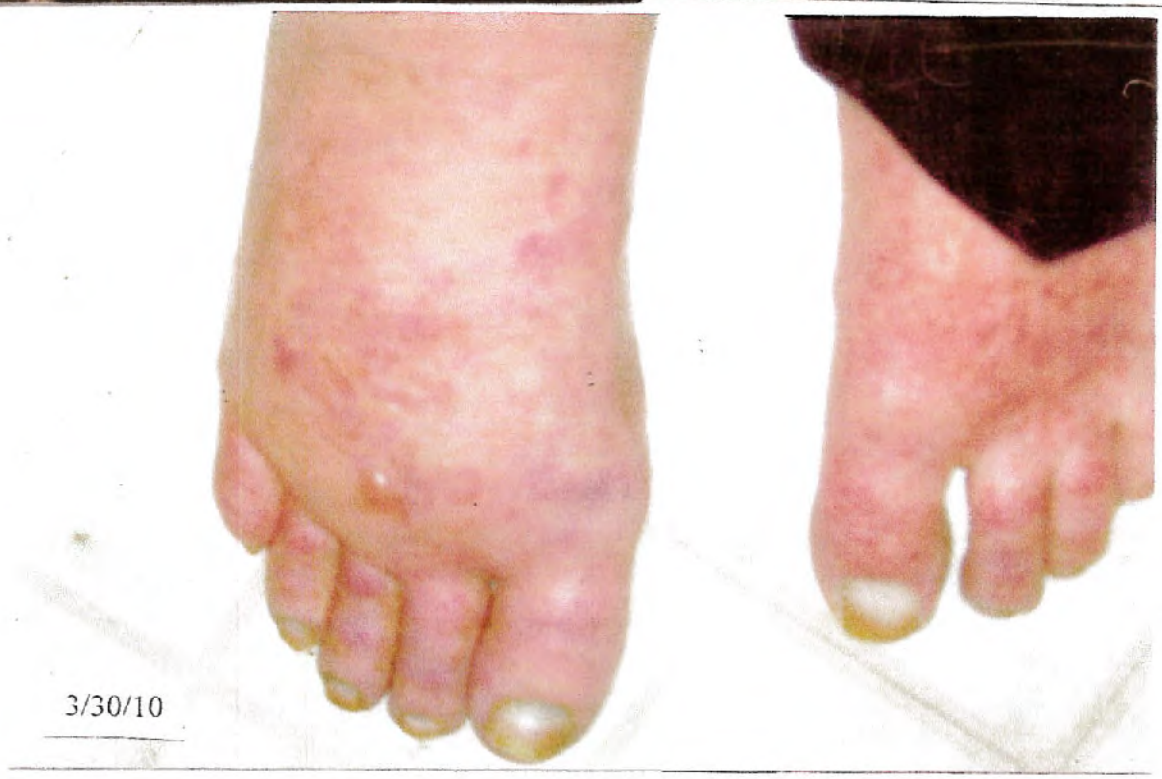

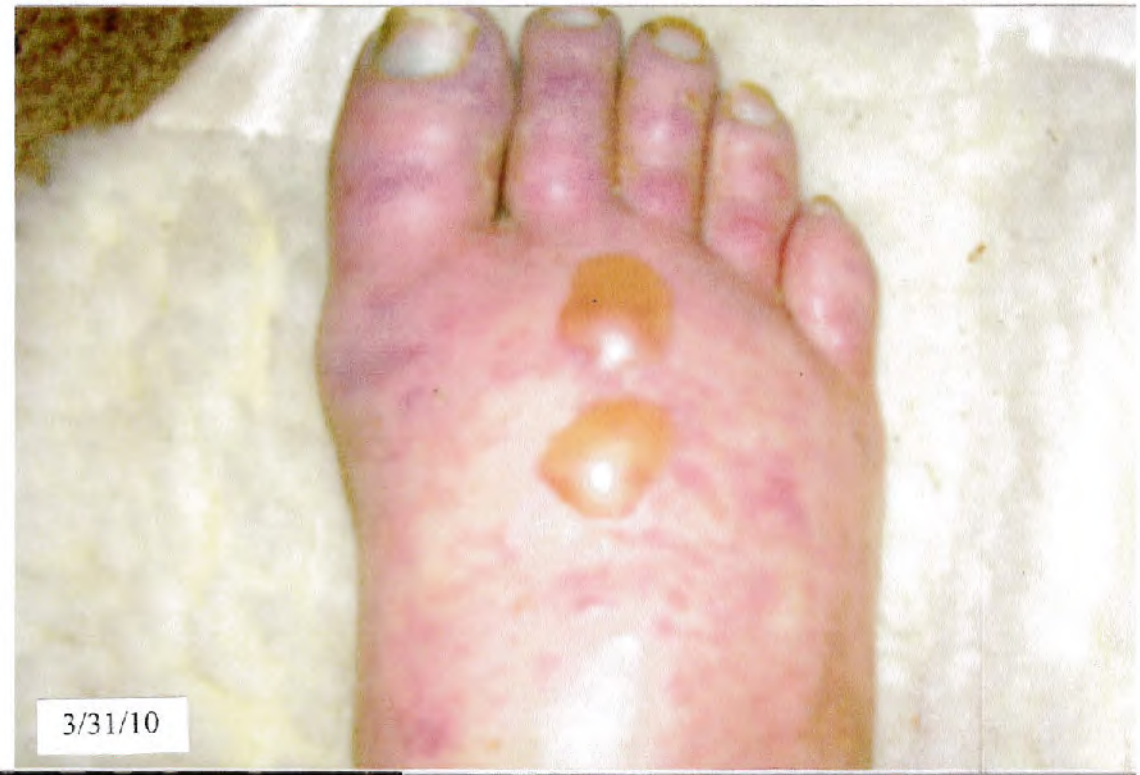

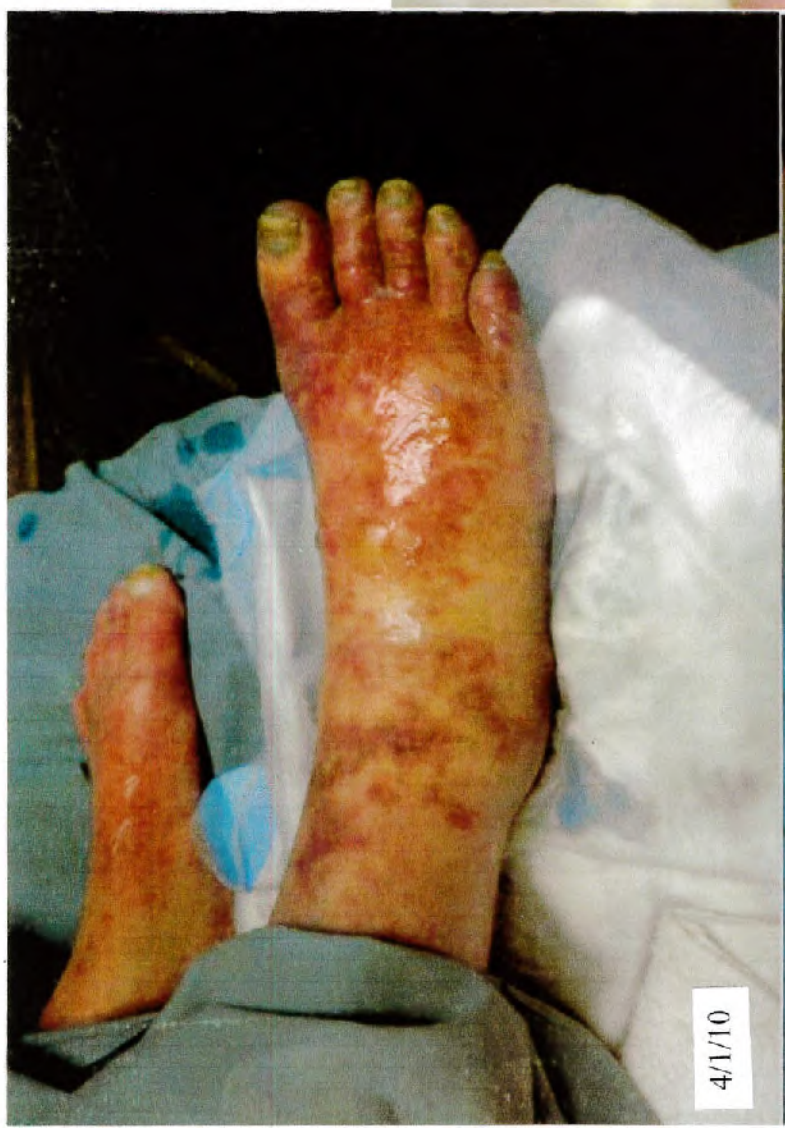

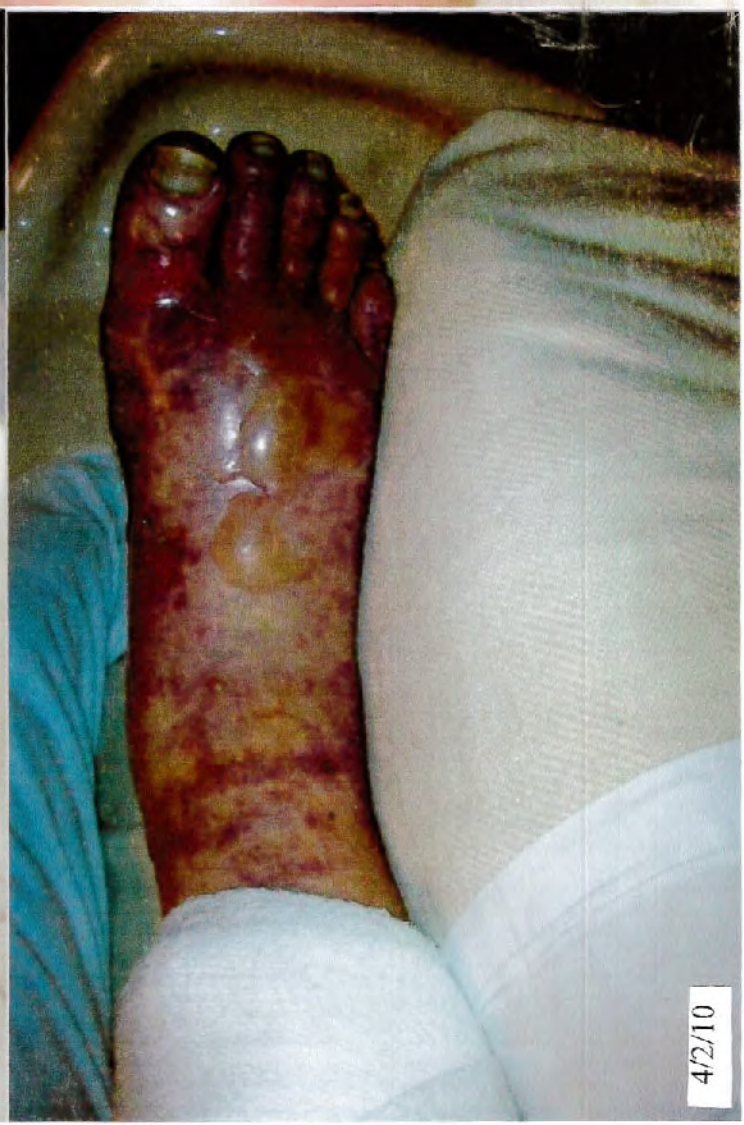

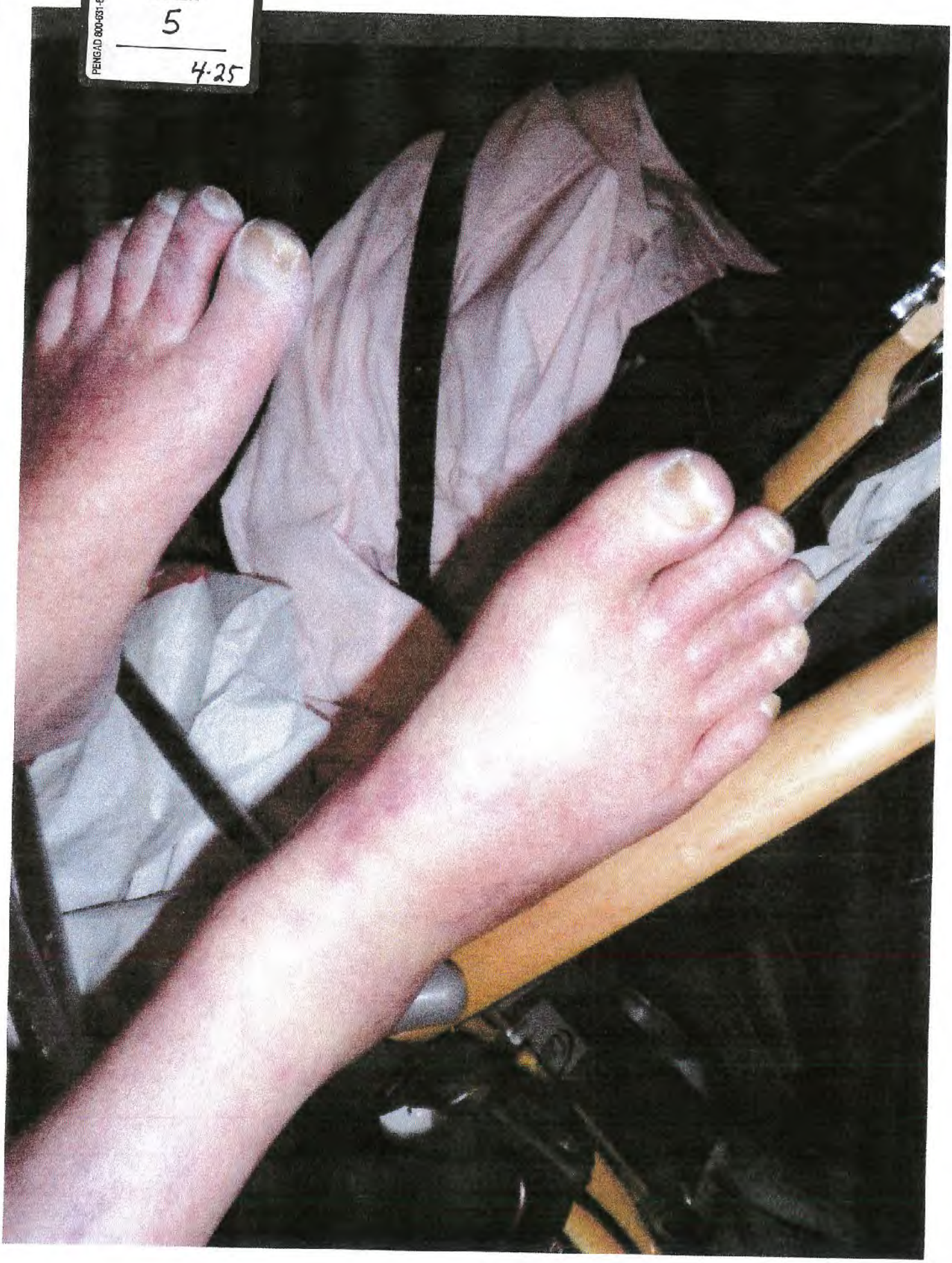
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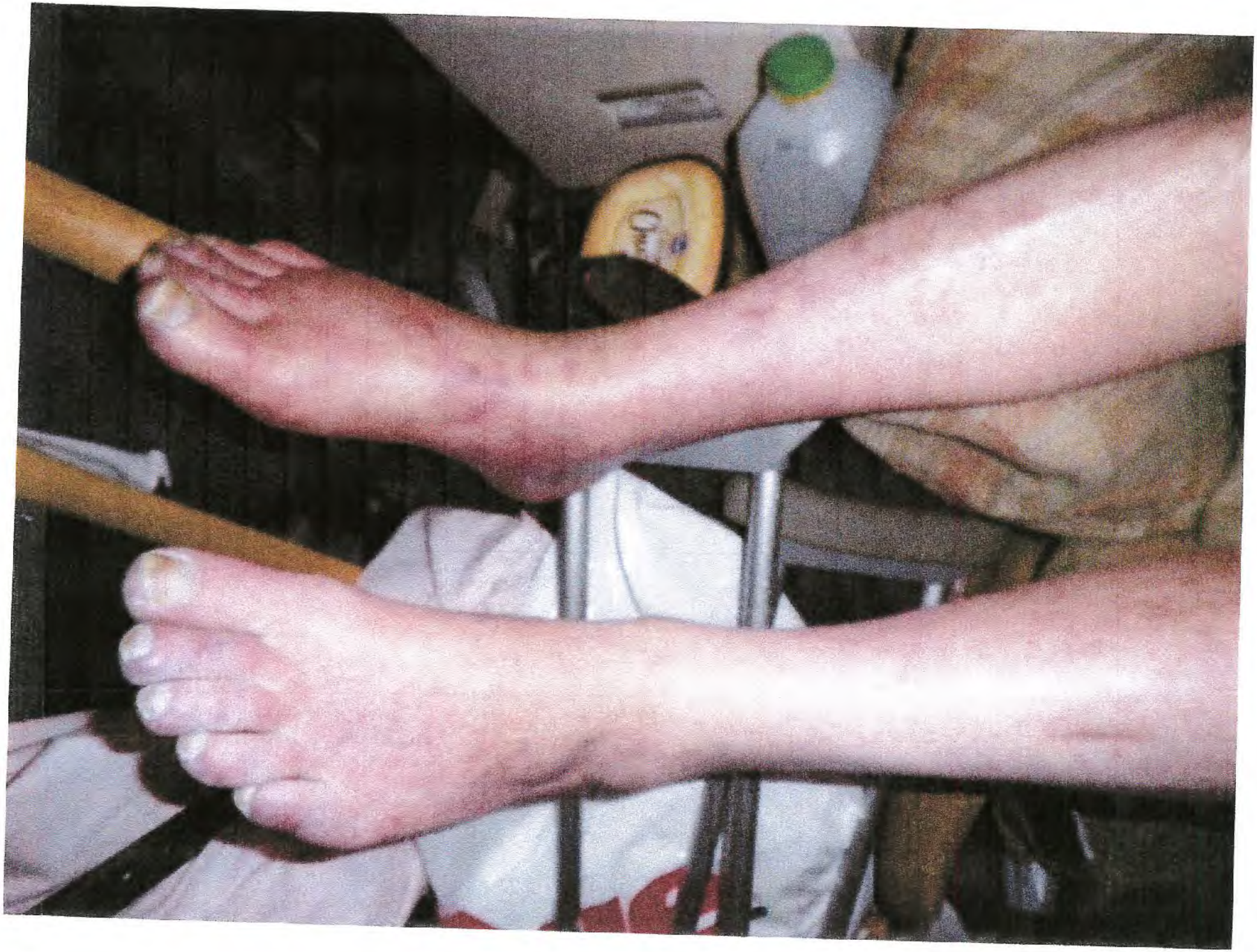

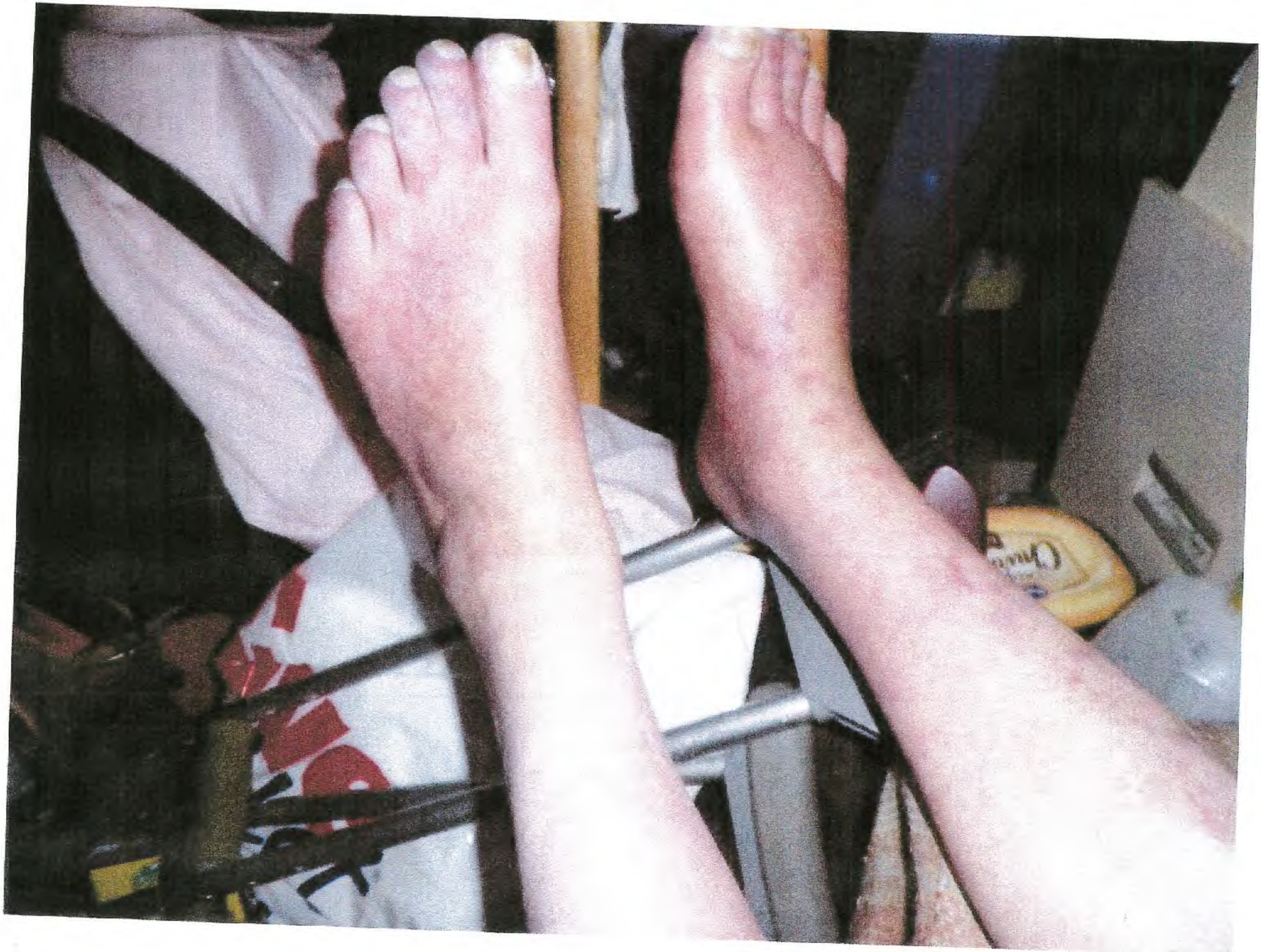

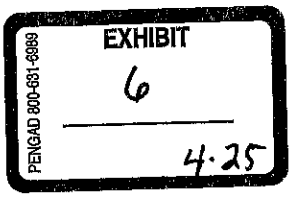

STATE OF MICHIGAN

IN THE CIRCUIT COURT FOR THE COUNTY OF JACKSON

GEORGE BOLTZ,

Plaintiff,

vs.

LARRY JENNINGS, M.D., COREEN GARCIA, PA-C, AND LARRY JENNINGS, M.D., P.C.,

Defendants.

Case No. 12-2490-NH

Hon. Thomas D. Wilson (P-42371)

HEIDI L. SALTER-FERRIS (P-41481)
Attorney for Plaintiff
4158 Washtenaw Avenue
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NOTICE OF TAKING DISCOVERY DEPOSITION AND REQUEST FOR PRODUCTION OF DOCUMENTS OF PAUL COLLIER, M.D.

TO: HEIDI L. SALTER-FERRIS (P-41481)
ATTORNEY FOR PLAINTIFF

PLEASE TAKE NOTICE that on **Friday, the 25th day of April, 2014, commencing at 1:00 p.m. in the afternoon,** in the offices of **Edgeworth Club, 511 East Drive Sweickley, PA, 15143, (412-741-8500), (Witness Location) and Huron Court Reporting, 623 W. Huron**

Street, Ann Arbor, MI, 48103 (734-761-5328) (Attorneys' Location), Defense Counsel will take the discovery deposition, upon oral examination of **PAUL COLLIER, M.D.** This deposition is to be taken in accordance with the Michigan Court Rules and is to be used for impeachment purposes only at the time of the Trial of this matter.

The deponent is to bring:

1. A professional resume' or Curriculum Vitae summarizing your professional qualifications. O/C

2. Copies of all scientific and technical publications authored by you. dont have

3. All time records, diaries and bills prepared and rendered in connection with your investigation and evaluation of the issues involved in the lawsuit. them

4. Your complete file in connection with your investigation and evaluation of the issues involved in the lawsuit, including but not limited to:

   a.) All documents furnished to you by anyone.

   b.) All documents obtained or created by you.

   c.) All documents you reviewed, referred to or relied upon in arriving at any of your opinions or conclusions concerning the issues involved in the lawsuit, including but not limited to all scientific and technical articles, publications, codes, standards and other literature.

d.) All models, illustrations, photographs or other exhibits or documents of any kind which you intend or contemplate using to explain, illustrate or support your testimony at Trial.

This deposition is to be taken before a Notary Public duly authorized to administer oaths in accordance with Michigan Court Rules 2.302 and 2.306. You are invited to attend and cross-examine the witness.

RUTLEDGE, MANION, RABAUT,
TERRY & THOMAS, P.C.

BY: _____
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(313) 965-6100

DATED: MARCH 3, 2013

6 P 3/1-17 foot fine then D
3/17

3/24/10 PA GARCIA pain no new sens/motor walks
photo mild dependent rubor Jennings MD

30
31 - needs to be seen per Dr J (next appt 4/2)

4/1 Duplex ⊖ flow Ⓡ CFA, SFA, pop PT per

INR 4 CLASS III profound RLE ischemia distal calf & foot nonviable
4/2/10 Thromb Ⓡ AoF & Ⓡ Fem Pop
Ⓡ AoF → DFA PTFE Ⓡ calf fasciotomy 3 LFP out
TO SAVE BK prevent pass hip
⊖ embolic source

4/5/10 RBKA (phantom

11/11/10 Ⓛ AoF open Bovine Pericard 1.5 cm patch thrombus
occlude prox DFA FP out
BK Pop → 2 vessel d/o VEIN
MIN AS

1/24/11 open Ⓛ distal anast 6 mm PTA

EXHIBIT
7
4.25

↑BP

Toledo - 2006 ↓walking distance ↓to 100-150'
some numbness ED
cig c̄ ppd Ⓟ
⊖ Fam LORCHOS

6/14/06 ABF 12 hemashield Ⓛ SFA out PT out distally c̄ recanal ATO
4 F Ⓡ goes length
Ⓛ SFA open 12 cm

7/29/1 short Ⓛ CFA → mid SFA (distaflow)
Ⓡ CFA → prox SFA thrombectomy Dacron patch Ⓑ 1.0 TPA
ABF thrombectomy 1.0 cc R FP PTFE 5/30
Ⓑ ant comp fasciotomies Ⓑ PTD R ATD

D/C 6/05/07 Rhabdo
hetero MTHFR mutation
COUMADIN

See Bachany 10/8/7 note

2/6/08 Ⓛ FP distaflow Ⓛ PTD

EXHIBIT
8 4.25