

Patient Name

DOB: MM/DD/YYYY

Expert Medical Opinion

XXXX, a 47-year-old woman presented to XXXX, DPM, at Franciscan System Services for bilateral foot and ankle pain and Charcot neuroarthropathy with left foot ulceration. Her history was significant for uncontrolled diabetes mellitus, hypertension, chronic pain, morbid obesity with BMI of more than 40, and neuropathic ulcer of left foot.

On 01/10/0000, during her office visit with Dr. XXXX, there was a large superficial ulcer on the plantar aspect of left foot as well as rocker bottom deformity. The X-ray of left foot revealed foot collapse with Charcot distraction to the mid-foot. Dr. XXXX recommended performing Charcot foot reconstruction at later stage once the wound is healed and HGB A1C levels are normal (as her HGB A1C was 8.1) at that time. A CT of her left lower extremity (LLE) was recommended.

On 01/31/0000, a CT of her LLE revealed end stage arthrosis of midfoot most suggestive of Charcot arthropathy. She was advised to schedule an appointment in one month to discuss surgery.

On 02/28/0000, Ms. XXXX had a follow-up with Dr. XXXX. The wound on her LLE was healing well and she remained WBAT with contact cast on LLE. The importance of wound healing to aid in surgical correction was discussed. She was advised to follow up in two weeks, for a pre-op evaluation.

On 03/07/0000, Ms. XXXX had a follow-up with Dr. XXXX. The wound had healed and **there was a hyperkeratotic lesion to the plantar region of left foot**. There was no open lesion/erythema/edema. There was a Rocker-bottom deformity in left foot. She was recommended to undergo left Achilles tendon lengthening, sub-talar joint fusion, left mid-foot osteotomy and fusion, and left autogenous bone graft harvest. The risk of limb loss due to surgery was discussed. Post op instructions including Non weight bearing on LLE after surgery was discussed.

Ms. XXXX subsequently underwent the planned surgery on 03/27/0000.

Date of Surgery: 3/27

Direct operative report is unavailable for review to know if there are any deviations in standard of care to be administered.

There are no post op records until 07/18/0000

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From 07/05/0000, Ms. XXXX received physical therapy from XXXX, PT at Franciscan Health Systems for post-operative rehabilitation. She was partially weight bearing in CAM boot with XXXX assist for short distances. From 8/22/0000, she was in CROW boot and was instructed to walk only with CROW boot. Her treatment included therapeutic exercises, ROM training, squats, single-leg squats, heel raise, and gastrocnemius stretches. Her last date of physical therapy was on 10/18/0000.

On 07/18/0000, during her postoperative follow up she was weight bearing with Crow boot with XXXX assist for short distances. She received PT two times a day and has the CROW boot for three weeks. An X-ray of left foot revealed unchanged position and alignment of corrected Charcot reconstruction with hardware in place. Dr. XXXX discussed removing the boot only for ROM exercises and continued use of bone stimulator and continued physical therapy.

On 08/20/0000, during her follow-up, the X-ray of her left foot revealed hardware in place. Dr. XXXX removing the boot for ROM exercises and recommended increasing activity in the CROW boot. Shoe gear only tolerated for non-weight-bearing activity and biking, but no walking without the CROW boot. Continued physical therapy and bone stimulator use were recommended. She was advised to follow up in four weeks.

On 10/17/0000 during her follow-up, Ms. XXXX complained of pain in her foot while doing heel raises and felt that she shouldn't do the exercises. The physical therapist continued to push the patient and felt she should be walking in a regular shoe; however patient continued to use Crow boot as directed. The X-ray of her left foot revealed failure to both medial and lateral beam of the hardware, however, the position and alignment of corrected Charcot reconstruction with hardware in place. Dr. XXXX opined that there was no significant collapse despite hardware failure. She was recommended to use CROW boot for walking. Discussion with Dr. XXXX was recommended.

There was no statement by Dr. XXXX relating the physical therapy to hardware failure. Also, Dr. XXXX's records are unavailable.

On 11/18/0000, during her follow-up, Ms. XXXX stated that she discontinued physical therapy. Dr. XXXX discussed the sustained stability and recommended continued CROW boot use.

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On 2/27/0000, the X-ray of her left foot revealed progressive change of the position of broken hardware. Patient desired to return to regular shoe. Dr. XXXX reiterated the risk of Charcot collapse and wound as opposed to CROW boot with diabetic shoe gear and bracing. She was advised to use CROW boot at all times and diabetic shoes for bicycle and limited activity at home.

On 1/7/0000, Ms. XXXX continued to use CROW boot and occasional diabetic shoes. There was a newly developed wound to left lateral foot and was concerned about infection. She suffered a fall in May, 0000 due to imbalance and damaged her shoulder. Wound debridement was performed and the wound was covered with Band-aid. She was instructed to avoid using shoe gear that caused instability.

Ms. XXXX continued to receive wound care to her LLE and on 04/19/0000, she had flare up of pain and was dismissed at work due to pain and cramping. The importance of new diabetic shoe gear with modifications was discussed. Right foot Charcot reconstruction was discussed and bariatric surgery was discussed.

Medical Opinion:

Based on the detailed review of records and analysis, there is no direct evidence for deviations in the standard of care of the physical therapist to the hardware failure. In addition, the operative report dated 3/27/0000, immediate post-operative instructions, and records till 7/18/0000 are unavailable for review, to know any other deviations in the standard of care by the surgeon.

However, the following factors need to be considered for the hardware failure:

Evidences suggest that there was a high incidence of non-union of arthrodesis after fixation in patients with Charcot neuroarthropathy (CN) Pre-operative ulceration; vitamin D deficiency, obesity, and impaired immune response are known factors that challenge the outcome.

Factors such as BMI >30 kg/m² and combined hindfoot and midfoot reconstructions seem to be the predictors for hardware failure with a marked tendency for the thin plates to break. However, those patients with hardware failure, albeit still able to ambulate, required more supportive footwear in comparison to those with intact hardware.

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In this case, Ms. XXXX had pre-operative ulcers/hyperkeratotic lesion on her left plantar foot as a possible source of infection. In addition, she was obese with a BMI of more than 40, making her more prone to hardware failure.

Additionally, the median barefoot midfoot peak pressures were significantly higher in the Charcot foot group than in the non-Charcot foot group. In addition, the mean forefoot PPP during heel raise exercises would be higher than during level walking. The mean forefoot PPP was 27.2% ($P < 0.01$) higher during heel raise exercise as compared to level walking. Therefore, NWB exercises (stationary bicycling, resistance band exercises and balance ball exercises) would be ideal for people with diabetes and polyneuropathy who have severe foot deformity or an acute ulcer, as these exercises provide greater reductions in plantar pressures than WB exercises.

However, on 10/17/0000 during her follow-up, Ms. XXXX complained of pain in her left foot while doing heel raises and felt that she shouldn't do the exercises. The physical therapist continued to push the patient. Though, there are no evidences of walking without CROW boot, Ms. XXXX performed heel raise exercises thorough the physical therapy sessions, causing left foot pain.

References:

<https://aoj.amegroups.com/article/view/5680/html>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3434274/>
