



## What is it: Malignant or Benign?

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### Abstract

This case report is given to illustrate the extreme anatomical soft tissue aberrations that can occur secondary to a long standing wound and the methods used in diagnosing and ultimately treating this very unusual presentation.

### Introduction

This 40 year old gentleman presented to an outpatient podiatric clinic as a direct referral from the wound care center housed in the same level 1 trauma facility in western Massachusetts. His past medical history was positive for adult onset diabetes mellitus, utilizing insulin, with poor glycemic control, stage 3 kidney diseases and peripheral neuropathy. In addition to these underlying co morbidities and the reason for his referral, was a long standing, non healing wound at the site of amputation of the first ray on the left foot. The surgery had been performed by a general surgeon 10 months prior to his first visit in the podiatric clinic and was a result of a non healing area and subsequent osteomyelitis that required the amputation. Initial evaluation of the area was met with concern regarding its presentation and resection of tissue through biopsy revealed a verrucous carcinoma. This uncommon, low grade squamous cell variant was successfully treated and obliterated through a combination of open excision and Moh's surgery [1]. Through this process, the patient required a semi-weight bearing status and towards the conclusion of his healing developed a Charcot arthropathy of the contralateral foot [2]. This presented a difficult dilemma as treatment was now aimed at immobilizing the right foot in hopes of rendering the Charcot quiescent as quickly as possible and avoiding a plantar ulceration. Total contact casting (TCC) was employed immediately for the right limb, however, due to the non compliant nature of the patient, the cast broke down and a plantar ulceration occurred quite quickly [3]. The ulceration, Wagner Grade 2 in nature was relatively small, measuring approximately 1.5 × 1.5 × .3 cm in size and was centrally located on the plantar aspect of the right foot [4]. In an effort to close this area in a timely fashion, the patient was referred to the plastics department for the consideration of a split thickness skin graft for closure and coverage and to avert potential debilitating complications. While contraindications to this application include donor morbidity site and impaired healing as the result of diabetes, the consideration of the level of complicating factors with a bilateral wound issue in this particular patient, the choice was felt to be acceptable [5].

Unfortunately, while the patient had followed up as requested and a STSG as well as Strayer procedure for a contracted Achilles was performed, he returned back to the podiatric clinic 3 years later with the following presentation (Figure 1).

### Case Presentation

This exuberant soft tissue mass clinically measured approximately 6 × 5 × 5 cm in size, was highly malodorous and had undermining both at the medial and proximal aspects of the foot. It was situated at the intermetatarsal and tarsal metatarsal regions plantarily. It was non painful to the patient. Radiographs showed shadowing of the mass only without any bony erosional changes or defects suggestive of osteomyelitis. An MRI revealed measurements of 7.5 × 6.6 × 5.6 cm in size with a lateral fluid mass measuring 2 × 2.2 × 1.4 cm and a hypo intense tubular structure measuring 2.9 × 0.5 cm in size. An MRI performed of the same area approximately 1 year previous showed a centimeter growth of the mass in all parameters. No osseous destruction was noted in either MRI (Figure 2).

The medical disciplines of Orthopedic Oncology, Pathology and Infectious Disease were contacted for assessment and differential diagnosis. The immediate concern, based on the size of the mass, was for malignancy. Because of the friable nature of the mass, attempts to punch or shave

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**Figure 1:** Clinical preoperative photographs displaying the size and height of the mass-like Deformity.



**Figure 2:** MRI preoperative revealing sagittal and coronal images illustrating confines of the mass as well as infiltrate and tuberos projection.



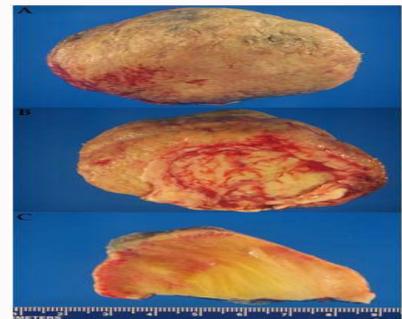
**Figure 3:** Attempted biopsy through FNA.

biopsy was not performed as true deep tissue evaluation was not thought to be possible or would provide accurate assessment. A fine needle aspiration (FNA) was performed and below is a picture of that procedure (Figure 3).

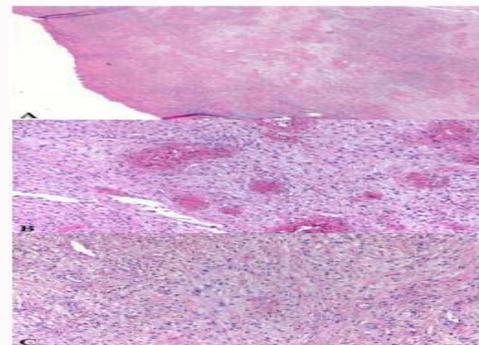
The aspirate was unsuccessful as abundant blood was noted immediately with attempted collection. A radiographic ultrasound was performed with concern regarding a vascular etiology as a source in the development of the mass, but proved unsuccessful due to the inability to compress the mass upon examination. The collaborative assessment by the medical disciplines involved, while clearly grasping the need for accurate tissue evaluation to provide guidance in ultimate treatment and possible reconstruction, was debated as to the method in which to derive that information. Ultimately, the main



**Figure 4:** Intraoperative photos illustrating the method in which the mass was dissected from the foot, the ultimate size of deficit and its location on the foot and the size en toto of the mass removed.



**Figure 5:** Histological photos mass-forming scar-lesion a,b) Macroscopic image revealing 8.3 x 6.5 x 4.2 cm tan pink firm granular well circumscribed mass with a 5.5 x 5.5 cm resection margin c) Sectioning reveals a tan-white, focally yellow, glistening and whorled surface.



**Figure 6:** Mass-forming scar like lesion. a) Low b) medium power views revealing an ulcerated skin surface with underlying inflamed veracious fibrovascular tissue and scar (H and E stain, 20X and 100X).

consensus was to consider a below the knee amputation as the best choice in this individual. If the mass was determined to be malignant, then a BKA was imminent and the surgical difficulty in removing the mass may in fact encounter vascular structures creating such gross embarrassment to the foot, that non viability was possible. The author felt that attempted removal of the mass was a reasonable risk to assess for the possibility of malignancy and that the long term prognosis for an individual of this nature with a BKA was poor [6]. After exhaustive preparation and fact finding, the patient was taken to surgery for removal of the mass. The ultimate dimensions were 10 x 11 x 4 cm in size (Figure 4).

## Results and Discussion

The pathology results from this surgical excision were reviewed by



**Figure 7:** Split thickness skin graft harvested from the lateral left thigh approximately 3 weeks following graft application with good viable tissue noted upon examination.

numerous members of the hospital involved and were eventually sent to a soft tissue expert in the Boston area. While that individual was unable to classify or categorize the mass he described it as “inflamed fibrovascular granulation tissues along with extensive scarring in the deeper tissues with no atypia, pleomorphism or concern for malignancy.” The immunohistochemical studies of cells were negative for SMA, beta-catenin, CD34, Pancytokeratin (OSCAR), design, EMA and S100. There were no clonal cytogenetic aberrations. A Gram stain revealed mixed cocci and bacilli and a PAS, GMS, AFB and Fite stain were negative for fungal and mycobacterial organisms [7]. Histological evaluation of the mass is displayed in Figure 5 and 6. Approximately 5 months following excision of the mass, once all cultures from the wound were negative for bacteria and negative pressure wound therapy (NPWT) was able to minimize the size and depth of the wound, a STSG was performed by the plastics department and subsequently healed without deficit. Below is a photograph of the graft soon after application (Figure 7). The consideration for bony reconstruction of this Charcot foot at some time in the future is a potential intervention, however, currently the patient is ambulating without limitation or pain in a CROW walker and is pleased with the outcome [8].

## Conclusion

Unusual situations occur in medicine and present challenges to practitioners on a daily basis. The value of this case is multifold. It presented an atypical and grossly uncommon anatomic variation that implored the attending physician to exhaust every medical discipline available for consultation and every medical diagnostic modality, as well. The consensus was varied and favored amputation. Ultimately, the decision to remove the mass was based on 30 years of practice experience and the acknowledgment of the grave prognosis of diabetics with limb amputations. The attempts to diagnose and treat a difficult problem were undertaken in the hopes of saving a limb and a life.

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