

INTRODUCTION

Thromboangiitis obliterans (TAO) is a rapidly evolving and poorly understood disease process that requires multi-modal medical treatment. This is a two patient case report that describes diagnosis and treatment of TAO using a multi-team approach consisting of a podiatric surgeon, rheumatologist, plastic surgeon, vascular surgeon, and hyperbaric oxygen therapy specialist.

LITERATURE REVIEW

TAO is described as a non-atherosclerotic segmental inflammatory obliterative disease process that can affect upper and lower extremity small and medium-sized arteries¹. Historically it was described to affect younger men who are heavy tobacco users, however it is also shown to affect women. Although tobacco use is not the cause of the disease, exposure to nicotine seems to be synergetic in triggering an autoimmune response². Should clinical suspicion be present, angiography and histology reports can be helpful in aiding the diagnosis, however no definitive diagnostic test or serological markers are available. Figure 3 shows the five diagnostic criteria that should all be met to have a strong clinical suspicion for TAO³. Complete cessation from tobacco use and nicotine exposure appears to be the only effective means to preventing disease progression⁴. The goal for therapy is targeted toward pain relief, infection control, revascularization, and amputation if warranted.

CASE REPORT #1

- **HPI:** A 45 year old female presents to a podiatric surgeon complaining of pain and “darkness” to her left 2nd toe. Two weeks prior, she was treated for infection at an outside hospital with oral antibiotics with minimal resolution. She denies history of trauma.
- **PMHx:** Tobacco use (½ PPD)
- **PE:** Ischemic changes localized to 2nd digit without signs of erythema or acute infection
 - Vascular exam - nonpalpable pulses to LLE
- **Imaging:** No signs of bony destruction on XR
- **Plan:** Referral to vascular surgeon for ischemic changes in an atypical patient

Patient Course

An angiogram was performed which revealed distal segmental occlusive lesions and corkscrew collateralization, with no revascularization options available (Figure 1a). Initial treatment included hyperbaric oxygen therapy (HBOT) and a rheumatology consult for pharmacological drug therapy optimization. Seven months later, due to infection concern, patient underwent amputations of digits 2 and 3. HBOT and drug therapy was continued for approximately 8 months until her remaining digits turned necrotic (Figure 1b). A proximal amputation was performed with incision dehiscence and necrosis occurring soon after.

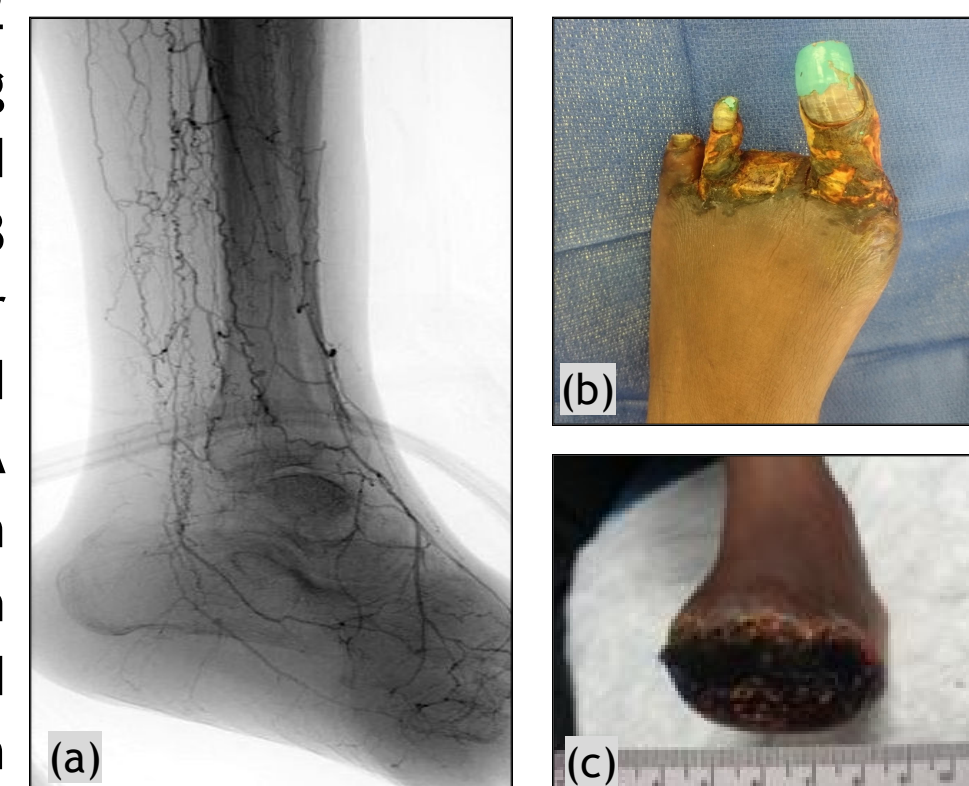


Figure 1 (a): Angiogram showing extensive corkscrew collateralization, characteristic of TAO, (b): Presentation 1 year after initial evaluation, (c): Follow-up 2 months status post TMA

CASE REPORT #2

- **HPI:** A 34 year old female with known history of TAO and tobacco use presented to a podiatric surgeon with concern of infection and necrosis to her hallux. She has previous surgical history of finger and partial hallux amputation
- **PMHx:** Lupus, antiphospholipid Syndrome, Factor V Leiden, Cryoglobulin Vasculitis
- **PE:** Isolated necrosis to distal hallux with erythema and drainage (Figure 2b)
- **Imaging:** Mild erosive changes to distal aspect of 1st metatarsal head
- **Plan:** Admission to hospital for surgical intervention, HBOT consult, vascular consult, IV antibiotics

Patient Course

A hallux amputation was performed and HBOT was initiated. Vascular surgery was consulted. Angiography revealed a distal arterial occlusion (Figure 2a). Angioplasty was attempted and was unsuccessful. It was determined that no further revascularization options were possible. At a two week follow-up, ischemic changes to 2nd and 3rd digits was noted

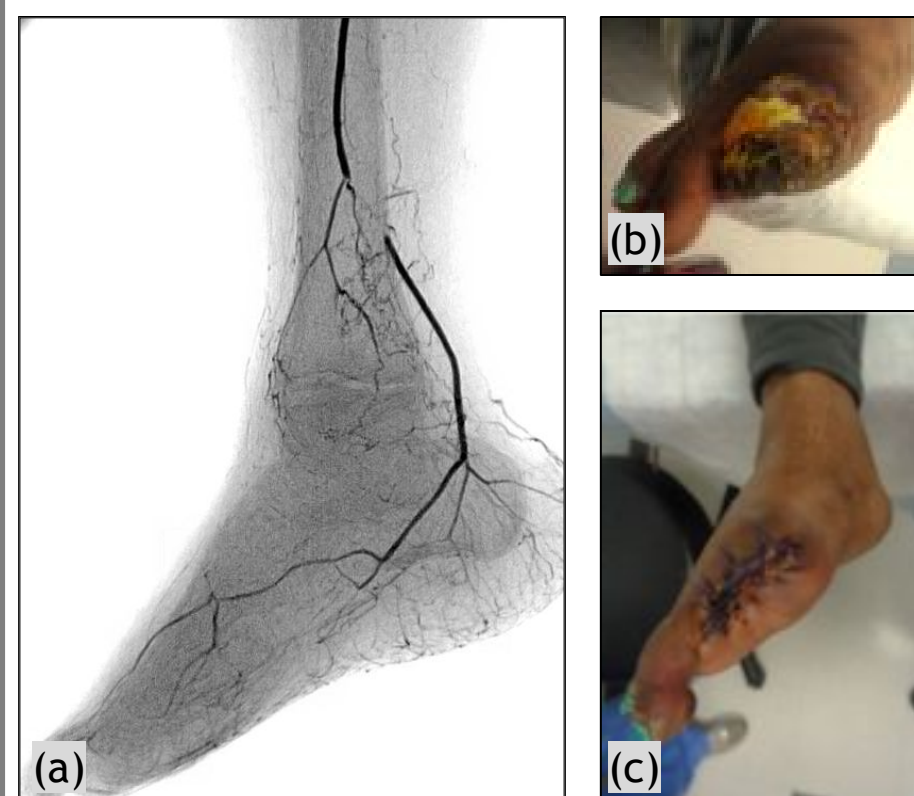


Figure 2 (a): Angiogram showing distally located vessel occlusion (b): Initial presentation, (c): Follow-up 2 weeks status post hallux amputation with ischemic changes to 2nd digit

with increased pain (Figure 2c). Given the failed response to medical therapy, vascular intervention, and HBOT, plastic surgery was consulted. A below the knee amputation was determined to be the best course of treatment.

TREATMENT APPROACH

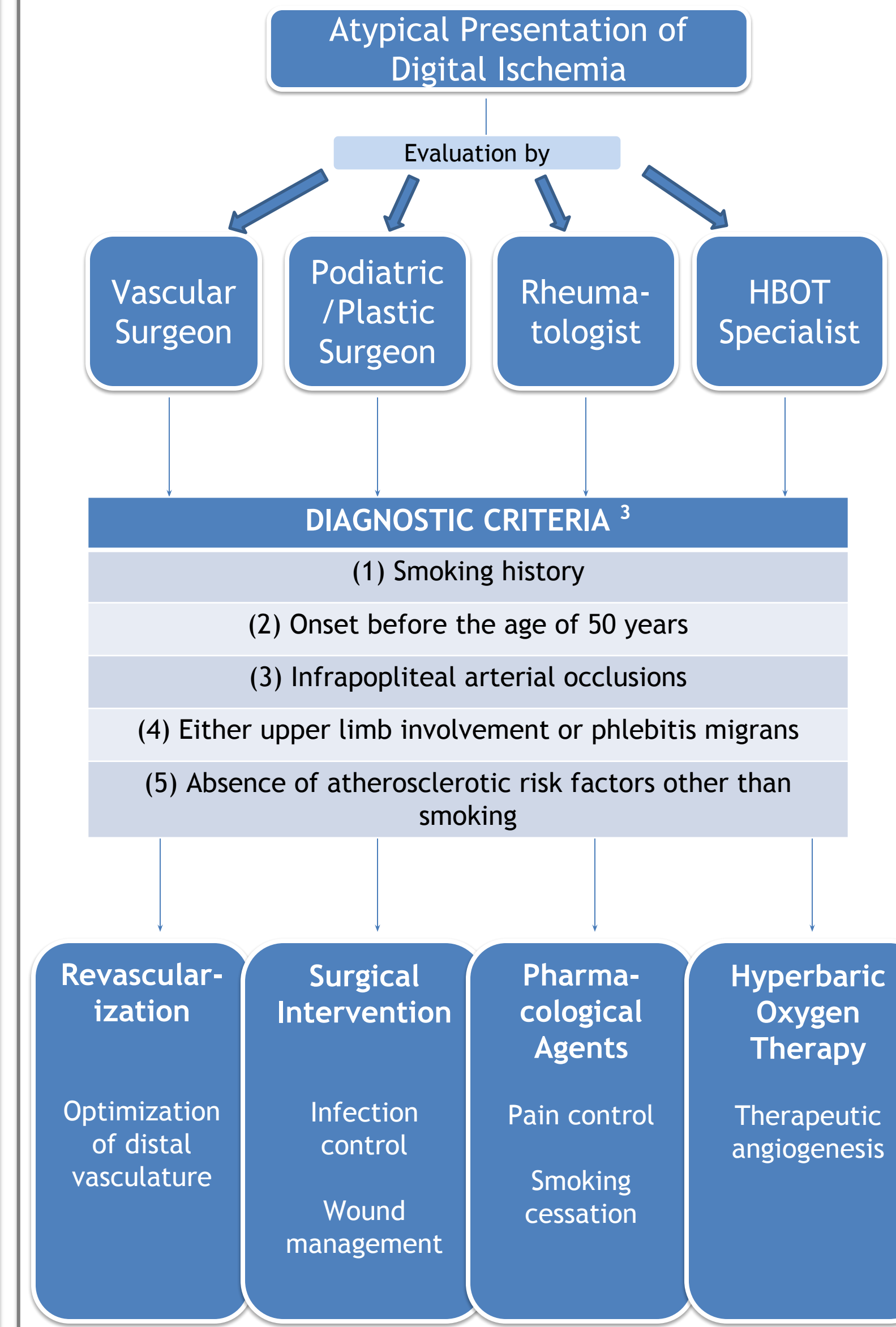


Figure 3. Multi-disciplinary approach to diagnosis and treatment of TAO

OUTCOMES / DISCUSSION

Due necrosis development, both patients underwent proximal amputations at different levels (Figure 4). Current two year follow-up reveal both patients have developed superficial wounds. Barriers to healing include non-compliance with tobacco cessation and/or second-hand smoke exposure shown by positive blood nicotine levels.

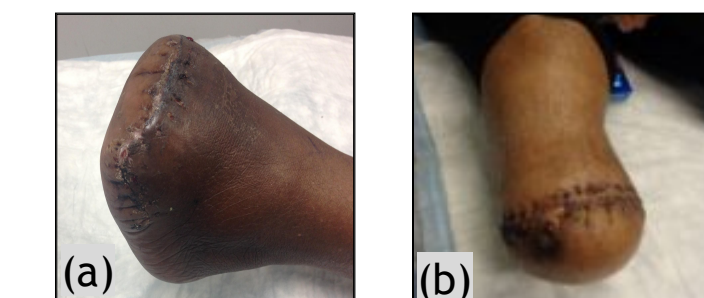


Figure 4. (a) Patient #1 at 18 month follow-up, chopart level amputation (b) Patient #2 at 2 year follow-up

These case reports reveal how difficult TAO is to treat successfully. Revascularization is often unachievable due to the distal localization of the occlusions. Steroid pulse dosing in addition to HBOT were two novel treatments used in these cases. HBOT has been shown to reduce ischemia and pain in nonhealing ischemic wounds that were refractory to standard treatment⁵. Smoking cessation and elimination of secondhand smoke remains the cornerstone of treatment. A multidisciplinary approach should be used toward this difficult and challenging disease process to allow for the best patient outcomes.

REFERENCES

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