

ABSTRACT

The Diabetic Patient is a difficult surgical candidate who requires close evaluation for multiple co- morbidities prior to any major lower extremity reconstructive surgery. The approach needs to be a multispecialty team approach and even then there can be catastrophic outcomes. The healing in a DM patient is difficult to predict, confounding variables such as neuropathy, poor blood flow due to PAD or CHF, poor nutrition due to alcohol abuse and an extensive smoking history can create a less than ideal situation for healing to occur leading to a limb threatening infection.

INTRODUCTION

Diabetic foot infections constitute a large burden of the morbidity of diabetes, with more than 70,000 lower-extremity amputations performed annually in the United States. There is one person dying from diabetes-related preventable complications, including foot complications, every 7 seconds across the world, this is a major health challenge. Analysis has shown that Charcot joints, peripheral vascular disease (PVD), neuropathy, diabetes duration >10 years, insulin use, retinopathy, nephropathy, age >45 years, cerebral vascular disease (CVD), poor glycemic control, coronary artery disease (CAD), male gender, smoking, and hypertension to be significant risk factors for contributing to a post surgical infection. Patients with diabetes mellitus are at increased risk of severe infection compared with those without diabetes. Patients with uncomplicated diabetes do not have an increased risk of postoperative infection compared with patients without diabetes, whereas patients with complicated diabetes have a significantly higher rate of postoperative infection.


The objective of this case review is to demonstrate the need for close attention to preoperative evaluation focusing on co-morbidities, along with, close aggressive post surgical care in the unfortunate situation of a surgical site infection.

METHODS

A Comprehensive chart review of one case of a diabetic post surgical site infection. The chart review spanned 2013 till present. Patient’s records were reviewed from 2 sites, limited records from an outside private provider and extensive review from a VA facility. Patient’s physician notes along with laboratory values, diagnostic images and surgical reports were reviewed specifically focusing on but not limited to a lengthy admission to the VA after an elective surgical intervention from an outside hospital.



Top row of images 2014 VA Admission, fifth partial ray amputation; Bottom row of images 2016 VA Admission leading to BKA; X-ray images to right 2016 on admission and after talectomy, PET Scan 2016 admission showing OM of STJ.



A Case Report on a Diabetic Post Surgical Site Infection Resulting in a Below Knee Amputation.

Dr. Jessica V. Randolph DPM; Dr. Robert G. Frykberg DPM MPH

RESULTS

Mr. X is a 67 y/o male with a past medical history of Type 2 diabetes with neuropathy, congestive heart failure, coronary artery disease, chronic obstructive pulmonary disease, orthostatic hypotension, atrial fibrillation, RCA stent placement, pacemaker, peripheral arterial disease, 50+ pack year smoker, along with alcohol abuse. Past Surgical History: Right fibular fracture with open reduction internal fixation 2007, right fifth partial ray amputation due to osteomyelitis 2014, pacemaker placement 2015. Mr. X has been well known to the VA podiatry department since 2013. He was not consistent with clinic visits until 2014. He had a chronic non-healing wound since 2011 to his right foot fifth metatarsal head with osteomyelitis diagnosed 2014. Mr. X. became a podiatry patient 2013 after a hospitalization for exacerbation of his CHF. Patient was evaluated by the podiatry team, in-patient, due to chronic ulcer to his sub- 5th metatarsal head, per patient wound had been present for 16 months. Mr. X was treating the wound on his own with betadine and a dressing. There was not consistent follow up until an admission to Podiatry service May 2014 due to osteomyelitis of his 5th metatarsal head from the same wound, still non-healing since initial encounter in 2013. Mr. X underwent a partial 5th ray amputation to the right foot during this admission. He was discharged to follow up regularly with podiatry for out patient care. Podiatry continued with local wound care, with wound closure recorded on a visit in December of 2015 after several applications of a biologic wound dressing. The wound reopened the next month January 2016. Mr. X was seen at a private hospital for surgical correction of a varus deformity to his right foot and his care returned to the VA July 2016 with a right foot post surgical site infection. While Mr. X was being treated for his wound he had an initial surgical work up August of 2015 for removal of painful hardware of his right fibula with a surgery request placed. The hardware removal was postponed due to EF 30-35% he required a further cardiac workup, he received cardiac risk stratification for surgery October 2015 and deemed of moderate risk for a low risk surgery. He was re-evaluated and rescheduled surgery for a subtalar joint fusion with varus correction for April 2016. He was transferred to a private hospital in order to expedite surgery his surgery per his request. Mr. X did have a cardiac evaluation but did not have any vascular work up prior to his right foot surgery.

A consult was placed for Choice TriWest to an outside institution to expedite surgical correction, December 2015. Mr. X underwent a right foot STJ fusion with tendon transfer a by private institution performed on April 11, 2016.



2016 Admission

2016 Admission

Vascular Evaluation:
SLPs, TcPO2 both demonstrating poor prediction for healing.
Right ABI 0.64; TBI 0.37 (2016)
Angiogram did show 3 vessel run off with collateral flow, however, with a low EF reduced blood flow to foot.

A Surgical site infection began shortly after the surgery; within 2 weeks of surgery, Mr. X was admitted to a private hospital 4/26/2016 for his surgical site infection. He received IV antibiotics along with an incision and drainage with wound debridement performed on 4/29/2016. Mr. X’s care was transferred back to the VA after 90 days from his initial surgery. He was admitted to the VA hospital due to his surgical site infection on July 8, 2016. On admission he was confused and not willing to answer questions. He did have an elevated glucose, but not an elevated WBC or left shift in granulocytes. Within a few days he did develop bacteremia, septicemia, initially cultures grew MRSA and shortly there after converted to VRE. On admission there was a large wound to the lateral ankle with purulence, which did probe to bone and into his joint. Podiatry attempted wound care and limb salvage through out his admission, he was taken to the operating theater multiple times for aggressive debriedments and bone resections. Initial Debridement 7/11/2016 with Instillation wound vac application next morning. A PET CT was performed confirming osteomyelitis of his subtalar joint. 7/18/2016 Additional debridement of ankle/ STJ, at this point a communicating wound medial and lateral right ankle, antibiotic beads/spacer was attempted and unsuccessful, his wound was left packed open with betadine soaked gauze. 7/20/2016 additional debridement and lavage irrigation, total resection of his talus, and all hardware was removed. He was left with a large communicating space between medial and lateral ankle. 7/25/2016 bone fragments from his lateral malleoli, which was free floating in his void within the ankle/ STJ removed with further lavage irrigation. The antibiotic spacer was again attempted without success. The void packed with betadine soaked gauze. During his admission vascular surgery and infectious disease was consulted. Infectious disease recommended a below knee amputation to for source control of a life threatening lower limb infection. Vascular surgeries initial consult stated moderate arterial insufficiency ABI/ TCPO2 with suspected poor healing potential for a forefoot amputation. Vascular surgery recommended to allow for permissive HTN SBP> 100 due to systemic Hypotension. A Re-evaluation 1.5 weeks later stated there was concern for popliteal and groin hot spots seen on PET imaging. Vascular surgery recommended a BKA Vs AKA. The open BKA performed on 8/4/2016 and closed on 8/8/2016. Mr. X had difficulty healing his amputation site finally healed on November 2016; four months after VA admission to hospital and seven months after his initial surgery for varus correction. He was fitted for prosthesis and ambulating on prosthesis June of 2017 more than one year after his initial surgery. Mr. X continues to smoke one ppd and not willing to entertain the thought of quitting, he continues to be followed by vascular surgery.

RESULTS

Due to Cardiac Co-morbidities Mr X. had reduced blood flow to his feet because of a low ejection fraction. Mr. X. is a smoker who was not willing to quit prior to initial surgical correction and to this day continues to smoke He is malnourished due to a long standing history of alcoholism Long standing history of a chronic non-healing wound with a history of osteomyelitis to the same right foot lateral side where the post operative infection began. There was no vascular workup prior to a MAJOR surgical reconstruction of right foot.

CONCLUSIONS / DISCUSSION

Prior to any Major reconstructive foot surgery on a diabetic patient a full Vascular Evaluation to include SLP/ ABI, TCPO2 should be performed. An EKG and if applicable a Cardiology evaluation should be performed. Comprehensive Labs CBC, CMP, PT/INR, PTT, Albumin and pre-albumin for nutritional status, HbA1c for diabetic control must be drawn. An evaluate for Peripheral Neuropathy needs to be completed.

There were multiple areas which were not fully addressed prior to the patient’s reconstructive surgery in April 2016. The areas which were not fully taken into account were cardiac and vascular status, smoking and alcohol history, previous ulceration and osteomyelitis on the same extremity. Once the initial infection was identified the initial treatment was not aggressive enough to control the infective process quickly. Initial control of a diabetic infection needs to be quick and aggressive to regain control of the process. It is hard to predict if a major or even a minor surgical intervention is going to result in such a limb and life threatening infection. By fully exhausting all co-morbidities prior to any surgical intervention can prevent loss of limb.

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