

COMPLICATIONS OF HALLUX VALGUS SURGERY: A Challenging Case Scenario

John A. Ruch, D.P.M.

Lily Pan, D.P.M.

It is no surprise that any surgery, including something as familiar and common as hallux valgus surgery, can result in any number of possible complications. As much as we hope that complications only occur in conjunction with complex cases, they potentially can occur following any procedure performed by any surgeon. It is strongly recommended and helpful to inform your patients of the possible risks of the surgery before they arise. It is important to realize that surgery is not the answer to all problems. Offering different treatment options (non-surgical as well as surgical) to your patients is recommended. Disclose the risks and benefits involved with surgical treatment options. If you are thorough and truthful with your patients, they will be more cooperative if complications occur.

Most people would agree that building a good relationship with the patient is beneficial and important. Your efforts in taking true interest in your patients will reassure them of your compassion and empathy, as well as professionalism and competence. The goal of this article is to present systematic approaches for implementing thorough evaluations in an attempt to minimize surgical complications. Keep in mind that surgical complications do not equal malpractice unless you neglect to inform your patients properly, or practice abandonment when faced with complications. A unique case involving multiple complications following hallux valgus surgery will be presented.

PRELIMINARY EVALUATION OF THE DEFORMITY

Prior to making any treatment decisions, a thorough history of the chief complaint should be taken. All clinical and radiographic findings should be evaluated and documented. Formulate some differential diagnoses before being tunneled into the obvious diagnosis. It is important to ascertain the details in an initial work-up for analysis and comparison of the effectiveness of any treatment

modality. Be aware that most deformities deserve a course of conservative treatment before surgery is suggested. Try to build a good relationship with your patients during this period of time. For hallux valgus deformities shoe modification, orthotics, NSAIDs, and splints should be considered. Once the non-surgical modality proves itself to be of minimal benefit, one can then advance to discussing surgical options.

SURGICAL DISCUSSION

The first task in presenting surgical options is actually making certain the patient understands the diagnosis of the deformity. Clearly state the objectives and goals to be achieved through surgery. Present to your patients the different acceptable surgical options. In cases of hallux valgus deformities, discuss capital versus base procedures, different types of fixation devices, and joint preservation versus joint destruction scenarios. Go into details about the postoperative course such as the expected healing time for each of these options. Make sure patients understand their responsibilities in being compliant with weight bearing restrictions, follow-up dressing changes, and possible required time off from work, sports, or school. Discuss the topic of pain management including intraoperative anesthetic options and postoperative analgesic agents. Finally, no surgical presentation would be complete without disclosing the risks of complications. Begin with general risks associated with any invasive procedure, then expand on complications specific to the procedure to be performed.

RISKS AND COMPLICATIONS/ INFORMED CONSENT

General risks affiliated with any type of surgical procedure include infection, allergic reaction to any medication given, disfiguring scars from the incisions, loss of blood which may require transfusion, loss of function of any limb or organ, paralysis,

paraplegia or quadriplegia, brain damage, cardiac arrest, or death. These are very serious complications which should be disclosed. Make it clear that although these are not probable complications in elective podiatric procedures, they are still possible risks for any invasive procedure.

Next, discuss the more specific risks related to the surgery to be performed including scars, infection, recurrence of pain/deformity, worsening of pain/deformity, over-correction, stiffness, weakness, neurovascular damage, hematoma, deep vein thrombosis and pulmonary embolism, bone or fixation device failure, prolonged swelling and healing, malunion or nonunion of osteotomy, dehiscence of wound, difficulty walking or loss of function, etc. Make sure the patient is clear that the surgery would only be performed if the benefits outweigh the probable risks. Be honest in disclosing the possible complications, yet reassure the patient that measures will be taken to avoid complications. For example, the risk of DVT can be minimized by early mobilization and anticoagulation therapy. Let them know that if complications occur, you will manage the said complication or make appropriate referral to a physician more skilled in the management of the specific complication.

MEDICAL CLEARANCE FOR SURGERY

Detailed Review of Medical History

Obtaining a thorough history will help determine whether the patient is an acceptable candidate for surgery. An important factor in avoiding unnecessary complications is the proper selection of patients for surgery. It is important to recognize the "red flags" and follow through with appropriate consults for further work up. The goal is to ensure there are no contraindications for the required anesthesia, the surgical procedure, and the post-operative healing capability. A thorough history includes solicitation of the patient's current and past medical history, prior history of hospitalizations, past surgical history, family history, social history, allergies, current medications, and a review of systems.

Past medical history such as diabetes mellitus may require further labs to ascertain glycemic control. It is important to obtain a current medication list and withhold appropriate medications such as Glucophage. Make sure the patient is clear on what to do with adjustments of medication with the

NPO status preoperatively, to prevent dangerous hypoglycemic situations. For a patient with hypertension, a baseline blood pressure is important. Once again, order appropriate lab work such as a chemistry panel to check for electrolyte imbalance (especially potassium for patients on diuretics). Make sure the patient's hypertension is stable and controlled on hypertensive medication. Do not hesitate to consult their primary care physician for assistance and to solicit any perioperative management recommendations. Patients with coronary arterial diseases or history of myocardial infarctions/ischemia will need clearance from a cardiologist. It is helpful to obtain copies of any recent EKGs, stress test results, and echocardiogram results for documentation. If there is a history of myocardial infarction, find out the elapsed time frame, and cancel or postpone elective cases as necessary.

Patients with respiratory problems such as asthma or emphysema may need chest x-rays, discussions of modification or cessation of smoking peri-operatively, and precautions with inhalation anesthetic agents. These patients are likely to need incentive spirometry postoperatively. Patients with a history of gastrointestinal problems such as GERD may require aspiration precautions with general anesthesia. These are medical issues which are of surgical concern and deserve special attention. Although most of the medical history will be disclosed in this portion of the investigation, be aware that patients often inadvertently leave out information. Correlate their previous medical history section with their current medication list.

Following the medical history portion, continue with the past surgical history, social history, and family history. Document not only the types of surgery, but learn of any complications with anesthesia, healing, scarring, blood clots, or any other problems. In obtaining the social history, be aware that someone with a history of alcohol abuse may need precautions for continued abuse or withdrawal. It may be a good idea to check the liver function. Smokers may benefit from a detailed discussion of its negative effects on bone and wound healing. It is not unreasonable to recommend cessation. Once again, chest x-rays may be indicated, especially if the lungs appear compromised. Social history also involves finding out if the patient has good family support or assistance postoperatively. If needed, long-term rehabilitation facilities or nursing homes can be arranged prior to surgery to avoid the

complication of falling due to lack of assistance. In terms of family history, ask about deep vein thrombosis, keloid formation, and myocardial infarctions (if the patient has CAD). Take appropriate measures with any positive findings.

Review a complete list of the medications. Look for any discrepancies with the previous medical history, and also look for medications which may need to be adjusted or withheld perioperatively. For example, consider stress dosing patients on long term/routine steroids. Withhold Glucophage and cover with insulin sliding scale as indicated. Other pertinent concerns are drug-to-drug interactions when you prescribe any additional medications. Document all drug allergies and find out what type of reactions are triggered with these allergies.

A review of the systems should be performed before advancing to the physical examination. Make certain the patient does not have any recent illnesses such as urinary tract infections, upper respiratory tract infections, etc. that would require canceling or postponing the surgery.

Physical Exam

When performing the physical examination to clear a patient for surgery, the physician should be reminded that one of the goals is the prevention of surgical complications. Start out the physical evaluation with the vital signs. Look for any gross abnormalities. Make sure the patient does not have unexplained skin rashes. Even if you are not the physician doing the medical clearance, be comprehensive and perform an evaluation on your own.

The lower extremity evaluation is also performed in a very systematic manner. Make sure the vascular supply is adequate. Take precautions when arterial disease is in question especially in deciding what to use for hemostasis. Neuromuscular exams will be especially important in neuropathic patients such as in diabetics. Dermatological exams are crucial with ulcers for determining the depth, size, and infectious state. Other dermatological findings such as hyperkeratosis can reveal bio-mechanical abnormalities. Structural evaluations will help in deciding whether the pathology is more soft tissue or osseous which is important in determining the types of procedures. Radiographic findings will play an adjunctive role in determining surgical options.

By completing a thorough evaluation of the

deformity, implementing different treatment options, determining the need for surgical treatment, disclosing all risks and benefits in signing an informed consent, and participating in making sure the patients are medically cleared for surgery, the physician can feel everything has been done to give the patient the best care. Complications may still arise, however, if they do, the patient will feel more confident in your care so you can better serve your patients.

The following is a unique case scenario in which the patient underwent multiple surgeries secondary to complications. The stepwise approach in dealing with each of the complications will be detailed.

CASE PRESENTATION

A 65-year-old woman presented with a hallux valgus deformity as well as a tailor's bunion, and subluxed hammer digit deformity of the second digit. The deformities were bilateral and had become progressively worse over 25 years. Conservative treatment had been ineffective, and surgical correction was scheduled. The medical history was positive for polymyalgia rheumatica and borderline hypercholesterolemia. The medication list consisted of three years of prednisone use. The patient reported an allergy to doxycycline. The patient was deemed an appropriate surgical candidate, and the first surgery on the right foot was performed in November of 1999.

Surgery #1, Right Foot (11-99):

A McBride /Austin bunionectomy including adductor tendon transfer, lateral FHB tendon release, and fibular sesamoidectomy was performed. Fixation was with one 2.7mm screw. The hammertoe repair consisted of PIPJ arthrodesis with MPJ release, lateral capsulotomy, and flexor tendon transfer. The tailor's bunionectomy was performed using 28 gauge wire loop fixation.(Fig. 1) The postoperative injection consisted of 1cc Decadron and 10cc 0.5% Marcaine plain. The patient was instructed to be partial-weightbearing using a walker for assistance.

On day four, the postoperative x-rays revealed a shift in the capital fragment of the first metatarsal. (Fig. 2A) The patient related an unremarkable postoperative course with the pain being well-controlled.



Figure 1A. Preoperative x-ray of the right foot.



Figure 1B. Postoperative x-ray of the right foot.



Figure 2A. Dislocated capital fragment of first metatarsal, preoperative X-ray of right foot.



Figure 2B. Postoperative x-ray, to correct dislocation of capital fragment.

Surgery #2, Right Foot (11-99)

The dislocation of the first metatarsal osteotomy was repaired surgically on postoperative day four. No intra-articular fracture or capital fragment fracture was noted intraoperatively. The capital fragment was then relocated and fixated with three 0.062" smooth K-wires using the lock-pin technique. (Fig. 2B) C-arm imaging was used intraoperatively for assistance. The foot was cast and the patient was instructed to be non-weightbearing on that side using a walker.

Surgery #3, Left Foot (3-00)

Four months later, the patient presented for surgical correction for similar pathologies on the left foot. Identical procedures were performed as the first surgery with the exception of the bunion and tailor's bunion fixation techniques. The first metatarsal capital osteotomy was fixated using two 0.062" smooth K-wires in the lock pin fashion. (Fig. 3) The left foot was casted and the patient was instructed to be non-weight bearing on that side using a walker.

Surgery #4, Right Foot (7-00)

The patient developed hallux varus bilaterally, with the left side appearing clinically less severe than the right side. Conservative treatment with splinting did not control the deformities. The right side became symptomatic at the metatarsophalangeal joint with motion and ambulation. The deformity on the left side is less symptomatic. Clinical evaluation revealed flexible varus deformities which were both tracking. Minimal pain was elicited with range of motion. The interphalangeal joint on both the right and left hallux demonstrated malleus flexion deformities. The surgical procedure selected was a first metatarsophalangeal joint arthrodesis fixated with two parallel 4.0mm partially-threaded screws.(Fig. 4) There were areas of significant cartilage erosion noted intraoperatively. The previous three K-wires were removed. The patient was instructed to be non-weightbearing postoperatively.



Figure 3A. Preoperative x-ray of the left foot.



Figure 3B. Postoperative x-ray.



Figure 4A. Preoperative x-ray of hallux varus, right foot.



Figure 4B. Postoperative view of corrected hallux varus with MPJ arthrodesis.



Figure 5A. Preoperative view, hallux varus of the left foot.



Figure 5B. Postoperative x-ray, showing correction using MPJ arthrodesis.

Surgery #5, Left Foot (11-00)

The patient returned for surgical correction of symptomatic hallux varus on the left foot. The right hallux varus, which is nearly four months postoperative, continues to be asymptomatic. The surgical procedure selected was also a first metatarsophalangeal joint arthrodesis. This was fixated using two crossed partially-threaded 4.0mm screws.(Fig.5)

CONCLUSION

With this case presentation, we can see that multiple complications can occur to the same patient. The patient was informed of the risks and complications prior to surgery after thorough clinical and

medical evaluations. The possibility of complications were verbally discussed with each and every one of the five surgeries. Despite the multiple complications, this patient never questioned the surgeon's competence. The invaluable lesson to be learned is dealing with the complications in a professional manner. Face the patient and face the problems. Patients who are well-informed and involved in all facets of the decision making process, are more likely to be cooperative and understanding should any complications arise.