

SURGERY IN THE GERIATRIC PATIENT

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The traditional concept of a geriatric patient needs to be redefined. The authors maintain a practice in Sun City, Arizona, which is predominately a retirement community. It is not uncommon for patients well into their 80s to actively participate in swimming, golf, tennis, and walking regimens. It seems to be a trend that people are generally living longer and leading healthier lifestyles. In fact, nationwide, retirement communities are being developed that boast an active lifestyle.

The geriatric patient presents with a myriad of pedal pathology combined with a host of special concerns. Some of these concerns include their general medical status, polypharmaceutical issues, vascular status, functional/activities of daily living needs (living alone, sole care-giver to a spouse, non-weightbearing, transportation), traumatic events, and iatrogenic deformities.

It is common to think of elective foot surgery as being predominately for the young and healthy patient. The geriatric patient also suffers from the same ailments, as do our younger patients. To complicate matters, many geriatric patients suffer from coronary artery disease and have had heart attacks, strokes, multiple angioplasties, bypass surgery, in addition to taking anticoagulants. Despite problems such as diabetes, heart disease, and cancer, many geriatric patients are still active and desire surgical correction of various deformities of the foot and ankle. The traditional school of thought is to offer orthopedic shoes, pads, cushions, and related orthodigital devices. It is a disservice to this patient population to only offer a "band-aid" approach to podiatric deformities. Of course, it is crucial that surgical candidates are selected based on sound criteria, not only from a medical viewpoint, but also from family/social factors perspective or viewpoint.

Once the patient has been medically cleared for surgery, there are some special concerns that need to be addressed. Vascular status is of concern if there is not an easily palpable arterial pulse. Non-invasive doppler studies are fairly routine studies

performed to assist with the initial assessments. A vascular referral may be needed if the non-invasive studies are sub-optimal suggesting a compromised circulatory status. Often times, patients will undergo a vascular procedure followed by podiatric surgery at a later date. In the case of a non-elective procedure, such as an incision and drainage or resection of bone for osteomyelitis, the reverse may prevail. The angioplasty or bypass may need to be performed after the podiatric surgery.

The authors do not use tourniquets for forefoot surgery. Epinephrine in toes is used only if there is a palpable pulse with adequate capillary refill. If non-invasive studies indicate sub-optimal results, epinephrine is not used, and the surgery is performed without a tourniquet. Postoperatively, the extremity is elevated, without the application of ice.

The geriatric patient at times will have an extensive podiatric surgical history. Multiple previous surgeries on the forefoot can make it challenging to initiate an effective treatment plan. (Fig. 1) In addition to bony pathologies such as hammertoes and/or aberrant metatarsal parabolas, there are inherent problems such as lack of adequate fat pad, thin/atrophic skin, and refusal to wear adequate shoe gear.

The authors have had good results with conservative management of foot and ankle trauma in our geriatric patients. Fractures of the metatarsals, calcaneus, and fibula generally heal well without surgery if in satisfactory alignment. Initially, a light Jones dressing is used to reduce edema. Light touch ambulation with a CAM walker and crutches/walker is generally adequate. It is important to determine the patient's activity level and lifestyle when making the decision for type of treatment. Surgical repair is discussed as an alternative to patients as a treatment, however, most patients elect to try conservative management. Figure 2 represents conservative treatment of a metatarsal fracture. The patient is asymptomatic despite evidence of a non-union.

When elective surgery is being contemplated



Figure 1A. Clinical photograph of a foot with multiple iatrogenic deformities.

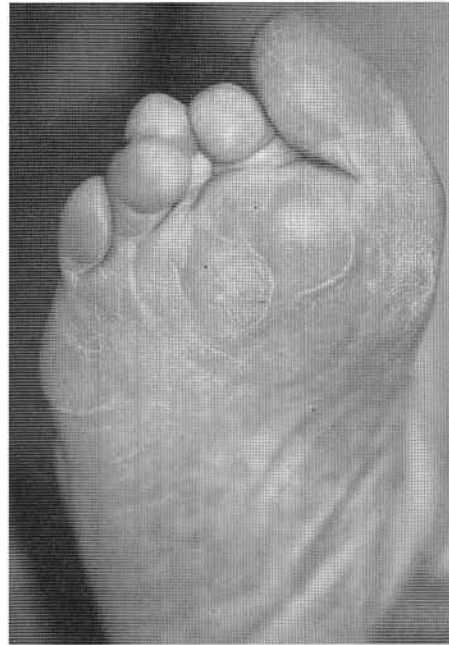


Figure 1B. Plantar view.



Figure 2. Radiograph showing avulsion fracture of the fifth metatarsal.

in the patient taking anti-coagulant medications, it is important to carefully assess the risks with the potential benefits. The authors have not had any major complications performing forefoot surgeries such as bunionectomy or hammertoe repair in the anti-coagulated patient. However, major rearfoot reconstructive surgery can be more difficult due to the increased difficulty in achieving hemostasis, and the increased risk for development of post-operative hematoma and infection. The patient's internist should be consulted when considering surgery on the patient taking anti-coagulants.

In high-risk patients when there is concern for an embolic event, it may be necessary to admit the patient prior to surgery. Subcutaneous heparin (mini dose of 5,000 units every 12 hours) is given while coumadin is stopped. After surgery, coumadin can be administered to achieve the appropriate protime level. Heparin can then be discontinued. In patients with low to moderate risk of an embolic event, it is acceptable to discontinue coumadin three to five days prior to surgery, administer a mini-dose of heparin in preoperative holding, then administer coumadin postoperatively. Additional use of antiembolic stockings, intermittent compression pumps, and/or early post-operative range of motion/exercise of the hip and knee are all employed to augment any lapse in pharmaceutical anticoagulation.



Figure 3. Radiograph following a base resection of the proximal phalanx with K-wire stabilization.



Figure 4. Radiograph showing failed great toe implant arthroplasty.

The same surgical principles used in the younger, more active patient, do not always pertain to the geriatric patient. For example, a fifth metatarsal head resection in a young patient would usually not be considered, but it is ideal for an inactive geriatric patient with a painful tailor's bunion. Another common problem is the severely dislocated second metatarsophalangeal joint. An aggressive relocation can be compromising to the vascular supply of the toe in the geriatric patient. A phalangeal base resection is often needed to relocate the toe. A K-wire is used to maintain position for up to six weeks and rarely is there a problem with stability of the toe. (Fig. 3) In addition, for hammertoe repair, the authors perform arthrodeses of the lesser toes (excluding the fifth) to provide long-term stability and function. In certain cases, arthroplasties are performed in our older, sedentary patients that have problems such as ulceration on the dorsal toe and/or they cannot wear a shoe. This is a prime example of the "less is more approach" which is an effective way to resolve an ulceration without prolonged healing from a more extensive reconstruction.

Failed first metatarsophalangeal joint implants are commonplace. (Fig. 4) It is a surgical dilemma to reconstruct the first ray when there are issues such as a short first ray with poor quality bone at

the proximal phalanx and first metatarsal head. In a young, active patient an autogenous iliac bone graft is often used to augment an arthrodesis of the first metatarsophalangeal joint. In the geriatric patient, however, this is not practical, as generally this patient population cannot tolerate eight to twelve weeks of non-weightbearing. In these cases, the authors will either remove the implant and K-wire for six weeks or perform an arthrodesis without bone graft, using crossed K-wires. The quality and quantity of bone is evaluated intraoperatively. Typically there is a significant amount of cortical shell without any cancellous bone. After the implant is removed, the bone margins of the proximal phalanx and metatarsal head are debrided until bleeding, cancellous bone is encountered. At this point, a decision is made whether to fuse or not. Despite a short first ray, with retraction of the great toe, the foot is still functional for the needs of the geriatric patient. Patients are counseled in great detail as to surgical options, expectations, and goals. In many of these patients, a pan metatarsal head resection is the only viable option to restore the foot to a functional, pain-free state. For best, long-term results, it is important to fuse the digits at the proximal interphalangeal joints to add stability. K-wires are generally removed after six weeks.

When considering surgery in geriatric patients,

preoperative counseling is of utmost importance. A frank and detailed discussion should include realistic goals and expectations of surgery, and an assessment of the patient's willingness and ability to be compliant with the postoperative healing protocol. Prior to surgery, most patients are already using pads, cushions, and wearing shoes with an adequate toe box. Surgery is offered as a permanent treatment modality; however, it is ultimately the patient's decision after extensive counseling. The authors believe there is no such thing as "simple" foot surgery, regardless of the procedure.

Forefoot reconstruction in the geriatric patient should not limit itself to "lump and bump" procedures. Standard approaches to bunions and hammertoes are used in both the geriatric and younger patient. The geriatric patient can tolerate osteotomies with internal fixation as well as fusions

of the lesser digits very well. Performing a bunionectomy in the geriatric patient does not mean the only option is a Keller arthroplasty.

In conclusion, forefoot reconstruction is in great demand for active geriatric patients. It is important to use sound surgical principles such as anatomic dissection, along with gentle retraction of skin. Generally speaking, patients well into the eighth decade of life can tolerate foot surgery very well. It can be challenging not only to reconstruct a multitude of long-standing deformities, but also to accommodate the special needs of the geriatric patient. As long as precautions are made especially for DVT prophylaxis, vascularity, medical management, and postoperative activities of daily living, geriatric foot surgery can be successful and rewarding.