

BUNION SURGERY: Why Does It Fail?

William D. Fishco, DPM, FACFAS

Hallux valgus is one of the more common foot ailments that prompts a visit to the podiatrist. There are limited non-surgical treatments that give long lasting pain relief; and because one is dealing with a bone and joint deformity, surgery is often performed for permanent correction. Bunion correction has evolved from a simple exostectomy (bunion removal) to a myriad of different options in osteotomies, soft tissue correction, fusions, and arthroplasties.

The main objectives of bunion surgery are simple. We try to achieve removal of the bump, a straight toe, and adequate pain-free range of motion to the great toe joint. How can something be so simple, yet often times very difficult? Most of us will agree that bunion surgery does work well most of the time. But, of course, there are some exceptions. So, why doesn't bunion surgery work all of the time? This article will explore some of the author's ideas regarding failure, some by personal experience, and some from other's experiences.

BUNIONS ARE NOT CREATED EQUALLY

It is probably safe to say that most foot surgeons have a preference in procedure selection for bunion correction. Some may choose a traditional Austin, some modify it for screw placement, and others might select a SCARF or distal L osteotomy. Whatever you choose, most of the time these will work equally as well. But, as we all know, these "staple" procedures do not work for all patients. Dalton McGlamry always said, "If all you have is a hammer...everything is a nail." As an expert in foot surgery, we must be versatile in our approach to bunion surgery. Decision making before, during, and after surgery is what separates a surgeon from a technician.

WHEN NOT TO CHOOSE A DISTAL METAPHYSEAL OSTEOTOMY

The real question, then, is when should you abandon your "staple" procedure for bunion correction? Flexibility of the foot and first ray are important to evaluate preoperatively and intraoperatively. If you can move the first ray through a wide excursion in the sagittal plane, then you will probably have the same phenomenon in the

transverse plane. Unfortunately, flexibility of the first ray is a double-edged sword. It can help the surgeon in closing down the intermetatarsal angle on the operating room table, however, this is the foot that will come back and haunt you with a recurrent bunion. It may happen very quickly, within the first few months after surgery, or in the near future. In this circumstance, the author chooses either a base osteotomy, first metatarsophalangeal joint fusion, or a first MTCJ fusion. Each one of these procedures help make the first ray more functional and stable. Laxity of the soft tissues will be less likely to play a role in recurrence after a fusion procedure.

There is often a debate in procedure selection especially when there is degenerative joint disease of the great toe joint. There are new technologies for implants designed every year, the traditional Keller arthroplasty is still used by many, and finally a fusion of the great toe joint is an option. In younger, active patients, the fusion of the great toe joint is ideal. An implant in an active patient, regardless of the age of the patient, will eventually get destroyed. In geriatric patients who lead sedentary lives, an implant is acceptable, however, the author finds similar results with a Keller without the potential complications. By using an implant, the surgeon may have a difficult reconstruction if the implant fails. By resecting bone on both sides of the joint, a hefty bone graft may be required for a fusion. Geriatrics tolerate fusions very well. If the patient has an arthritic joint with very little motion, then the author, generally speaking, will choose a fusion over a Keller.

TECHNICAL AND DECISION ERRORS

Bunion surgery may fail due to technical errors. These include, but are not limited to, fixation failure, aggressive soft tissue correction, aggressive exostectomy, osteotomy placement/direction, and over or under correction with an osteotomy.

There is no such thing as the "best procedure" for fixing a bunion deformity. If you follow the guidelines of adequate bone and joint alignment (reduction of the intermetatarsal angle) and removal of soft tissue constraints, then you should have a successful outcome. It is important to stick to that *modus operandi* at all times. However, many physicians have been guilty of trying to

appease his or her patients. How often do you hear, "I can't be in a cast for 6 weeks?" So, to make our patients happy, we try to "push the Austin." Some times we get away with it, but this is a recipe for recurrence and failure. Another common pitfall that I see is the surgeon "throwing in an Akin" if the Austin didn't get enough correction. There is no substitute for adequate correction at the metatarsophalangeal joint. The Akin does nothing as far as the bunion is concerned. The osteotomy is distal to the joint, and therefore has no effect on the mechanics of the great toe joint. It is an optical illusion, that if the toe is straighter, then the bunion is gone.

Postoperative decisions include when to begin weight bearing, when to return to shoes, and when to resume all unrestricted activities. Premature weight-bearing activities may include complications such as stress fractures around implanted screws, elevatus deformities, fixation failure, prolonged edema, and/or delayed/non-union.

EXPECTATIONS FOLLOWING BUNION SURGERY

As with all surgical procedures that are performed, it is especially crucial that our patients are aware of reasonable expectations following bunion surgery. Informed consents usually contain information about possible complications. Just as important, your preoperative consultation should include a candid discussion of what the recovery period entails. The patient needs to know that it will take six months to one year to fully recover from the surgery. Until then, swelling, stiffness, and soreness will be present. Range of motion of the toe is another consideration. How often do you hear, "doctor, my toe doesn't go down like it used to?" or "my big toe

doesn't move like my other one." Make it a point that there will be some loss of motion that may take months to regain. The reality is that following bunion surgery, the toe rarely moves as it did prior to surgery.

CASE ILLUSTRATIONS

MO is a 35-year-old female that presented for bunion correction. Her pain was mostly on the "bump" and she had difficulty wearing shoes. Clinically, she had a flexible deformity without submetatarsal pain. Radiographs show a moderate sized bunion deformity with an approximate intermetatarsal angle of 13 degrees with an underlying metatarsus adductus (Figure 1). The patient underwent a modified Austin bunionectomy with two-screw fixation. Her postoperative x-rays revealed adequate correction and good screw purchase. Over correction is noted with bandaging (Figures 2,3). The patient had an uneventful postoperative course. On her six-month followup visit it was obvious that she had a recurrence. The radiographs showed the same deformity prior to her surgery (Figure 4). The reason for failure was a decision making error. She was too flexible and required either a base osteotomy or Lapidus procedure.

The second patient, HR is a 46-year-old female that underwent bunion surgery. Her preoperative films show a mild to moderate intermetatarsal angle (Figure 5) Her pain was located to the "bump" only. She underwent a bunionectomy, which consisted of an Austin. Postoperative radiographs revealed excessive medial exostectomy with peeking of the tibial sesamoid (Figure 6). This progressed to a hallux varus and required revision. The reason for failure was a technical error: excessive exostectomy.

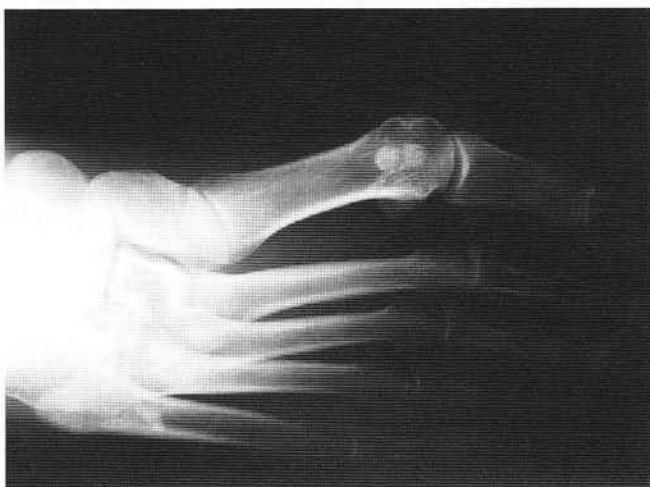


Figure 1. Preoperative anterior-posterior radiograph showing moderate bunion deformity with an underlying metatarsus adductus.



Figure 2. Immediate postoperative anterior-posterior radiograph showing reduction of the intermetatarsal angle.



Figure 3. Immediate postoperative lateral radiograph showing adequate fixation and good sagittal plane position.



Figure 4. A 6-month postoperative anterior-posterior radiograph showing hallux valgus recurrence and failure of the surgery.



Figure 5. Preoperative anterior-posterior radiograph showing a mild to moderate sized bunion deformity.



Figure 6. Postoperative anterior-posterior radiograph showing excessive medial exostectomy with "peeking" of the tibial sesamoid. Hallux varus deformity developed.



Figure 7. Preoperative anterior-posterior radiograph revealing a moderate sized bunion deformity.



Figure 8. Immediate postoperative anterior-posterior radiograph showing inadequate internal fixation.

GC is a 60-year-old female with a moderate hallux valgus deformity. Her intermetatarsal angle was 13 degrees (Figure 7). She underwent an Austin bunionectomy with smooth K-wire fixation (Figure 8). Her immediate postoperative films showed inadequate fixation and rotation of the capital fragment. She ultimately went on to revision with adequate placement of the metatarsal head and fixation (Figure 9). Despite a mild hallux varus, this patient is happy with her results three years postoperatively (Figure 10). The reason for failure was a technical error: poor fixation.

LK is a 64-year-old female with a chief complaint of bunion pain. She is unable to wear dress shoes. Her bunion deformity was long-standing. Her deformity was mild to moderate (Figure 11), and therefore an Austin bunionectomy with smooth k-wire fixation was performed (Figure 12). The postoperative radiographs fail to show adequate correction of her bunion deformity due to the fibular sesamoid touching the 2nd metatarsal. One year postoperatively, loss of some intermetatarsal correction is noted as well as residual deformity (Figure 13). The patient asked if she could have more “bump” taken of the other foot when she has it repaired. The reason for failure was a decision-making error. There was a failure to achieve adequate reduction on the table. The fibular sesamoid should have been excised to allow for adequate correction.

KP is a 74-year-old female with a long-standing bunion deformity. She has a flexible deformity with an intermetatarsal angle of at least 15 degrees (Figure 14). She underwent a modified Austin bunionectomy with two-screw fixation. It is evident in the postoperative films that correction was not obtained (Figure 15). The reason for failure was poor decision making. She was too flexible. Better options might have been a fibular sesamoidectomy with the Austin, base wedge osteotomy, or first metatarsophalangeal fusion.

Bunion surgery works well most of the time. Anecdotally, patient satisfaction rate is high. When bunion surgery fails, it can usually be linked to error in technique and/or in procedure selection. Execution of bony alignment and adequate soft tissue release is paramount for a good long-term result. Common technical errors include improper fixation, excessive shortening of the first ray, poor placement of the capital fragment (dorsiflexed/plantarflexed), and over or under correction. Procedure selection is based on many objective and subjective criteria. Some of the pertinent findings and factors to evaluate include: presence or absence of metatarsalgia, bump pain versus joint pain, metatarsal parabola, intermetatarsal angle, PASA, bone quality, and finally, flexibility of the deformity. The author has found that bunions with hypermobility of the first ray tend to have a

high recurrence rate with a distal metaphyseal osteotomy. Decision making intraoperatively is crucial. All bunion deformities are unique, and therefore, a check list of maneuvers should be performed on all cases. Assuming there is a good joint, this checklist includes: 1) Assessment of the mobility of the metatarsal head after the soft tissue is released. Does the intermetatarsal angle reduce with lateral pressure? Is there splaying of the forefoot with loading of the forefoot? 2) Careful inspection of the fibular sesamoid to make sure it is released and will be positioned under the metatarsal head after the osteotomy; 3) Evaluation of the range of motion following the osteotomy and relocation of the capital fragment. Is the toe moving up and down or is it tracking side to side? Is the nail pointing straight up or is it in valgus rotation? If there is valgus rotation of the toe and/or significant abduction of the toe, then one must consider adjunct procedures such as, a flexor hallucis brevis tenotomy, extensor digitorum brevis tenotomy, extensor hallucis longis tendon lengthening (in long-standing large bunion deformities) and/or removal of the fibular sesamoid. 4) Is the fixation stable? Range of motion of the toe and distal traction of the toe will reveal any instability of the osteotomy. Remember, if you do not have the correction on the table and/or your fixation is not stable, you are doomed to failure. Splinting in over correction, dressing techniques, excessive exostectomy, and/or aggressive medial capsulorrhaphy are not substitutes for adequate bony correction.

Hindsight is always 20/20, therefore, we must learn from our mistakes to refine our techniques and strategies to hallux valgus surgery. It is probably safe to say that all Podiatrists go through their entire careers trying to perfect the art of bunion surgery. Forefoot surgery including hallux valgus repair and hammertoe surgery can be a humbling experience for us all.



Figure 9. Immediate postoperative lateral radiograph showing inadequate internal fixation. Note the K-wire does not cross the osteotomy site.



Figure 10. Anterior-posterior radiograph 3 years following revision. The patient is pleased with the result despite mild hallux varus deformity.



Figure 11. Preoperative anterior-posterior radiograph of a long-standing bunion deformity. Note the fibular sesamoid appears to be arthritic.



Figure 12. Immediate postoperative anterior-posterior radiograph. Adequate correction was not obtained due to the fibular sesamoid interfering with proper positioning of the metatarsal head.



Figure 13. One year following surgery. Anterior-posterior radiograph shows some increase in the intermetatarsal angle and obvious failure to correct the deformity.



Figure 14. Preoperative anterior-posterior radiograph of a large bunion deformity.



Figure 15. Immediate postoperative anterior-posterior radiograph depicting failure to adequately correct the deformity.