

## Surgical management of the tailor's bunion deformity: A minimally invasive biplanar corrective approach

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The tailor's bunion deformity can be very debilitating for patients considering surgical intervention. Here we describe a minimally invasive surgical approach to correcting this deformity utilizing a new intramedullary fixation system within the fifth metatarsal. We are pleased to describe that this implant offers an immense amount of inherent stability and allows for translation of the fifth metatarsal head both dorsally and medially to account for abnormal plantar and/or lateral pressure secondary to the deformity.

**Keywords:** tailor's bunion, Stryker PROstep™, minimally invasive surgery, MIS

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A common cause of pain in the lateral forefoot is the tailor's bunion or bunionette deformity. In many ways, this pathology mirrors hallux valgus commonly seen of the first ray. The tailor's bunion will typically present with a valgus frontal plane rotation of the fifth metatarsal, a varus frontal plane orientation of the toe, with an occult subluxation of the metatarsophalangeal joint. These classic findings are often appreciable both clinically and radiographically. There are multiple anatomic variations of the fifth metatarsal which can manifest in the lateral forefoot which are known to contribute to deformity and pain. These variations include but are not limited to a hypertrophic fifth metatarsal head, an aggressive lateral curvature or bowing to the fifth metatarsal, and a sagittal plane deformity with respect to a plantarflexed or dorsiflexed fifth metatarsal head. With any degree of osseous deformity, the surrounding soft tissues must adapt. This typically results in formation of painful hyperkeratotic lesions about the metatarsophalangeal joint and contractures ultimately resulting in adductovarus deformity of the fifth toe. Most commonly, patients who are experiencing pain secondary to tailor's bunion deformity will usually present with some form of chronic bursitis to the lateral and plantar aspects of the fifth metatarsal head, localized hyperkeratosis plantar or laterally to the fifth metatarsophalangeal joint, and an exacerbation of symptoms when ambulating in narrow fitting shoe gear [1].

Conservative treatment options for this pathology are known to offer varying degrees of relief for patients. These include prescription of anti-inflammatories medications, encouraging patients to seek more accommodative shoe gear, performing routine debridement, and offloading of symptomatic hyperkeratotic lesions, and performing intra-articular steroid injection to the fifth metatarsophalangeal joint. When these conservative options no longer offer adequate relief, surgical intervention to correct deformity should be considered. Classically, there are several options for correction of tailor's bunion which can involve osteotomy at multiple levels of the fifth metatarsal. In our hands, we have found that performing an osteotomy at the level of the fifth metatarsal neck with a dorsal and medial translation of the capital fragment offers highly reproducible results and high levels of patient satisfaction while allowing us to relieve the patient of any hyperkeratotic pressures, whether they be plantar or lateral, about the fifth metatarsophalangeal joint area.

In recent years, minimally invasive options for correction of hallux valgus have become increasingly popular among patients and surgeons alike. In turn, the demand for minimally invasive surgery (MIS) for correction of tailor's bunion deformity has increased as well. While many of these procedures solely emphasize correction in the transverse plane through medial translation of the capital fragment, we have

found that this technology can adapt exceedingly well when attempting a dorsal and medial translation of the fifth metatarsal. We feel this adaptation of this technology is imperative as metatarsalgia of the fifth metatarsophalangeal joint associated with plantar callus secondary to a plantarflexed fifth metatarsal head has been described being present in approximately one-third of tailor's bunion deformities [2]. We have found this to stand true amongst our own patient populations.

We are mindful that achieving biplanar correction through a transversely oriented osteotomy does present its challenges when it comes to fixation. We have found that a minimally invasive surgical approach utilizing the Stryker PROstep™ Minimally Invasive Bunionette system offers a robust form of fixation which allows for both medial and dorsal translation of the metatarsal head through transverse osteotomy. This system combines principles of intramedullary fixation and locking plate technology which facilitates early weightbearing and excellent compression across the osteotomy site. We are proud to report high levels of patient satisfaction and positive outcomes using this system in our hands.

### **Surgical Technique**

With the patient positioned in the supine position, a small stab incision is made at the level of the flare of the fifth metatarsal, dissection is then performed to elevate the periosteum of the metatarsal both dorsally and plantarly. We recommend this stab incision be performed oriented parallel with the course of the sural nerve to limit risk of iatrogenic injury. Upon elevation of the periosteum, a through and through osteotomy utilizing a sagittal saw is made at the level of the neck of the fifth metatarsal. Once released, the capital fragment can be translated both dorsally and medially to account for correction in both transverse and sagittal planes. We find that a freer elevator can be helpful to aid in this translation as well as locate the medially canal of the fifth metatarsal.

A series of broaches are then utilized to prepare the medullary canal for insertion of the intramedullary fixation. The broaches come in a series of three sizes, and it is ideal for the broach to fit snugly so that the implant will utilize the diameter intramedullary canal for optimal construct stability. We recommend that this approximation can be confirmed utilizing both AP and MO fluoroscopic radiographs.



**Figure 1** AP and lateral radiographs demonstrating final postoperative position of the implant.

Be mindful that there is a PROstep™ Bunionette implant which corresponds to the size of the broach. The implant is then inserted down the pre-broached intramedullary canal until the distal end of the inserted implant nearly contacts the proximal fragment. Be mindful that the insertion of an implant which is too large can risk iatrogenic fracture of the fifth metatarsal. The implant should insert fully with only slight resistance.

The first of two 1.6mm K-wires will temporarily fixate the fifth metatarsal head to the fourth metatarsal head. The trajectory of this wire should be through the distal fragment and into the fourth metatarsal. Next, a locking screw can be placed through the implant into the head of the fifth metatarsal to perform permanent fixation. Any remaining lateral shelf or flare can be contoured down with a sagittal saw or surgeons preferred choice of instrumentation. Figure 1 demonstrates final positioning of the implant with correction of the tailor's bunion deformity.

### Postoperative Protocol

In our postoperative protocol, the stabilization of the construct allows us to confidently weight bear patients immediately protected while wearing a pneumatic CAM walker. Our first dressing change occurs at one week postoperatively with initial postoperative radiographs to be taken. We ask our patients to return to our office at 3 weeks postoperatively for suture removal and serial radiographs. At five weeks postoperative pending positive prognostic indicators of osseous consolidation and intact hardware on radiograph we anticipate that our patients are then transitioned to regular shoe wear. Final x-rays occur at 6 weeks post op with no activity limitations.

### Case Report

Patient RW presented to the office for the care and treatment of a painful lesion on the plantar aspect of the right fifth metatarsal head (Figure 2). The patient had undergone conservative care for a painful lesion under the head of the fifth metatarsal. Initial treatments included debridement, orthotics, and padding all of which failed to eradicate the condition, so surgery was proposed, and the patient was scheduled for a tailor's bunionectomy with metatarsal head sagittal and transverse plane correction performed on 12-21-21. Surgery was performed using the Wright/Stryker medical MIS tailor's bunion plate. The surgery was performed under LMAC at a local surgical center.



**Figure 2** Patient RW, painful lesion on the plantar aspect of the right fifth metatarsal head.

Attention was directed to the lateral foot where a 1cm incision was made just proximal to the head of the fifth metatarsal. The incision was deepened with sharp dissection. Minimal soft tissue dissection and resection was performed to prevent extensive motion of the capital fragment. Using the broaches, the appropriate size plate was used and prior to final fixation the capital fragment was displaced dorsally in the sagittal plane approximately 2 mm and fixated with the screw provided in the fixation and implant kit. Once fixated the osteotomy was smoothed and closure initiated.

Patient was dressed in a sterile fashion along with a pneumatic walking cast boot. The patient presented for post op visit one week after surgery expressing less pain, dressing changed performed and additional follow-up appointments made. Sutures were removed at 3 weeks and he was allowed to return to regular shoes after two months. Over the healing time the lesion became less painful and slowly reduced in size to the point of elimination (Figure 3).



**Figure 3** Patient RW, postoperative resolution of lesion on the plantar aspect of the right fifth metatarsal head.

### Conclusion

Surgical considerations in the foot must not be underestimated. Seemingly simple procedures can often become quite complicated by inadequacies in circulation and soft tissue coverage and other

systemic factors. It is important that deformities of the forefoot be approached with the highest level of confidence by the surgeon and safety for the patient. We feel that the Stryker PROstep™ Minimally Invasive Bunionette system allows us to do just that. Symptomatic tailor's bunion deformity can be quite debilitating for patients who are considering surgical interventions. We are proud to demonstrate that this technology may broaden the ideal patient population due to minimal soft tissue disruption and inherent stability of the fixation construct. In our experience we have achieved optimal outcomes in at risk diabetic and vasculopathy patients who have suffered from pain of the lateral forefoot secondary to tailor's bunion deformity. We are pleased to demonstrate our minimally invasive technique which is beginning to gain much traction in the realm of foot and ankle surgery.

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### References

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