



# Outcomes and Long-Term Follow Up of Bunion Correction with the Modified Peabody (Lam) Bunionectomy

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## Statement of Purpose

The Lam modification of the distal first metatarsal osteotomy involves a minimally invasive approach to correction of mild to moderate Hallux Valgus deformities. The modification eliminates the use of power instrumentation, and provides an atraumatic technique for correction. The purpose of this study is to explore and document long-term outcomes of 10 patients 24 months after the procedure, and to measure sustainability of correction, and patient satisfaction<sup>1</sup>.

## Literature Review

There have been several studies describing successful use of the percutaneous bunionectomy. A study performed by Bosch et al described an extra-articular osteotomy of the first metatarsal through a 5mm incision, and percutaneous fixation with a wire. 95 percent of patients in the study had no pain at 10 year follow up<sup>2</sup>. A study by Giannini et al described minor modifications to the Bosch method, and created the SERI method (Simple, Effective, Rapid, and Inexpensive). Patients in Giannini's study had 92% satisfaction rate<sup>3</sup>.

## Procedure

All patients in the study were placed in the supine position on the operating table. A 6-mm incision was made with a 15 blade proximal to the first metatarsal head. Soft tissue structures were reflected dorsally and plantarly using a Freer periosteal elevator. The joint capsule was not opened and the medial condyle was not resected. A Steinman pin and fluoroscopy were used to mark the orientation of the desired osteotomy. The angle of cut was then marked on the dorsal aspect of the first metatarsal. An osteotomy was made with an osteotome and mallet in the desired correctional plane under fluoroscopic guidance. The osteotomy was completed through three passes of the osteotome (central, dorsal, and plantar) and then the lateral metatarsal cortex bone cut was completed. The capital fragment was manually manipulated and translated via a Kelly hemostat and confirmed under fluoroscopy.

Once the desired position was confirmed, a Kirschner wire or Steinmann pin was placed lateral to the capital fragment and down the first metatarsal medullary shaft to buttress the metatarsal head. The pin was percutaneously placed, then bent superiorly and cut. The incision was closed with one horizontal Monocryl suture. Postoperatively, the foot is dressed with a mild compressive dressing and the patient is able to partially bear weight with a surgical shoe.



## Post-Operative Course

All 10 patients were able to partially bear weight with a surgical shoe. The sutures are absorbable, and do not need to be removed. The pin is removed in 4 weeks, and the patient is transitioned to full-weightbearing in a CAM walker. Physical therapy for joint mobility is begun at post-operative week 6.

## Methods

10 patients were randomly chosen and contacted via phone or via office visit from a database of patients who had a Peabody Bunionectomy performed between January 2016 and January 2018 (24 months). The Foot and Ankle Outcome Score (FAOS) was used to evaluate satisfaction scores from the 10 patients. Questions included: (1) Level of Daily Pain (2) Function- Ability to perform activities of daily living (ADL), maximum walking distance, walking surfaces, and gait abnormality (3) Alignment

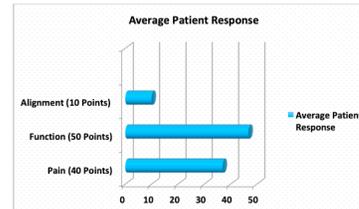
Scores were added up and averaged in each category based on responses. Next, post operative x-rays were compared to measure the amount of correction.

## Results

On average, each patient had 5-6 degree correction of the Hallux Valgus Deformity using the Lam Modification post-operatively, and no loss of correction with removal of temporary fixation.

Of the 10 patients in the study, the average FAOS score for Pain was 37 (Maximum-40), showing that 92.5% of patients reported no pain 24 months post-operation. Average FAOS score for Function was 46.8 (Maximum-50), showing that 93.6% of patients had no limitations in activity, walking distance, or walking on any surface 24 months post-operation. Average FAOS score for Alignment was 10, showing that 100% of patients were satisfied with post-operative alignment

The correction appeared to be maintained in patients 24 months post-op with significant bone callus in the area of the osteotomy. 92.5% of patients reported no pain after 24 months, and were satisfied with the cosmetic appearance of their foot after correction.



## Disclosures

Dr. Lam and Dr. Nelson have no disclosures to report

## Analysis and Discussion

The Lam modification of the distal first metatarsal osteotomy employs the use of minimal skin incision, limited soft tissue dissection, less traumatic bone cuts, combined with temporary percutaneous fixation. The correction is maintained after removal of temporary fixation, and formal physical therapy post-operatively allows for maintenance of first MTPJ range of motion.

1/10 patients expressed dissatisfaction with the post-operative course, stating discomfort while sleeping with the percutaneous Steinmann pin. 2/10 patients complained of neuritic symptoms to the great toe that lasted 6 months post bunionectomy.

The most common complication from the series of 10 patients was a dorsal exostosis that developed after the osteotomy was fully healed. This occurred in 2/10 of the patients in the study. This was easily corrected with resection of the exostosis through the same minimally invasive incision.

0/10 patients complained of stiffness or limited range of motion to the 1<sup>st</sup> MTPJ. 10/10 patients state they were able to participate in all activities of daily living 24 months after the procedure.

Overall all 10 patients in the study were satisfied with the procedure, and would have the procedure performed again.



## References

Lam, K, Patel, R, Merrill, T. (2017). "Minimally Invasive Bunionectomy: The Lam Modification of the Traditional Distal First Metatarsal Osteotomy Bunionectomy." *Podiatry Today*. Accessed on 6 November 2018. Pp. 3-6. <[http://www.podiatrytoday.com/cdn/Uploads/2017/11/17/peabody\\_final.pdf](http://www.podiatrytoday.com/cdn/Uploads/2017/11/17/peabody_final.pdf)>

Bosch P, Wierke S, Legenstein P. (2000). "Hallux valgus correction by the method of Bosch: A New technique with a Seven to Ten-Year Follow-Up." *Foot Ankle Clin*. 2000;5(3):485-495.

Giannini C, Faldesi F, Vianini F, et al. (2008). "The Minimally Invasive Osteotomy "S.E.R.I." (Simple, Effective, Rapid, Inexpensive) for correction of bunione deformity." *Foot Ankle Int*. 29(23):282-286.