

## THE REVERDIN LAIRD OSTEOTOMY

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The Reverdin-Laird procedure was designed as a modification of the Reverdin-Green to provide concomitant correction of PASA as well as structural reduction of the intermetatarsal angle via distal osteotomy. Little has been written on the Reverdin-Laird approach for the correction of hallux abducto valgus deformity, and there has been only one study evaluating the efficacy of this technique. Lorenzo, et. al., found this to be a very effective approach with high satisfaction rates for both patients and surgeons.

The current author does not subscribe to the concept of a deviated PASA, and research has demonstrated that radiographic assessment of PASA does not correlate with the actual alignment of the articular cartilage noted intraoperatively. However, derotation of the articular cartilage can be an effective means of creating "reverse buckling" at the first metatarsophalangeal joint, and secondarily reducing the intermetatarsal angle in patients with a flexible first ray. This was the means in which the Reverdin osteotomy was understood and performed by a number of surgeons, with the peak popularity in the late 1970s and 1980s. One of the foremost proponents of the procedure was Dr. McGlamry, who used this in older patients with a flexible first ray.

The Reverdin, or one of the modifications therein, is still used commonly in patients with recurrent hallux abducto valgus deformity. In this circumstance the metatarsal head is often narrowed, leaving a small segment of residual articular cartilage. Realignment of the articular cartilage via this type of osteotomy is an effective means of enhancing later function.

The question then arises as to whether or not there is a need for this type of procedure in a larger patient population, especially given today's understanding of PASA? Like most surgeons, this author has been frustrated at times when performing the Austin osteotomy in patients with soft bone. In some circumstances the degree of osteopenia is not reflected in the preoperative radiographs. In other instances, one may become suspicious of the soft nature of the bone following the exostectomy, yet in other patients problems may only be noted once the osteotomy has been completed and the capital fragment is shifted laterally. It is at this

stage that one is greeted by the soft medullary canal and tendency for troughing. This often precludes sufficient lateral translation of the capital fragment, leading to less than adequate or desired correction.

It would appear that there is a need for a distal metatarsal procedure that can be performed in those patients with mild to moderate deformities, yet with bone that is not ideally suited to an Austin or Scarf procedure, secondary to concerns over bone density and troughing. In senior citizens the modified first metatarsophalangeal joint arthroplasty procedure is still a very viable alternative, and used by this author in select circumstances. However, it would appear that a joint preservation procedure would be ideal in middle aged patients with good joint integrity.

The author has found the Reverdin-Laird procedure to fill this need. Resection of a wedge of bone to derotate the articular cartilage is not performed, but the osteotomy is translocated laterally. How does this offer any meaningful difference from the Austin procedure? First, the apex is slightly more distal and plantar, such that there is a greater preponderance of metaphyseal bone at this level. In addition, the configuration of the apex, 90 degrees, as opposed to 60 degrees for the Austin, further tends to reduce the likelihood of impaction or troughing. Some may question whether or not adequate lateral translation can be achieved, but the author has noted that the configuration of the osteotomy has not been a limiting factor in the amount of correction that can be obtained with capital osteotomies. Fixation is typically provided with one lock pin, or two lock pins in a crossed orientation.

In addition, the configuration of the osteotomy also provides the surgeon with another alternative in those patients where troughing is noted even with the Reverdin-Laird. In this circumstance, provided the patient possesses a flexible first ray, the capital fragment may be returned to the original position, and a medially based wedge of bone may be removed converting the procedure to a Reverdin-Green modification. Reduction of the IM angle in this setting is afforded by reverse buckling at the metatarsophalangeal joint.

## DISCUSSION

Lorentz et al published the only long term evaluation of the Reverdin-Laird, but in all cases a wedge of bone was removed in addition to lateral transposition of the capital fragment. They noted an overall good to excellent clinical appearance in 91% of patients. However, 10% of patients demonstrated hallux adductus or hallux varus, prompting the authors to minimize the amount of wedge removed in subsequent patients. Several patients also complained of lesser metatarsalgia. Interestingly, there was an average shortening of 4.23 mm in their series of patients, most likely due to the resection of the wedge of bone. This author has not appreciated any unusual shortening with

the procedure, and like the Austin, the actual end length of the metatarsal can be controlled to some degree by the orientation of the axis guide for the osteotomy.

## CONCLUSION

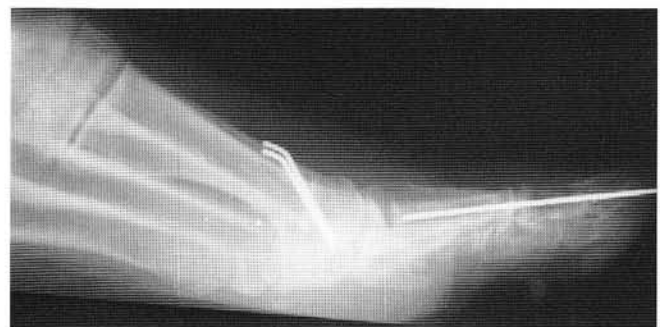
The Reverdin-Laird procedure may be a very useful alternative for the correction of hallux abducto valgus deformity whenever soft bone is anticipated preoperatively, or experienced following the resection of the medial eminence. While troughing can occur with any distal osteotomy, it has been the experience of the author that this problem has been reduced with this approach.



1A. Preoperative appearance of a 70-year-old female with rheumatoid arthritis that is well controlled.



1B. Postoperative appearance of the patient following a Reverdin-Laird procedure.



1C. Lateral view immediately following surgery. Notice how the apex of the osteotomy is lower than that of an Austin. In addition, the apex could also be placed slightly more distal than shown.



2A. The configuration of the Reverdin-Laird procedure does not limit the amount of lateral translation that can be achieved with the osteotomy. Note the preoperative appearance in this patient with significant lateral translation of the metatarsal head.



2B. Postoperative appearance.

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