

HALLUX LIMITUS: FOLLOW-UP STUDY

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Introduction

A variety of surgical procedures have been utilized singly and in combination in the treatment of hallux limitus at Doctors Hospital. These procedures include the cheilectomy, modified Austin, Watermann, Green-Watermann, plantarflexory wedge osteotomy of the first metatarsal, and silastic implantation. A step-wise approach to hallux limitus surgery was presented at the 1987 Doctors Hospital Seminar (1) (Fig. 1).

It is the aim of this year's presentation to give a retrospective follow-up study examining the results of these procedures as well as an evaluation of the systematic step-wise approach. As of this printing the study will be incomplete and thus will be presented at the 1988 Doctors Hospital Seminar. A brief description of the principles, methods, and goals of the study are presented here with an update on the Austin and Green-Watermann techniques.

Objectives

The goal of this retrospective study is to examine the results of the above surgical procedures as they relate to subjective and objective criteria. Subjectively, the patient will be asked the success of the procedure regarding

1. pain relief,
2. range of motion,
3. appearance, and
4. overall satisfaction.

We will examine objectively

1. degrees of first metatarsophalangeal joint range of motion,
2. crepitus,
3. pain with range of motion,
4. sesamoid motion, and
5. radiographic criteria.

Methods

A retrospective study for the past five years will be performed. The study will include approximately twenty to thirty patients.

A subjective evaluation form will be sent to each patient asking that they evaluate the surgery according to the previously mentioned subjective criteria. The patient will then be examined by a resident or staff member for objective evaluation. The objective and subjective information will be presented as it pertains to each procedure and will be correlated to the step-wise approach.

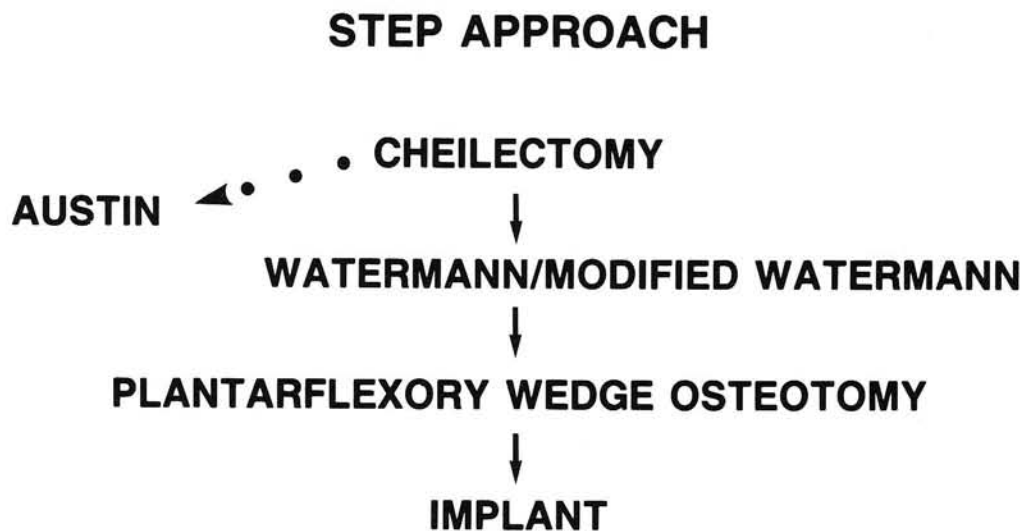


Fig. 1. Step-wise approach to hallux limitus repair based upon sequence of procedures.



Fig. 2. Trapezoidal wedge is created which is wider medially than laterally.

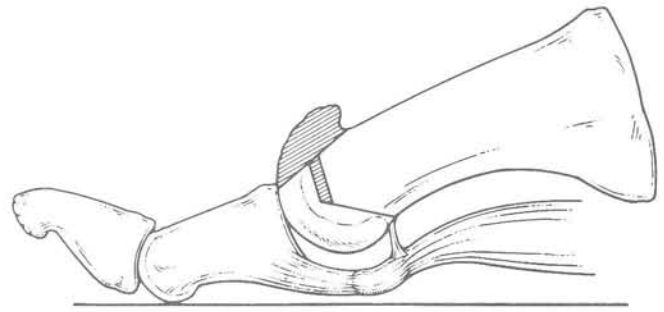


Fig. 3. Following creation of trapezoid an oblique through and through osteotomy is performed.

Update

Utilizing the systematic approach to hallux limitus surgery, a variety of surgical procedures may be performed. Since the 1987 Doctors Hospital Seminar further significant experience has been gained with both the modified Austin (plantarflexory and shortening) and the Green-Watermann.

This modified Austin, as it relates to hallux limitus repair, has been explained in detail previously at the 1987 Doctors Hospital Surgical Seminar. Early reports indicate satisfactory results with increased range of motion and decreased pain noted.

The Green-Watermann osteotomy was introduced as an alternative procedure for hallux limitus repair at the 1987 Doctors Hospital Seminar. However, a detailed description of this procedure was not provided. Recently, additional experience has been gained with this technique. This method has now become a procedure of choice as preliminary reports indicate superior results. The Green-Watermann provides shortening and plantarflexion of the first metatarsal producing decreased tension in the flexor apparatus and "slack in the line!"

The technique is performed by creating an incomplete osteotomy approximately 0.5 cm proximal to the articular cartilage in a dorsal to plantar direction. A second incomplete osteotomy is then performed just proximal to the first in a dorsal to plantar direction. This cut is performed so that a trapezoidal section remains wider medially than laterally (Fig. 2). An oblique, transverse, through and through osteotomy is performed medial to lateral from the plantar edge of the trapezoid to the plantar border of the first metatarsal metaphysis (Fig. 3). The angulation of the cut is critical and should be performed at approximately 45 degrees to the trapezoid. An osteotomy performed perpendicular to the trapezoid will result in only shortening and not provide plantarflexory movement of the capital fragment.

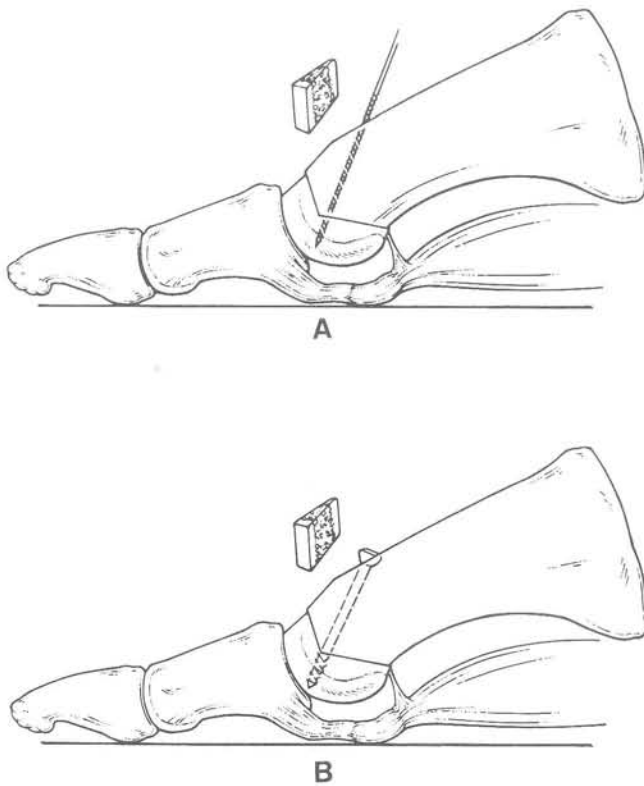


Fig. 4. A. Fixation utilizing .062 threaded K-wire. **B.** Fixation utilizing 4.0 mm AO screw.

Fixation may be achieved with a variety of techniques. The methods utilized most often include a .062 threaded Kirschner wire (K-wire) or an AO 4.0 mm screw fixation (Fig. 4). The AO 4.0 mm cancellous screw is placed from medial-dorsal-proximal to lateral-plantar-distal and serves to provide compression as well as stabilization. The .062 threaded K-wire is placed in an oblique fashion similar to a standard Austin fixation technique; however, the wire is then cut flush with the cortical surface.

Postoperatively it is imperative to begin early active and passive range of motion exercises as documented previously. First metatarsophalangeal joint dorsiflexory and plantarflexory movement should begin as early as 24 hours postoperatively. The patient should be instructed to perform the passive exercise as often as possible at home and if feasible at work. When performed on a consistent basis, range of motion exercise will preserve the correction obtained at the time of surgery and will prevent post-operative fibrosis resulting in limitation of motion.

Summary

A brief review of a systematic approach to hallux limitus repair is presented. A follow-up study is planned to evaluate

current results and modify present techniques where indicated. The modified Austin and Green-Watermann procedures have proven to be superior procedures at this time and further reports will follow.

References

1. Bernbach MR, McGlamry ED: Hallux limitus. *Reconstructive Surgery of the Foot and Leg Update '87*. Tucker, GA, Doctors Hospital Podiatric Education and Research Institute, 1987, pp 81-85.

Additional References

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