

Revision Hallux Valgus

Causes and Correction Options

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KEYWORDS

- Hallux varus • Revision hallux valgus • Failed hallux valgus correction
- Avascular necrosis • Nonunion • Malunion • Bunion revision • Bunion reoccurrence

KEY POINTS

- Revision bunion surgery can be difficult and must be worked up thoroughly.
- Avascular necrosis can result in severe bone damage and limit potential options for revision surgery.
- The most common causes of revision surgery are reoccurrence, malunion, nonunion, and hallux varus.

CAUSES OF HALLUX VALGUS FAILURE

Hallux valgus failure has a multitude of causes. Too many potential causes exist to be discussed completely in this article, but the most common causes are addressed.

RECURRENCE

Recurrence of hallux valgus after surgical correction is undoubtedly a frustrating scenario for both patient and surgeon. Austin and colleagues¹ found a 10% recurrence rate on retrospective review of 300 Chevron osteotomies performed. A common theme among all recurrence was a preoperative hallux abductus angle greater than 35°, and an intermetatarsal angle of greater than 15°. Lagaay and colleagues² described a 5.56% reoperation rate in a retrospective analysis of Chevron osteotomies, with recurrence being the most common reason for return to the operating room. Many causes of recurrent hallux valgus deformity have been described, most of which involve inadequate patient selection and inadequate procedure selection, which can be catastrophic to the overall outcome for the patient. For example, performing a head osteotomy in a patient with a severe intermetatarsal angle may not

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afford proper correction. Even if soft tissue rebalancing with aggressive capsular reefing gives the impression of adequate correction, the risk of deformity return is high. Additionally, failure to recognize the need for supplementary procedures, such as an Akin, may lead to continued lateral deviation of the hallux with abnormal pull of the tendons about the first metatarsophalangeal joint. Inappropriate intraoperative technique is also a common cause of reoccurring hallux valgus. More specifically, insufficient lateral release with poor sesamoid realignment, improper repair of the medial capsule, inadequate repair of the intermetatarsal angle, or a deficiency in hardware fixation all may lead to deformity recurrence.³ In addition, failure to address a hypermobile first ray can lead to an unfavorable outcome for patients with persistence of symptoms. Other causes that are less under surgeon control have also been described. For example, Okuda and colleagues⁴ found that a more roundly shaped metatarsal head was more predisposed to postoperative hallux valgus recurrence when compared with a more angular metatarsal head. Through identifying this in the preoperative planning process, the surgeon can modify the procedure accordingly to prevent return of the bunion.

Procedures for revisional surgery can be divided into joint-sparing and joint-destructive procedures. If the deformity is still mild to moderate in nature and no severe arthritic changes are present, a joint-sparing procedure may still be an option.⁵ The surgeon may consider another osteotomy either distally or proximally, a double osteotomy, or a Lapidus bunionectomy. In any case, capsulotendon rebalancing will most likely also be needed around the first metatarsophalangeal joint. Good results have been found with the use of a scarf osteotomy for revisional bunion surgery. One study demonstrated a mean American Orthopaedic Foot & Ankle Society (AOFAS) score improvement from 59 to 90, with a mean reduction in intermetatarsal angle from 13° to 4°. Reoperation with a crescentic osteotomy has also been illustrated in the literature with good long-term outcomes.⁵ Lim and Huntley⁷ describe a 39-year-old woman previously treated with a Chevron osteotomy who presented with recurrence of her hallux valgus deformity. A proximal opening wedge was performed in combination with a short distal scarf osteotomy in which a medial closing wedge was used. Her 3-month postoperative visit showed both adequate clinical and radiographic outcomes.

The Lapidus arthrodesis is a reliable and reproducible procedure that is often used in secondary surgery for hallux valgus correction, especially if a significant amount of distal work has already been performed. The Lapidus procedure is a valid alternative if a severe intermetatarsal angle exists and first metatarsophalangeal joint salvage is desired. The procedure will also address any underlying hypermobility that may have been overlooked initially, and will provide overall stability to the medial column. Ellington and colleagues⁸ performed a retrospective review of 32 feet treated with a Lapidus arthrodesis for recurrent hallux valgus with 1-year follow-up. The mean hallux valgus angle decreased from 36.2° preoperatively to 15.3° postoperatively. The intermetatarsal angle also improved significantly from 13.6° to 7.5°, and 87% of patients reported good to excellent results. Coetzee and colleagues⁹ also recommend the Lapidus as the preferred procedure for salvage of failed hallux valgus surgery. They conducted a prospective cohort study of 26 feet with previously failed procedures. At 2 years, the mean AOFAS score had increased from 47.6 to 87.9 points. The mean intermetatarsal angle decreased from 18.0° to 8.6°.

Both the Keller arthroplasty and first metatarsophalangeal joint fusion may be preferred procedures for secondary hallux valgus operations. Kitaoka and colleagues¹⁰ compared these procedures after failed hallux valgus surgery. Keller arthroplasty was performed on 11 feet, and first metatarsophalangeal joint fusion

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