

Severe Hallux Varus; an Uncommon Deformity —A Case Report and Review of Literature.

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Received: June 2016

Accepted: July 2016

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ABSTRACT

Hallux varus is relatively uncommon and few cases have been reported in the orthopedic literature. In this article, we report the case of a 63 years old, female patient with severe hallux varus deformity, associated with deformity of other toes. Here we describe the case report of hallux varus managed by surgical intervention at our tertiary care hospital in Mumbai, India.

Keywords: hallux varus; first metatarsophalangeal joint.

INTRODUCTION

Hallux varus is a deformity of the great toe that is characterized by adduction of the hallux and medial subluxation of the first MTP joint. The hallux varus is a triplanar deformity, involving supination of the first metatarsophalangeal joint, hyperextension of the first metatarsophalangeal joint, and hyperflexion of the hallux interphalangeal joint [Figure 1]. The hallux is deviated or subluxed medially with a non-purchasing digit in varus rotation with a possible negative angle between the first and second metatarsals.^[1,2]

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Hallux varus if present in transverse plain is referred to as hallux adductus. In literature incidence are very less as compared to hallux varus. Here we present the case of severe degenerative hallux varus associated with 2nd, 3rd, 4th toe deformity, treated surgically with Correction and arthrodesis of the 1st metatarsophalangeal joint with excisional arthroplasty of 2nd, 3rd and 4th interphalangeal joint using k-wire.

CASE REPORT

A 63-year-old female, presented in the Outpatient department with pain in the left foot, difficulty in walking and wearing shoes.

On physical examination, there was a severe hallux varus deformity of left foot with 80 degree medial deviation of the great toe. There was adduction at metatarsophalangeal joint and flexion at proximal interphalangeal joint of 2nd, 3rd and 4th toes [Figure 1]. There was compensatory supination of the hind foot. The medial ingrown toenail was present. There was long hallux with increased 1st web space. Interphalangeal joint bursitis was present.



Figure 1: Deformities on toes.

She was a known case of Rheumatoid Arthritis and she was under treatment.

On x-ray there was a dislocation of the 1st metatarsophalangeal joint with subluxation of 2nd, 3rd, 4th toes & flexion at interphalangeal joint [Figure 2]. There was evidence of demineralization of bone with reduction of joint space notes. The hallux abductus angle was negative and intermetatarsal angle was reduced.



Figure 2: X-Ray of foot.

The patient was more concerned about cosmetic deformity and for which surgery was planned. Correction of deformity and arthrodesis of the 1st metatarsophalangeal joint with excisional arthroplasty of 2nd, 3rd and the 4th interphalangeal joint was done. K-wires were used to stabilize all the four toes and for maintenance of the surgical correction [Figure 3].



Figure 3: K-Wire insertion for stabilization.

Postoperatively result was good without any complication. At 3 week k-wire was removed. At 6 months, the patient was satisfied cosmetically and had painless joints [Figure 4].



Figure 4: Post-operative X Ray.

DISCUSSION

Hallux varus is relatively uncommon and few cases have been reported in comparison to hallux valgus in the orthopedic literature. Hallux varus is a deformity of the great toe that manifests as a medial displacement of the first MTP joint. The hallux varus is a triplanar deformity, involving supination of the first metatarsophalangeal joint, hyperextension of the first metatarsophalangeal joint, and hyperflexion of the hallux interphalangeal joint. The hallux is deviated or subluxed medially with a non-purchasing digit in varus rotation with a possible negative angle between the first and second metatarsals.^[1,2] Different non-surgical and surgical techniques have been described to treat Hallux varus.

- Non surgical techniques include
 - Non steroidal anti-inflammatory drugs
 - Toe splints
 - Orthotics & physiotherapy
 - Steroids
- Various surgical intervention are described in literature^[3,4] which have been used both alone and in conjunction with others, is as follows:
 - Sesamoidectomy
 - Relocation of the sesamoid(s).
 - soft tissue procedure
 - Skin resection of the first web-space
 - Syndactyly of the great and second toes
 - Total joint release
 - Abductor hallucis transfer^[5]
 - Ligapro suture/technique (an elastic polyethylene terephthalate device that is not available in the United States)
 - Split extensor hallucis brevis (EHB) transfer and reverse Akin procedure
 - EHB transfer
 - Lengthening of the medial capsular structures
 - Lengthening of the extensor hallucis longus (EHL)
 - Osteotomy/Arthrodesis/ arthroplasty

- Keller resection arthroplasty
- Implant arthroplasty
- Metatarsophalangeal (MTP) arthrodesis
- EHL transfer with interphalangeal (IP) arthrodesis
- Reverse Austin bunionectomy

Hawkins et al described transfer of the abductor hallucis tendon to the lateral aspect of the proximal phalanx with the release of the medial capsule and mobilization of the medial sesamoid.^[6] Patients demonstrated maintenance of alignment between 5 and 54 months.

Johnson and Spiegl et al described transfer of the EHL tendon to the proximal phalanx as a dynamic stabilizer, coupled with IP joint arthrodesis for flexible hallux varus without MTP arthrodesis.^[7] There was improvement of flexion of the MTP joint from -23° to $+6^\circ$, and total ROM increased from 38° to 67° . The varus was corrected an average of 18.

Skalley and Myerson et al reported their experience with EHL transfer and IP arthrodesis in a retrospective study; the split EHL transfer resulted in symptomatic joint stiffness.^[8]

Myerson and Komenda et al did tenodesis of the EHL tendon in conjunction with a medial soft-tissue release for correction of a flexible hallux varus deformity.^[9,10] Restoration of alignment to an average of 0° , minimal loss of sagittal plane motion, and no stiffness or weakness was reported.

Tourne et al reported a case series of 14 French patients with iatrogenic hallux varus.^[11] They performed MTP arthrodesis in 9 patients who had stiffness and arthrodesis; in 5, the lateral ligament complex was reconstructed by using a Ligapro suture. Arthrolysis was performed in all patients. Younger patients had a mobile MTP joint, with no radiographic evidence of degenerative changes. Results included an average postoperative correction of 20° of plantar flexion and $60-90^\circ$ of dorsiflexion of the MTP joint.

Arthrodesis of MTP remains a logical salvage technique for patients who have hallux varus deformity with arthrodesis and bone loss. Moderate-to-severe degenerative changes should probably be addressed with arthrodesis or osteotomy.

Correction of the first intermetatarsal (IM) angle may require metatarsal osteotomy in addition to a soft-tissue balancing procedure for the MTP joint.^[12-14]

Potential complications include the following:^[15]

- Overcorrection of hallux valgus
- Avascular necrosis of the metatarsal head
- Stiffness
- degenerative changes
- Transfer metatarsalgia
- Wound dehiscence

CONCLUSION

Many surgical procedure have been mentioned in literature and been used as per priority of surgeon and patients. Surgery is aimed at improving the overall position of the hallux, not necessarily its motion.

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How to cite this article: Tripathi SK, Nanda SN, Agrawal NK, Kumar S, Khan A, Warriar S. Severe Hallux Varus; an Uncommon Deformity —A Case Report and Review of Literature. Ann. Int. Med. Den. Res. 2016; 2(5):OR07-OR09.

Source of Support: Nil, **Conflict of Interest:** None declared