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Early arthritis of the First MTPJ without AVN of the metatarsal head: A complication following lengthening SCARF osteotomy for transfer metatarsalgia

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Scarf osteotomy is a versatile osteotomy to correct varying degrees of mild to moderate hallux valgus deformity. It can also be used to lengthen the first ray as a revision procedure to treat transfer metatarsalgia in patients with a short first metatarsal. We describe a case of lengthening the first metatarsal complicated by early osteoarthritis.

Key words: metatarsalgia, scarf osteotomy, metatarsal lengthening

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Numerous procedures have been reported for hallux valgus correction of the great toe. [1-4] The Scarf osteotomy is a versatile osteotomy to correct varying degrees of mild to moderate hallux valgus deformity .[5-8] It can also be used to lengthen the first ray as a revision procedure to treat transfer metatarsalgia in patients with a short first metatarsal. We describe a case of lengthening the first metatarsal complicated by early osteoarthritis.

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Case Report

A 49-year-old female patient presented with pain and tenderness over the heads of the 2nd and 3rd metatarsals of the right foot in June 2005. She had undergone a hallux valgus correction one year previously at a different institution using a distal osteotomy which resulted in significant shortening of the first metatarsal. (Fig.1) Her symptoms did not respond to conservative treatment. Examination revealed a short great toe with a slight recurrence of the hallux valgus deformity.

Figure 1. Significant shortening of the first metatarsal after osteotomy.

There were callosities beneath the second and third metatarsal heads and splaying of the second and third toes. After lengthy discussions with the patient we elected to perform a lengthening Scarf osteotomy of the first metatarsal together with a medial closing wedge osteotomy of the proximal phalanx. Post operatively the alignment of the great toe and the transfer metatarsalgia were much improved. (Fig.2)

Figure 2 Alignment radiograph after Scarf osteotomy for metatarsalgia.

She returned to the clinic after two years complaining of increasing pain and stiffness around the first metatarsophalangeal joint (MTPJ). Radiographs of the foot showed evidence of severe osteoarthritis. (Fig.3)

Figure 3 Radiographs of the foot showed evidence of severe osteoarthritis.

Her symptoms failed to respond to conservative treatment and she underwent removal of the previous metalwork together with a fusion of the first MTPJ. (Fig.4) At her last follow up she was able to walk for more than five miles without any recurrence of her transfer metatarsalgia.

Discussion

One of the complications of some first metatarsal osteotomy is metatarsalgia secondary to shortening of the first metatarsal. [9-12] Conservative treatment with insoles is not acceptable to all patients. A range of techniques have been described to treat metatarsalgia secondary to a short first metatarsal. Shortening of the lesser metatarsals in one approach but is very extensive and does not restore the length of the first metatarsal. Complications such as non-union, floating toe deformity, persistent metatarsalgia and significant forefoot shortening have been described. [13-15] Distraction osteogenesis and lengthening of the first metatarsal has also been described to restore the relationship between the first and the second metatarsals.

Figure 4 Radiographs of the foot after fusion.

The technique is time consuming and complicated. [16] Single stage metatarsal lengthening techniques have been well described in the literature.[17,18] Lengthening Scarf osteotomy is one of the procedures that is used for the treatment of iatrogenic metatarsalgia.

Singh et al., have described a modified step cut osteotomy for the shortened first metatarsal with metatarsalgia.[14] They had shown that adequate relief of metatarsalgia was achieved in patients who had 10mm lengthening. There is no report in the literature of patients developing arthritis of the first MTPJ following lengthening of the short first metatarsal. Our patient developed arthritis of the first MTPJ after a lengthening Scarf procedure two years later. Lengthening of the short first metatarsal could put significant stretch of the soft tissues along with the blood vessels which can affect the blood supply to the first metatarsal head resulting in avascular necrosis (AVN) and subsequent arthritis. In our patient there was no evidence of AVN of the first metatarsal head. Another explanation for the early development of arthritis could be the increased pressure of the first MTPJ following the lengthening. Despite requiring a fusion there was no recurrence of the transfer metatarsalgia.

Conclusion

Lengthening scarf osteotomy may be associated with premature osteoarthritis in the first MTPJ. Both surgeons and patients should be aware of this potential complication.

References

1. Earl D. McBride, MD, A conservative operation for bunions. JBJS October 1928; Vol 10 pp.735-739.
2. Corless JR. A modification of the Mitchell procedure. JBJS 1975 58B:138.
3. Mitchell CL, Fleming JL, Allen R, Glenney C, Sanford GA. Osteotomy-bunionectomy for hallux valgus. JBJS 1958 40A: 41-60. [PubMed]
4. Peabody CW. The Surgical cure of hallux valgus. JBJS 1931 13: 273-282.
5. Kramer J, Barry LD, Helfman DN, Mehnert JA, Pokrifcak VM. The modified scarf bunionectomy. J Foot Surg 1992 31: 360-367. [PubMed]
6 Meyer M. Eine neue modification der hallux-valgus – operation. Zen Fur Chir 1926 53: 3265-3268.
7 Weil LS, Borelli AN. Modified Scarf Osteotomy: our experience in more than 1000 cases. J Foot Surg 1991 30: 609-622.
8. Barouk LS. Scarf osteotomy of the first metatarsal in the treatment of hallux valgus. Foot Disease 1991 1: 35-48.
9. Helal B, Greiss M. Telescoping osteotomy for pressure metatarsalgia. JBJS 1984 66B: 213-237. [PubMed]
10. Klareskov B, Dalsgaard S, Gebuhr P. Wilson shaft osteotomy for hallux valgus. Acta Orthop Scand 1988 59: 307-309. [PubMed]
11. Schemitsch E, Horne G. Wilson's osteotomy for the treatment of hallux valgus. Clin Orthop Relat Res 1989: 221-225. [PubMed]
12. Singh D, Dudkiewicz I. Lengthening osteotomy of the iatrogenic short first metatarsal. JBJS 2004 87B (Supp III) 382 (Israel Orthopaedic Association). [Website]
13. Helal B. Metatarsal osteotomy for metatarsalgia. JBJS 1975. 57B: 187-192. [PubMed]
14. Singh D, Dudkiewicz I. Lengthening of the shortened first metatarsal after Wilson's osteotomy for hallux valgus JBJS 2009 91B: 1583-1586. [PubMed]
15. Migues A, Slullite G, Bilboa F, Carrasco M, Solari G. Floating-toe deformity as a complication of the Weil Osteotomy. Foot Ankle Int 2004 25: 609-613. [PubMed]
16. Mather R III, Hurst J, Easley M, Nunley J. First Metatarsal Lengthening. Techniques in Foot & Ankle Surgery 2008 7: 25-30.
17. Skirving AP, Newman JH. Elongation of the first metatarsal. J Paediatric Orthop1983 3: 508-510. [PubMed]
18. Saxby T, Nunley JA. Metatarsal lengthening by distraction osteogenesis: a report of two cases. Foot Ankle 1992 13: 536-539. [PubMed]