



ORIGINAL RESEARCH PAPER

Orthopedics

EVALUATION OF OUTCOME OF SUBTALAR ARTHRITIS TREATED WITH SUBTALAR ARTHRODESIS

KEY WORDS: Subtalar joint, Arthrodesis, Operative techniques, Hindfoot deformity, Arthritis, Fixation, Bone grafts .

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ABSTRACT

Involvement of the subtalar joint in fracture calcaneus intraarticular malunion may give rise to chronic pain and functional impairment. In this study evaluate the effectiveness of a technique using double lag screw from the calcaneus to the talus and the functional result of subtalar joint fusion. **Materials and Methods:** In between May '18 and feb '20, we performed 20 isolated subtalar arthrodesis by double lag screw technique from calcaneus to talus. we included 13 males and 7 females in study. **Results:** 18 out of 20 joints were fused except one who developed infection and one lost to follow up, resulting in an overall fusion rate of above 90%. The average time for fusion was 5 months (ranging from 3 to 6 months). **Conclusion:** Using the double lag screws of 6.5 mm across the posterior facet of the subtalar joint resulted in fusion of joints in 90% of patients. The relief from pain was obtained in 100% of cases. This is a simple and reliable technique for achieving fusion of the subtalar joint.

INTRODUCTION

Osteoarthritis of the subtalar joint caused due to comminuted or displaced intra-articular fracture of calcaneum which were conservatively managed or reduced inadequately.[1-6] The subtalar joint adjusts the forces of the rest of the skeleton and influences the performance of the more distal foot articulations as well and weightbearing joint .[7] Intra-articular fractures of the calcaneum, which account for >50% of cases, are caused due to complex injuries with extensive damage to the bone and soft tissue.[8,9] These cases whether treated surgically or conservatively, ultimately present with pain, loss of joint mobility and functional disability.[10]The patient most commonly present with pain in the hindfoot due to arthritis. Other concerns are loss of height of calcaneum, soft tissue or tendon impingement, and flattening of longitudinal arches.[11,12] On performing subtalar arthrodesis, the patient is relieved of pain and has been reported to be effective in correcting the functional disability of the hindfoot due to various causes.[12-14] The aim of this study was to evaluate the functional outcome of subtalar arthrodesis using cannulated screws fixation to treat post-traumatic arthritis.

MATERIALS AND METHODS

In between May '18 and feb '20, we performed 20 isolated subtalar arthrodesis by double lag screw technique from posteroinferior calcaneum to talus. The average patient age was 42 (range 28–50) years. There were 13 males and 7 females. The initial trauma was a fall from a height in 17 patients and a bike accident in 2. Inclusion criteria were post traumatic unilateral subtalar arthritis in the study, exclusion criteria were bilateral involvement, degenerative arthritis, and associated comorbidities. The indication for operation was severe pain and disability in an incongruent subtalar joint [Figure 1]. The average duration of the presentation of the patient was 14 months (range 09– 22 months) after the initial trauma. All patients had calcaneus height and talar angle within normal limits. All patients presented with the complaints of severe hindfoot pain, which was not relieved by conservative measure such as analgesics, orthosis and physiotherapy. All patients were clinically, radiographically, and functionally evaluated.

Operative procedure

After taking informed and written consent regarding the loss of eversion and inversion movements, the patient is taken in supine position on operating table. Tourniquet was applied in the proximal thigh. Painting and draping were done. The

operation was performed under spinal or general anesthesia. A lateral curvilinear incision was made to approach the talocalcaneal joint. After dissecting the talocalcaneal joint capsule, joint surface is prepared by removing all cartilage. The bone surface is roughened to stimulate bleeding. Bone graft was inserted which was harvested from the autologous iliac crest. Two 6.5 mm partially threaded cannulated screws were inserted from the calcaneum to the talus over the pre-inserted guide-wire under c-arm[Figure 2,3]. The bleeding allows the two bones to heal together after the joint is fixed with screws. At the end of the procedure, the tourniquet was released, and thorough wash was done with saline, followed by subcutaneous closure with absorbable suture and skin closure with nonabsorbable suture and below knee slab was applied[Figure 4].



[Figure 1]. PRE OPERATIVE X RAYS



[Figure 2]. INTRA OPERATIVE X RAYS



[Figure 3]. INTRA OPERATIVE X RAYS



[Figure 4]. IMMEDIATE POSTOPERATIVE X RAYS



[Figure 5]. FOLLOW UP WITH FUSION

Postoperative strategy

Isometric exercises were started on the 1st postoperative day. Check dressing was done on postoperative day 2 or day 3. After 10-12 days stitches were removed and below knee cast were applied. After 4 weeks partial weight bearing was allowed with below knee walking cast. Clinical and radiographic evaluation was done regularly at 4 weeks interval until solid union of arthrodesis was observed and then full weight-bearing was allowed [Figure 5]

RESULT

Eighteen out of 20 joints were fused except one who developed infection, resulting in an overall fusion rate of 90% and one lost to follow up. Infection was treated with IV antibiotics and the regular dressing was done. The average time for fusion was 5 months (ranging from 3 to 6 months). There was no correlation between the type of accident, the weight of the patient and the recovery period. In 14 (70%) patients, there was some residual pain; 5 (25%) had no complaints.

During follow-up, complications such as nonunion and wound dehiscence were not noticed in any of the patients. Follow-up

was carried out for 20–24 weeks. Surgical scar was healed in all cases.

CONCLUSIONS

Isolated subtalar arthrodesis is an effective surgical intervention with significant clinical improvements in some patients with post-traumatic arthritis of the hindfoot. Screw fixation with two cannulated screws can give compression and added stability for fusion of the arthrodesis site. Fusion of joint in above 91% of patients, and the relief from pain was obtained in 100% of cases which favors the study.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

REFERENCES

1. Reich RS. End-result in fracture of the calcaneus. *J Am Med Assoc* 1923;99:1909-13.
2. Wilson PD. Treatment of fracture of the os calcis by arthrodesis of the subastragalar joint. A of on 26 cases. *J Am Med Assoc* 1927;89:1676-83.
3. Gallie WE. Subtalar arthrodesis in fracture of the os calcis. *J Bone Joint Surg Am* 1943;25:731-6.
4. Dennyson WG, Fulford GE. Subtalar arthrodesis by cancellous grafts and metallic internal fixation. *J Bone Joint Surg Br* 1976;58-B:507-10.
5. Mann RA, Beaman DN, Horton GA. Isolated subtalar arthrodesis. *Foot Ankle Int* 1998;19:511-9.
6. Russotti GM, Cass JR, Johnson KA. Isolated talocalcaneal arthrodesis. A technique using moldable bone graft. *J Bone Joint Surg Am* 1988;70:1472-8.
7. Meyer JM, Lagier R. Post-traumatic sinus tarsi syndrome. An anatomical and radiological study. *Acta Orthop Scand* 1977;48:121-8.
8. Johansson JE, Harrison J, Greenwood FA. Subtalar arthrodesis for adult traumatic arthritis. *Foot Ankle* 1982;2:294-8.
9. Carr JB, Hansen ST, Benirschke SK. Subtalar distraction bone block fusion for late complications of os calcis fractures. *Foot Ankle* 1988;9:81-6.
10. Herrera-Pérez M, Andarcia-Bañuelos C, Barg A, Wiewiorski M, Valderrabano V, Kapron AL, et al. Comparison of cannulated screws versus compression staples for subtalar arthrodesis fixation. *Foot Ankle Int* 2015;36:203-10.
11. Easley ME, Trnka HJ, Schon LC, Myerson MS. Isolated subtalar arthrodesis. *J Bone Joint Surg Am* 2000;82:613-24.
12. Haskell A, Pfeiff C, Mann R. Subtalar joint arthrodesis using a single lag screw. *Foot Ankle Int* 2004;25:774-7.
13. Catanzariti AR, Mendicino RW, Saltrick KR, Orsini RC, Dombek MF, Lamm BM. Subtalar joint arthrodesis. *J Am Podiatr Med Assoc* 2005;95:34-41.
14. Johnson JT, Schuberth JM, Thornton SD, Christensen JC. Joint curettage arthrodesis technique in the foot: A histological analysis. *J Foot Ankle Surg* 2009;48:558-64.