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Functional Outcome of Post Traumatic Subtalar Arthritis Managed by Subtalar Arthrodesis using 6.5 Cancellous Cannulated Screws with Bone Graft

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Abstract: ***Background: Involvement of the subtalar joint in fracture calcaneus intraarticular malunion may give rise to chronic pain and functional impairment. In this study evaluate the functional outcome of post traumatic subtalar arthritis managed by subtalar arthrodesis using cancellouscannulated screws fixation with bone graft. Materials and Methods: In between august 2020 and July 2022, we performed 20 isolated subtalar arthrodesis by double lag screw technique from calcaneus to talus. we included 10 males and 5 females in study. Results: 12 out of 15 joints were fused except one who developed infection and two lost to follow up, resulting in an overall fusion rate of 80%. The average time for fusion was 6 months (ranging from 4 to 8 months). Conclusion: Using the double cannulated cancellous screws of 6.5 mm across the posterior facet of the subtalar joint resulted in fusion of joints in 80% 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.***

Keywords: Subtalar joint, Arthrodesis, Operative techniques, Hindfoot deformity, Arthritis, Bone grafts

1. Introduction

Osteoarthritis of the subtalar joint caused due to displaced or communitedintra - articular fracture of calcaneum which were conservatively managed or reduced inadequately.[1 - 5] 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 weight bearing joint.6 These cases whether treated surgically or conservatively. Ultimately present with pain, loss of joint mobility and functional disability.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]

The patient most commonly present with pain in the hindfoot due to arthritis. Other concerns are soft tissue or tendon impingement, flattening of longitudinal archesand loss of height of calcaneum.[10, 11] On performing subtalar arthrodesis, the patient is relieved of pain and has been reported to be effective in correcting the functional disability of the hind foot due to various causes.[12, 13] The aim of this study was to evaluate the functional outcome of post traumatic subtalar arthritis managed by subtalar arthrodesis using 6.5 cancellous cannulated screws fixation with bone graft.

2. Materials and Methods

In between august 2020 and july2022, we done 15 isolated subtalar arthrodesis by double lag screw technique from posteroinferior calcaneum to talus. The average patient age was 38 (range 28–50) years. There were 10 males and 5 females. The initial trauma was a fall from a height in 13 patients and 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 subtalar joint who was previously subjected to fracture at that region. 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.

Procedure was done 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. 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 cancellous cannulated screws

were inserted from the calcaneum to the talus over the pre - inserted guide - wire under c - arm. 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 non absorbable suture and below knee slab was applied.

Postoperative strategy - Check dressing was done on postoperative day 2 or day 3 and Isometric exercises were started. 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.

3. Result

In 12 out of 15patientsjoints were fused except 1 who developed infection, resulting in an overall fusion rate of 80% and two lost to follow up. Infection was treated with IV antibiotics and the regular dressing was done. The average time for fusion was 6 months (ranging from 4 to 8 months). There was no correlation between the type of accident, the weight of the patient and the recovery period. In 8 (53.33%) patients, there was some residual pain; 5 (33.33%) 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 24 - 28 weeks. Surgical scar was healed in all cases.

4. 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 80% of patients, and the relief from pain was obtained in 100% of cases which favors the study.

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