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ORIGINAL RESEARCH

Assessment of cases of ankle arthrodesis in posttraumatic arthritis performed using Charnley's compression device

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ABSTRACT
Background: The ankle arthroplasty has been used to treat ankle arthritis patients. The present study was conducted to assess cases of ankle arthrodesis in posttraumatic arthritis performed using Charnley's compression device.
Materials & Methods:92 cases of ankle arthritis of both genders were included. Compression was achieved using Charnley's compression device. All the patients were assessed clinically and radiologically. American Orthopaedic Foot and Ankle Society (AOFAS) Ankle-Hindfoot scale was used.
Results: Out of 92, males were 50 and females were 42. The mean ankle fusion was observed in 20.4 weeks. Indication for ankle arthrodesis was avascular necrosis (AVN) talus in 24, malunited bimalleolar fracture in 30, distal tibial plafond fractures in 10 and medial malleoli non-union in 8 cases. AOFAS results was excellent in 85, good in 4, fair in 3 cases. The difference was significant ($P< 0.05$).
Conclusion: Ankle arthrodesis is considered as a standard procedure in ankle arthritis.
Key words: Ankle arthrodesis, ankle arthroplasty, Charnley's compression device

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Introduction

Ankle arthrodesis, used as surgical treatment for tuberculosis of the ankle joint, is still used for the treatment of ankle joint destruction. Following severe trauma, the ankle mortise is disrupted, and also the tibiotalar articular cartilage with resulting inflammation, synovitis, osteophyte formation, progressive loss of ankle-joint motion, weight-bearing pain, and functional disability. Ankle reconstruction is a viable option if a precise restoration of the ankle–joint anatomic relationship can be done

The ankle arthroplasty has been used to treat ankle arthritis patients, however the traditional operative treatment for ankle osteoarthritis has been tibiotalar arthrodesis. Those patients who do not respond to nonoperative treatment modalities are candidates for ankle arthrodesis, provided pathologic changes in the subtalar region can be ruled out. Ankle arthrodesis has been accepted as a salvage procedure. Since 1879, when Albert first described arthrodesis of the ankle, more than 30 different techniques have been described.

Open ankle fusions are generally performed through a two-incision (medial and lateral) large exposure; these techniques are based on a careful preparation of joint surfaces with flat cut osteotomies of distal tibia and proximal talus (in order to remove residual cartilage and subchondral bone and obtain broad flat cancellous bone surfaces). Moreover, a wide variety of open minimally invasive procedures were also been proposed for cases of arthritic ankles with minimal deformity, including dowel arthrodesis, arthroscopy–assisted arthrodesis, arthrodesis with mini-arthrotomy approach.The open technique with compression and internal fixation is still widely used for ankle

arthrodesis with major deformity. Ankle arthrodesis is an alternative for cases with intact subtalar joint. The present study was conducted to assess cases of ankle arthrodesis in posttraumatic arthritis performed using Charnley's compression device.

Materials & Methods

The present study comprised of 92cases of ankle arthritis of both genders. The consent was obtained from all enrolled patients.

Data such as name, age, gender etc. was recorded. Compression was achieved using Charnley's compression device and an additional calcaneotibial Steinmann's pin to maintain the desired alignment (neutral flexion, 0°–5° of valgus, 5°–10° of external rotation with slight posterior displacement of the talus). The patient was made ambulant with non- weight bearing on operated site after 48 hours. All the patients were assessed clinically and radiologically. American Orthopaedic Foot and Ankle Society (AOFAS) Ankle-Hindfoot scale was used. A score of 80–92 was considered an excellent result, 70–79 a good, 60–69 a fair and score less than 60 was considered a poor result. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

Results

Table I Distribution of patients

Total- 92		
Gender	**Males**	**Females**
Number	50	42

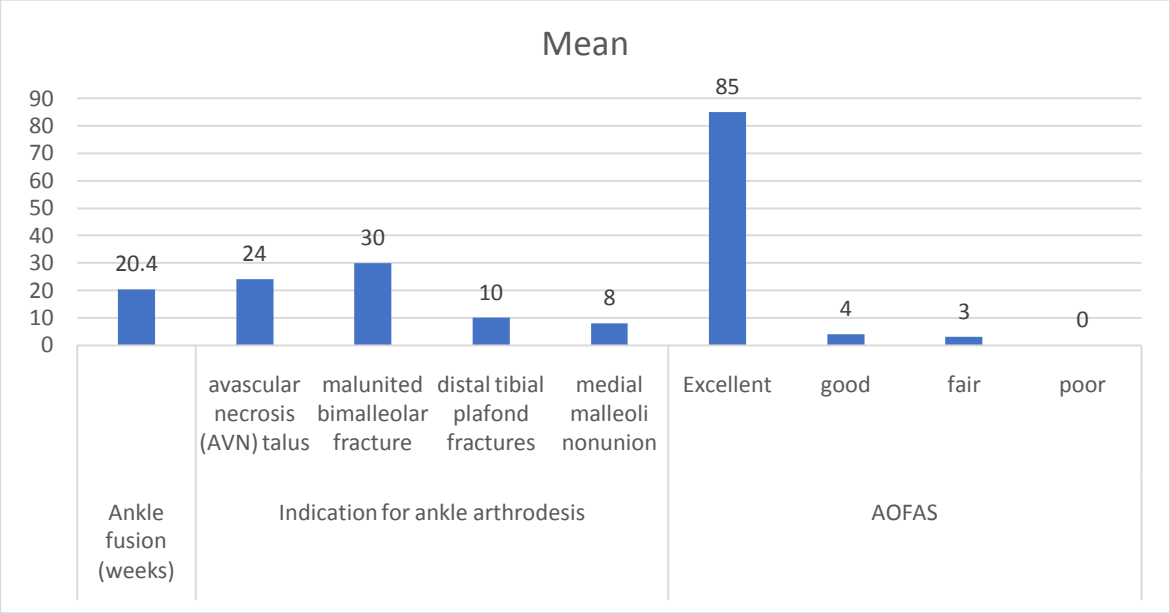
Table Ishows that out of 92, males were 50 and females were 42.

Table II Assessment of parameters

parameters	**variables**	**Mean**	**P value**
Ankle fusion (weeks)		20.4	-
Indication for ankle arthrodesis	avascular necrosis (AVN) talus	24	0.05
	malunited bimalleolar fracture	30	
	distal tibial plafond fractures	10	
	medial malleoli nonunion	8	
AOFAS	Excellent	85	0.01
	good	4	
	fair	3	
	poor	0	

Table II, graph I shows that mean ankle fusion was observed in 20.4 weeks. Indication for ankle arthrodesis was avascular necrosis (AVN) talus in 24, malunited bimalleolar fracture in 30, distal tibial plafond fractures in 10 and medial malleoli non-union in 8 cases. AOFAS results was excellent in 85, good in 4, fair in 3 cases. The difference was significant (P< 0.05).

Graph IAssessment of parameters



Discussion

Ankle arthrodesis is the surgical fusion of the ankle joint which aims to relieve pain, and restores function. Ankle arthrodesis, used as surgical treatment for tuberculosis of the ankle joint, is still used for the treatment of ankle joint destruction. Arthrodesis of the ankle joint is an important operation in the treatment of painful arthrosis, chronic infection, and malalignment, and instability. Arthrodesis of the ankle joint is an important operation in the treatment of painful arthrosis, chronic infection, and malalignment, and instability. It is commonly indicated in post-traumatic painful osteoarthritis and severe ankle injury. The present study was conducted to assess cases of ankle arthrodesis in posttraumatic arthritis performed using Charnley's compression device.

We found that out of 92, males were 50 and females were 42. Narayana G et al performed a clinical and radiographic evaluation of ankle arthrodesis in posttraumatic arthritis performed using Charnley's compression device. A functional assessment of 15 patients (10 males and 5 females) who had undergone ankle arthrodesis for posttraumatic arthritis and/or avascular necrosis (AVN) talus (n=6), malunited bimalleolar fracture (n=4), distal tibial plafond fractures (n=3), medial malleoli non-union (n=2). All the patients were assessed clinically and radiologically after an average follow up of 2 years 8 months (range 1–5.7 years). All patients had sound ankylosis and no complications related to the surgery. Scoring the patients with the American Orthopaedic Foot and Ankle Society (AOFAS) Ankle-Hindfoot scale, we found that 11 of the 15 had excellent results, two had good, and two showed fair results. They were all returned to their preinjury activities.

We found thatmean ankle fusion was observed in 20.4 weeks. Indication for ankle arthrodesis was avascular necrosis (AVN) talus in 24, malunited bimalleolar fracture in 30, distal tibial plafond fractures in 10 and medial malleoli non-union in 8 cases. AOFAS results was excellent in 85, good in 4, fair in 3 cases. Oboirien M et al looked at ankle arthrodesis as a primary and useful salvage procedure through simple technique for cases of severe open ankle injuries. Three patients with severe open ankle injuries were seen and had wound debridement done and compressive ankle arthrodesis with a Charnley's arthrodesis clamp. Tibiotalar and tibiocalcaneal arthrodesis was the procedure carried out. Patients were followed up for 3–12 months. Wound breakdown was seen in two cases and one later had skin grafting. All patients expressed satisfaction with the outcome of surgery. Ankle arthrodesis is a simple and useful salvage procedure for severe ankle disruption, guaranteeing patients satisfaction as against amputation.

Gowda et alin their study patients studied had a solidly fused ankle and had no complications related to the surgery. They were all improved as a result of ankle fusion and returned to their pre injury activities. Wearing shoes with appropriate heels, all the patients could walk on level ground without support. All the patients stated that they could walk up and down the stairs without much difficulty. Limb length discrepancies were insignificant (0.5 to 1.5 cm) except in one patient who had 2.5 cm secondarily due to distal tibial plafond fracture. The radiographs showed that 6 cases showed some evidence of degenerative changes in the subtalar joints which did not correlate with the symptoms.

Conclusion

Authors found that ankle arthrodesis is considered as a standard procedure in ankle arthritis.

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