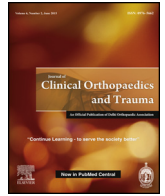




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Original article

Arthroscopic assisted ankle arthrodesis: A retrospective study of 32 cases

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ABSTRACT

Purpose: The arthroscopic assisted ankle arthrodesis (AAAA) is a minimally invasive procedure for end-stage ankle arthritis with numerous benefits like faster time of union, insignificant blood loss, less morbidity, less infection rate, and less soft tissue complications. A shorter hospital stay decreases the cost and results in early mobilization compared to open methods. We present a retrospective series of 32 patients, who underwent AAAA during a period of 8 years.

Methods: Thirty-two patients were reviewed retrospectively from 2008 to 2015. We calculated the Karlsson and Peterson ankle function scoring system pre-operatively and at 3 and 12 months after the surgery, in all the patients. All the patients were operated using arthroscopic denuding of degenerated cartilage followed by percutaneous criss-cross screw fixation through the tibia crossing the ankle joint into the talus.

Results: The mean age at operation time was 43.7 years. Four patients were excluded from the study. 18 were male, and 10 were female patients. All the 28 cases were followed up for a minimum of 1 year (mean 1.7 years). The average time to union was 14 weeks. The complications included four cases requiring removal of a screw for prominence, and one superficial infection. There were 20 (71.4%) patients with excellent, 4 (14.2%) with good, 3 (10.7%) with fair and 1 (3.5%) with poor clinical outcome. The average tourniquet time for the surgery was 70 min. The mean hospital stay was 2 days. The average Karlsson and Peterson's scoring was 32.71 pre-operatively and 74.10 and 89.00 postoperatively measured at 3 months and 1-year follow-up.

Conclusion: With the high incidence of soft-tissue problems and the young age of onset of post-traumatic arthritis, AAAA remains the treatment of choice in most cases with numerous advantages over open technique.

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1. Introduction

Ankle arthrodesis is a recognized surgical treatment for end-stage ankle arthritis in young patients, who are resistant to conservative treatment.¹ Nowadays, arthroscopic assisted ankle arthrodesis (AAAA) is becoming popular because it is a minimally invasive procedure and have shown good clinical outcomes. Between the open versus arthroscopic techniques, the rate of the union is almost the same. However, the benefits of the arthroscopic method are numerous like faster time of union, insignificant blood loss, less morbidity, less infection rate, less soft tissue

complications, a shorter hospital stay that decreases the cost, and results in early mobilization.^{2–4} In patients with local skin problems where an open technique cannot be used, the arthroscopic technique provides an additional benefit and become a useful alternative procedure (Table 1). We present a retrospective series of 32 patients, who underwent AAAA during a period of 8 years.

2. Materials and methods

We reviewed all 32 patients who have had AAAA from 2008 to 2015 from our database. Out of 32, four patients were excluded from this study due to incomplete, and mandatory follow-up of 1 year. Weight-bearing anteroposterior and lateral radiographs were taken preoperatively (Figs. 1 and 2) to identify the degree of deformation. We calculated the ankle function scoring (Karlsson and Peterson scoring system⁵ for ankle function) pre-operatively, at 3 and 12 months after the surgery, in all the patients.

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Table 1
Pros and cons of open versus arthroscopic assisted ankle arthrodesis.

| Open ankle arthrodesis | Arthroscopy assisted ankle arthrodesis |
|---|--|
| Advantages 1. Better visibility 2. Ability to correct severe deformities 3. Ability to deal with significant bone loss | Advantages 1. Lesser blood loss 2. Faster time of union 3. Lesser morbidity 4. Lesser soft tissue complications 5. Shorter hospital stay 6. Early mobilization 7. Lesser infection rate 8. Can be performed in ankles with skin problem |
| Disadvantages 1. Significant blood loss 2. Delayed mobilization 3. Higher infection rate 4. Longer hospital stay 5. Cannot be performed in ankles with skin problem | Disadvantages 1. Lesser access to the joint 2. Lesser ability to correct severe deformities |



Fig. 1. Pre-operative X-ray right ankle anteroposterior view showing advanced arthritis.

2.1. Surgical procedure

All of these procedures were done under spinal anesthesia. The position of the patient was kept supine on a conventional surgical table. Joint distraction was not used in any of these cases. A pneumatic tourniquet was used in all the cases during the whole procedure. Drapping, the limb above the knee, allowed complete visualization of the leg. The anatomical landmarks of the ankle, especially both malleoli and the joint line were identified and marked before the incision (Fig. 3).

2.2. Arthroscopic portals and procedure

We had used an anterolateral and an anteromedial arthroscopic portals for the ankle arthroscopy, using 4 mm 30° arthroscope. The anteromedial portal was first made using a trocar and cannula, and the arthroscope was then inserted. The lateral portal was created under direct vision by entering an intravenous needle lateral to the extensor digitorum tendons.⁶ The anatomical relations of anterior



Fig. 2. Pre-operative X-ray right ankle lateral view showing advanced arthritis.

approaches to the ankle joint was carefully observed, to avoid iatrogenic injuries to the neighboring structures. The ankle joint was kept distended with normal saline, using a pressure bag. The remaining articular cartilage was shaved using arthroscopic 5 mm shaver and the underlying burned subchondral bone was roughened until the bleeding surface was achieved, using arthroscopic burr. After freshening the joint surfaces, the ankle joint was assessed by an image intensifier, intraoperatively. We preferred the position for arthrodesis in neutral dorsiflexion, 5–10°



Fig. 3. Anteromedial and anterolateral arthroscopic portals for ankle arthroscopy.

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