

Results of Ankle Arthrodesis Using Integra (Tibiaxis) Plate



Achal Goyal*, Nikhil Gokhale and Paresh Kothari

Department of Orthopedics, Kings Mill Hospital, UK

Submission: April 26, 2019; Published: May 09, 2019

*Corresponding author: Achal Goyal, Orthopaedic surgeon, Kings Mill Hospital, Mansfield Rd, Sutton-in-Ashfield NG17 4J, UK

Abstract

A variety of techniques and implants for ankle fusion have been described in literature, with variable results. We report our experience of open arthrodesis of the tibio-talar joint using the Integra plate. We present a retrospective case series of 22 ankle fusions performed in 21 patients between 2014 and 2017. These were performed by a single surgeon specialising in foot and ankle surgery using the Integra plate. Each patient underwent a retrospective case note and x-ray review. Of the 21 patients, 8 were females and 14 were males (1 gentleman had bilateral ankle fusion). The average age at surgery was 60.27 years. All 22 ankle fusions resulted in union. Mean time to union was 12.54 weeks. We conclude that, the use of the Integra 9 Tibiaxis) plate for open arthrodesis of the tibio-talar joint gives reliably good results especially in patients undergoing revision arthrodesis.

Introduction

Ankle arthritis can cause significant pain and disability Sid-dique et al. [1]. An effective way to deal with these symptoms is ankle fusion Gharehdaghi M et al. [2]. There are number of techniques described in literature for ankle fusion, ranging from arthroscopic to open procedures. Each procedure has its own benefits. Anterior ankle plating has been shown to be an effective way of alleviating the symptoms of end-stage ankle arthritis with low complication rates Gharehdaghi et al. [2]; Morash et al. [3]. We are sharing our early experience with regard to open ankle fusion with the Integra plate. This plate has been shown to give a rigid fixation and compression at fusion site on table

which is either comparable Fragomen AT et al. [5] or superior to intramedullary fixation O'Neill et al. [4], and gives comparable or better results than total ankle arthroplasty Morash J, et al. [3]

Patients and Methods

We retrospectively analysed 22 ankle fusions performed in 21 patients between 2014 and 2017. The decision to perform ankle fusion was made by a foot and ankle specialist after clinical examination and x-ray review. The fusions were performed by a single surgeon specialising in foot and ankle surgery using the anterior approach and Integra plate. Data were collected from each patient via retrospective case note and x-ray review.



Figure 1: Pre op Non-Union.

The ankle was exposed by an anterior midline incision protecting the neurovascular structures. Anterior osteophytes were excised and the joint surfaces were prepared to expose bleeding cancellous bone. The tibio-talar space was grafted with auto graft harvested locally or from the proximal antero-medial tibia

through a separate incision and/or synthetic bone graft (DBX/ Trilex). Fixation was achieved with an Integra plate supplemented by a compression screw through the plate (3 patients) or as a separate compression screw (1 patient) or both (16 patients). In 2 patients, an additional anterior plate was used for fixation.

Post-operatively, sutures were taken out at 2 weeks. The patients were kept non-weight bearing for 6 weeks in a below-knee plaster cast. Weight bearing was initiated at 6 weeks in an Air-cast boot/walking below-knee plaster. After 12 weeks, the Air-

cast boot was gradually weaned off. Patients were seen in clinic at 6 weeks post-operatively and again at 3-4 months post-op (Figures 1 & 2).



Figure 2: Post Op with TibiaXis plate.

Results

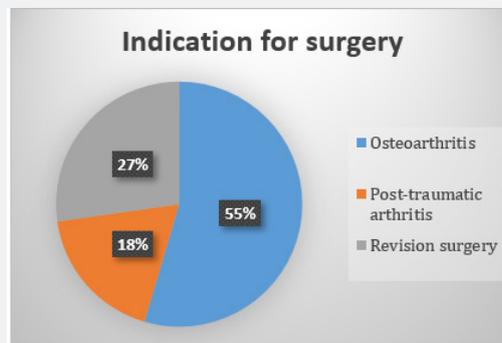


Figure 3: Indication for surgery.

Of the 21 patients, 8 were females and 13 were males (1 gentleman had bilateral ankle fusion). The average age at surgery was 60.27 years. Indication for surgery was osteoarthritis in 12 patients; post-traumatic arthritis in 4; and 6 had revision surgery for a failed attempted previous fusion. All 22 ankle fusions resulted in union. Union was determined by both clinical examination and review of patient radiographs. Mean time to union was 12.54 weeks. There were 4 complications, delayed wound healing in 1 patient, stress fracture around the upper part of the Integra plate in 1, complex regional pain syndrome in 1 patient, and prominent screw needing removal in the 4th patient. None of our patients developed deep infection. Out of the 6 patients who underwent revision fusion with the Integra plate, all had an initial attempt at fusion with screws (4 were arthroscopy assisted and 2 were open procedures). All these revision surgeries united with use of the Integra plate (Figure 3).

Discussion

Use of the Integra plate for both primary and revision ankle arthrodesis showed promising early results. Given the small sample size, complication rates within the follow-up period were comparable to that in the literature Gharehdaghi M, et al. [2]. Our patient cohort had a higher proportion of patients undergoing ankle fusion for osteoarthritis than post-traumatic arthritis.

This differs from other papers which either had a larger proportion of patients undergoing ankle fusion for post-traumatic arthritis or a similar distribution of patients with osteoarthritis and post-traumatic arthritis Gharehdaghi M, et al. [2]; Seaworth et al. [6]. The study is limited by the small sample size and duration of follow-up (4 months post-op). Future studies including larger sample sizes and long-term follow-up will be required [7].

Conclusion

We conclude that, the use of an Integra plate for open anterior arthrodesis of the tibiotalar joint gives reliably good union, especially, in patients undergoing revision arthrodesis.

References

1. Siddique MS, Ramaskandhan JR, Ashworth N (2016) Does Ankle Arthritis Cause More Disability Than Other Pathologies of the Foot and Ankle? *Foot & Ankle Orthopaedics* 1(1): 2473011416S2473000165.
2. Gharehdaghi M, Rahimi H, Mousavian A (2014) Anterior Ankle Arthrodesis with Molded Plate: Technique and Outcomes. *Arch Bone Jt Surg* 2(3): 203-209.
3. Morash J, Walton DM, Glazebrook M (2017) Ankle Arthrodesis Versus Total Ankle Arthroplasty. *Foot Ankle Clin* 22(2): 251-266.
4. O'Neill PJ, Logel KJ, Parks BG, Schon LC (2008) Rigidity comparison of locking plate and intramedullary fixation for tibiotalocalcaneal arthrodesis. *Foot Ankle Int* 29(6): 581-586.

5. Fragomen AT, Meyers KN, Davis N, Shu H, Wright T (2008) A biomechanical comparison of micromotion after ankle fusion using 2 fixation techniques: intramedullary arthrodesis nail or Ilizarov external fixator. *Foot Ankle Int* 29(3): 334-341.
6. Seaworth CM, Do HT, Vulcano E, Mani SB, Lyman SL (2016) Epidemiology of Total Ankle Arthroplasty: Trends in New York State. *Orthopedics* 39(3): 170-176.
7. Clifford C, Berg S, McCann K, Hutchinson B (2015) A biomechanical comparison of internal fixation techniques for ankle arthrodesis. *J Foot Ankle Surg* 54(2): 188-191.



This work is licensed under Creative Commons Attribution 4.0 License
DOI: [10.19080/OROAJ.2019.14.555881](https://doi.org/10.19080/OROAJ.2019.14.555881)

Your next submission with Juniper Publishers will reach you the below assets

- Quality Editorial service
- Swift Peer Review
- Reprints availability
- E-prints Service
- Manuscript Podcast for convenient understanding
- Global attainment for your research
- Manuscript accessibility in different formats
(Pdf, E-pub, Full Text, Audio)
- Unceasing customer service

Track the below URL for one-step submission
<https://juniperpublishers.com/online-submission.php>