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Case Report

Management of recurrent multiple osteochondral lesions of the talus (OCLT) in a young active patient

Farhan Syed MBBS, MS (Orthopaedic Surgery), MRCS^{a,*},
 Perrico Nunag FRCS (Tr & Orth)^b,
 Anand Pillai MBBS, MS (Ortho), FRCS (Tr & Orth)^c

^a Clinical Fellow, University Hospital of South Manchester, UK

^b Foot & Ankle Fellow, University Hospital of South Manchester, UK

^c Consultant Orthopaedic Surgeon, University Hospital of South Manchester, UK

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ABSTRACT

Management of recurrent osteochondral lesion of talus in a young active male is a challenging problem. We present one such case of recurrent talar osteochondral lesions treated by Autologous Matrix Induced Chondrogenesis (AMIC). Patient had a good functional outcome at short-term follow up. We also describe the technique and review the literature regarding this novel technique.

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1. Introduction:

Based on aetiology OCLT can broadly be classified as traumatic & non-traumatic. The trauma itself, can be one single inciting event or a repetitive microtrauma. Non-traumatic causes include congenital, genetic, ischaemic and idiopathic causes.

In a retrospective study looking at preoperative MRI in ankle fractures the incidence of osteochondral lesion was found to be 17%.¹ Another retrospective study which looked at all arthroscopic assisted fixation of ankle fractures found the incidence of osteochondral lesion a bit higher at 27.9%.² Interestingly a study combining MRI and arthroscopy in

diagnosing OCLT in ankle trauma found them to be as high as 70.7% in distal fibular fractures and 40.7% in lateral ankle instability.³

Management of OCLT can be non-operative or operative. Non-operative approaches include rest and cast immobilisation. When it comes to operative management, quite a few options are available. These techniques can be a reparative or replacement surgeries. Excision & curettage, Bone marrow stimulation (BMS) with microfracture, fixation of loose fragment and anterograde/retrograde drilling are the various reparative techniques. These can be used in isolation or as a combination of 2 or more techniques.

* Corresponding author.

E-mail address: farhan.syed@doctors.net.uk (F. Syed).

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Fig. 1 – Plain radiograph of ankle AP and Lateral showing osteochondral lesion of talar dome.

The replacement surgeries are Osteochondral transplantation with autograft/allograft, autologous chondrocyte implantation (ACI) & Autologous matrix induced chondrogenesis (AMCI). Zengerink et al in their systemic review concluded BMS as treatment of choice for primary OCLT.⁴

Herein we present a case of post traumatic OCL in a young male which recurred following microfracture and was subsequently treated with Autologous Matrix induced Chondrogenesis (AMIC) using Chondrogide®, a commercially available membrane (Geistlich Pharma AG, Switzerland) consisting of porcine collagen types I and III. This is the first time this technique is being reported in recurrent OCLTs.

2. Case report

A 35-year-old male presented to foot and ankle clinic with history of worsening ankle pain. He had a fracture of the ankle

13 years back, which was treated non-operatively in a cast. Recent radiographs only showed degenerative ankle joint changes with prominent osteophytes (Fig. 1).

He was seen by a foot and ankle specialist and was diagnosed to have ankle impingement for which he underwent an arthroscopic ankle debridement. Recurrence of symptoms around 18 months after 1st surgery prompted for an MRI scan which showed two large osteochondral lesions. He underwent second arthroscopy, where BMS with microfracture was performed to address the osteochondral lesion. He improved after second procedure, and was advised to avoid high impact sports and discharged from routine follow up.

Two years later he was referred back because of new onset sharp constant ankle pain associated with stiffness and clunking. A repeat scan (Fig. 2) confirmed 2 large recurrent osteochondral lesions on the talar dome with further increase in the cystic changes. Considering the recurrent nature of the lesions despite microfracture, an open surgery with AMIC was planned.

Fig. 2 – Axial & sagittal MR images showing two large osteochondral lesions of talus involving the talar dome.

Fig. 3 – Intraoperative images of talus exposed through anterior approach showing lesions covered with Chondro-gide.

3. Surgical technique

The surgery was performed under general anaesthetic, prophylactic antibiotics given and a tourniquet was used.

First joint debridement was performed through an anterior approach and then the anterolateral lesion accessed through the same approach. The postero-medial lesion was exposed via a medial malleolar osteotomy (Fig. 3). The lesions were cleaned and the base of the lesions drilled. Bone graft was harvested from proximal tibia. The graft impacted to fill the defects and covered with appropriate size chondro-gide®. The medial malleolar osteotomy was fixed with cancellous screws (Fig. 4).

The post-operative rehabilitation involved immobilisation in plaster & kept non-weight bearing for 6 weeks. This was followed by partial weight bearing in walking boot and ankle range of motion exercises for another 6 weeks. Patient reported outcome measure using the MOXFQ (Manchester Oxford Foot Questionnaire) score was used to assess the pain, mobility and social interaction. Scoring was done both pre and post-operatively.⁵

The summative score preoperatively was 184 which improved to 92 on 6 months follow-up, indicating good outcome.

4. Discussion & review of literature

The use of Chondrogide® instead of periosteum to provide a scaffold in autologous chondrocyte implantation was first introduced in 1999.⁶ In contrast to ACI which is a two stage

Fig. 4 – Post-operative follow-up image showing healed medial malleolus osteotomy which was used to access medial lesion on talar dome. Also shows graft consolidation and disappearance of lucencies seen previously because of OCLT.

procedure, AMIC is a single stage procedure involving debridement, drilling, filling of defect with autologous graft and then covering it with Chondrogide® secured with fibrin glue/sutures. Early case reports & case series presented favourable outcomes with AMIC in osteochondral lesions of knee.^{7–11} It has also been described in management of osteochondral defects of hip performed either arthroscopically¹² or open technique.¹³

With regards to ankle, a case report described good outcome using this technique in a distal tibial osteochondral defect.¹⁴ Same group went on to present a case series using this technique in OCLT.¹⁵ There is only one RCT which compared AMIC with microfracture in management of osteochondral lesions of knee.¹⁶ This RCT had a very small sample size and a high dropout rate at 2 year follow up. The data available from this study showed comparable outcome in AMIC and microfracture groups at 1 & 2-year follow-ups.

5. Conclusion

It is not possible to draw any conclusions based on a single case report. However, this novel technique holds the potential to emerge as an effective treatment for recurrent multifocal lesions where other known effective techniques have failed or have been only partially successful. The technique is simple to master, reproducible and based on sound scientific principle. RCTs and longer term follow ups are needed to establish the status of AMIC compared to already existing, more widely used surgical treatments.

Conflicts of interest

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

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