CASE REPORT

Allogenic labral transplantation in hip instability following arthroscopic labrectomy

Marc Tey [1], Juan I. Erquicia [1], Xavier Pelfort [1], Joan Miquel [2], Pablo E. Gelber [3], Manuel Ribas [4]

[1] Arthroscopy Unit, Department of Orthopaedic Surgery, University Hospital Dexeus, Barcelona - Spain
[2] Department of Orthopaedics and Traumatology, University Hospital Dexeus, Barcelona - Spain
[3] Arthroscopy Unit, Department of Orthopaedic Surgery, Hospital Sant Pau, Barcelona - Spain
[4] Hip Unit, Department of Orthopaedic Surgery, University Hospital Dexeus, Barcelona - Spain

Abstract. *The acetabular labrum augments femoral head coverage within the acetabulum and contributes to hip joint stability. This has led to an increasing interest in procedures dedicated to preservation of the labrum. An allogenic labral transplantation performed in a patient who had previously undergone a partial labral resection is presented.*

Key Words: *Hip instability, Labral transplantation, Labrectomy*

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INTRODUCTION

The acetabular labrum provides a suction effect on the femoral head. It also provides a seal against fluid flow and is important as a shock absorbing structure (1, 2). A torn labrum may result in relative instability (3). Labral debridement can lead to increased joint degeneration when compared to reattachment (4-7). Consequently, there is increasing interest in procedures designed to preserve or restore the labrum. We present a 2-year follow-up case report of a sportsman with hip pain and instability secondary to subtotal labral debridement treated by allogenic labral transplantation (ALT).

CASE REPORT

A 27- year-old amateur basketball player presented in 2005 with left hip pain following a sporting injury. He underwent hip arthroscopy during which a large anterior labral lesion was identified and re-contoured. Due to persistent hip pain, another hip arthroscopy was performed 5 months later, and partial labrectomy was performed. A third arthroscopy was carried out 7 months later due to persistent mechanical symptoms related to a cam-type impingement lesion. Femoral osteoplasty and a subtotal labrectomy were then performed through an indirect hip access technique (8).

The patient presented again 2 years after the initial procedure complaining of hip instability and pain. Although he was able to deal with daily living activities, he was unable to carry out heavy work or play sport. Radiographic evaluation again showed a cam lesion on the Dunn's axial view with a grade 0 joint space according to the Tönnis hip degeneration classification (9). Magnetic resonance images revealed an absence of the anterior acetabular labrum from 10 to 1 o'clock (Fig. 1). The WOMAC osteoarthritis index was 52 and the non-arthritic hip score (NAHS) was 37. An allogenic labral transplantation was performed. A 50 mm labral allograft had been procured from a living donor 6 weeks earlier during a total hip arthroplasty performed for avascular necrosis (AVN). It had been preserved frozen at -80° C.

A mini open anterior approach was used (10). The degenerated labrum in the region of the defect was debrided leaving a 35 mm defect in the anterolateral area. The acetabular host bed, at the rim, was refreshed with a round

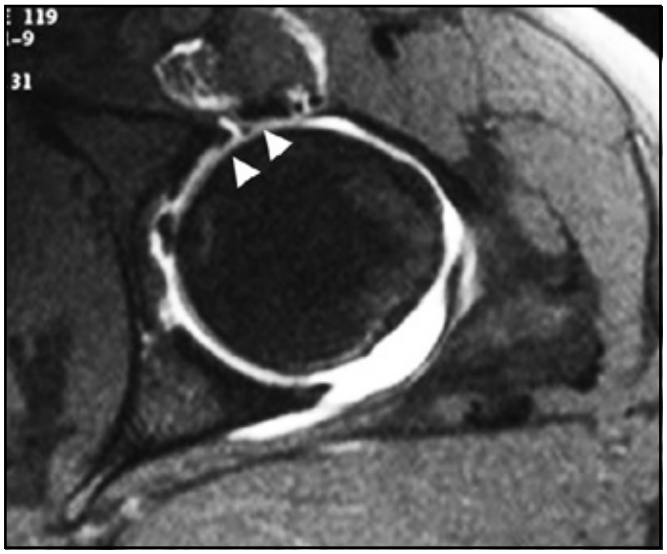

Fig. 1 - *Preoperative MRI of the left hip. The arrow's tips point to the deficiency of the anterior labrum in this axial view.*

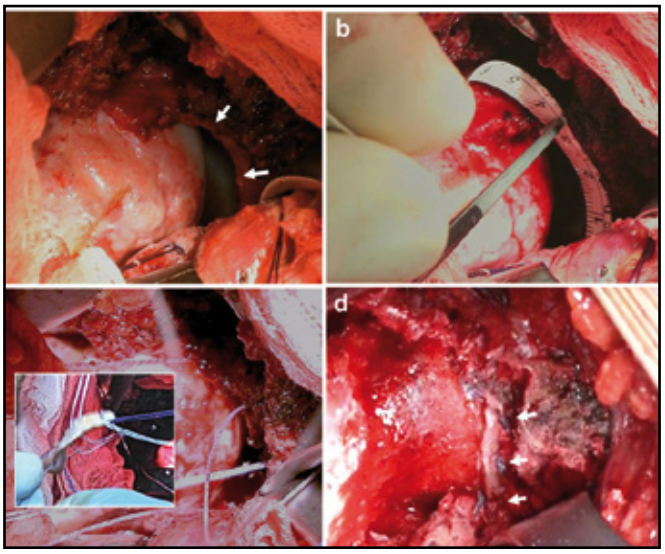

Fig. 2 - *Intraoperative view.* **a** *the anterosuperior labral defect (white arrows),* **b** *measurement of the labral defect,* **c** *the allograft (inset) is attached to the acetabular rim with bone anchors,* **d**, *final view of the allograft attached to the bone rim with the bone anchors (white arrows).*

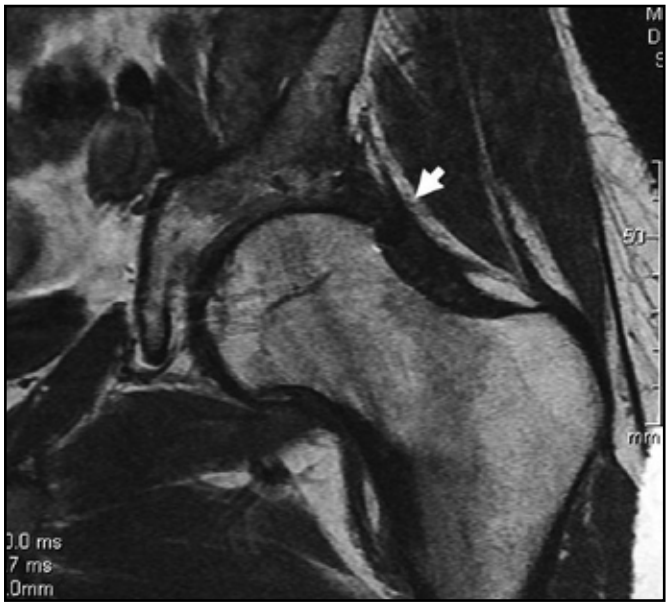

Fig. 3 - *Postoperative MRI of the left hip. The transplanted labrum is seen in the superior aspect of the acetabulum (white arrow) in this coronal view.*

burr. The graft was subsequently trimmed to fit the labral defect and finally fixed with 5 absorbable high fix bone anchors (Bio Mini-Revo; Conmed-Linvatec, Largo, FL) (Fig. 2). The patient was kept non weight-bearing for the first 3 weeks. Rotation and flexion over 80° were only allowed after week 6. Running on a flat surface was allowed at the third month of follow-up. High-demand sport was allowed by the eighth month. On evaluation at his latest follow-up, 26 months after the ALT, the patient was pain free, the WOMAC index had increased to 94 points and the NAHS to 78 points. The patient showed no signs of hip instability and he was able to return to sport (UCLA Activity Score at its maximum level = 10) in a lower level competitive league (Fig. 3).

DISCUSSION

Acetabular labrum allogenic transplantation has, to our knowledge, not been previously described in this context.
Labral debridement has been extensively employed (3), the assumption being that labral resection does not significantly increase pressure on the acetabular surface (11). Such procedures may reduce pain, at least on a short-term basis (12), but pain control and physiological labral function may be compromised in the midterm (3).
Hip instability has been reported following labrectomy (13). Therefore, new strategies are being developed to preserve the labrum. Reattachment with bone anchors has been described (14), and in cases of irreparable labral lesions,

reconstruction with autologous fascia lata grafts has also been reported (15).

We believe that a hip labrum allograft may restore anatomy and function more accurately than other soft tissue grafts. There is extensive experience at our institution with allograft meniscal transplantation (16), and therefore we decided to reconstruct the rim deficiency with a labrum allograft.

We performed a mini-open anterior approach because of our experience with this approach in treating femoroacetabular impingement (10). However, this procedure may potentially be performed through other surgical approaches, or even arthroscopically.

Due to the novelty of the technique, we used similar rehabilitation protocols as those employed after meniscal transplantation.

We believe that allogenic labral transplantation may be an option for the treatment of labral defects or non-reparable labral tears.

University Hospital Dexeus is an institution that is known worldwide in the field of musculoskeletal transplantation. It has had an accredited tissue bank since 1987. In addition, the institution was declared a founding member of the European Association of Tissue Banks (EATB) in 1991.

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Address for correspondence:
Juan I. Erquicia, MD
Calle Sabino de Arana 5-19
08028 Barcelona, Spain
juanerquicia@yahoo.com

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