ARTHROSCOPIC FASCIA LATA ALLOGRAFT RECONSTRUCTION: TECHNIQUE AND EARLY RESULTS

DOMINIC S. CARREIRA M.D.
ASSISTED BY RYAN ENDERS
FORT LAUDERDALE, FL

DISCLOSURE

• Consultant for Biomet including education and product development

INTRODUCTION

Femoroacetabular Impingement (FAI) is abnormal contact between the proximal femur and rim of the acetabulum. There are 3 types of FAI: CAM, Pincer, or Mixed; each may lead labral damage causing pain in affected patients.
1) What constitutes “irreparable”?

2) Debridement associated with less than optimal outcomes

3) Should Tx options be dictated by degree of labral injury?
   • Debridement → Repair → Reconstruction

- Labral Deficiency (after debridement or hypoplastic)
- Complex Labral Tearing
- Extensive Labral Bruising
- Absent Longitudinal Tissue
- Advanced Degeneration
  • Including Calcification
- Iatrogenic (bailout if primary repair fails)
- Os Acetabuli

Combination of these factors!
MORE AGGRESSIVE RIM TRIMMING
• Can remove a significant amount of arthritis
• Majority of Impingement cartilage wear is frequently located on redundant part of the cup
• Can make a labrum that fits your new cup

KNEE MENISCUS ALLOGRAFT AS A MODEL
• Several studies have consistently demonstrated patient satisfaction rates ranging from 70 to 90% > 2 years after surgery. 1, 2, 6

CARREIRA RESULTS
• 54 hips
• Minimum follow up was 12 months (mean of 20 months)
• Allograft versus control group
  • Age 45 vs 39
  • Microfracture %: 43 versus 21
  • Acetabular chondroplasty %: 63 vs 37
• Complications:
  • Temporary neuropraxias were noted in 4% of patients.
  • One patient had a superficial portal infection which resolved with oral antibiotics.
Based on the mHSS, the overall failure rate was 11%.

**EARLY OUTCOMES**

**POINTS OF COMPARISON**
ALLOGRAFT ITB RECONSTRUCTION

142 patients (152 hips)
86% had complete follow-up at minimum of 2 years
18 hips (13.7%) required revision procedures at a mean of 17 months

Of the remaining patients:
mean MHHS improved by 34 points
mean VAS pain score improved by
  3 points at rest
  4 points with ADLs
  5 points with sport
overall satisfaction of 9 (range: 1-10)

WHY NOT JUST RESECT?

• Although long term (>10yr follow-up) studies are yet to be published:
  Debridement group associated with good to excellent outcomes in 55-70% 8,9,10,11,12
• Much of this data was collected after only two years postop
  • Extrapolate beyond?

PREPARING THE ACETABULUM

Marking depth of resection → eg. 5mm at apex
ALLOGRAFT PREPARATION

University of Miami Tissue Bank provides the Fascia Lata allograft, which is tubularized on a back table using a baseball stitch with 2-0 Vicryl. Avoid additional incision for harvest and potential morbidity. Save surgical time.

Right Hip Portal Placement

ACCESSORY DISTAL PORTAL

Direct needle localization

Through capsulotomy
Percutaneous insertion of anchor at anteromedial extent of defect through the accessory distal portal (ADP) with a Black striped suture.

Insertion of 2nd anchor (Blue) at posterolateral extent of defect.

Allograft sizing:
- Measure chord length of excised area (c)

\[ s = 2r \times \arcsin \left( \frac{c}{2r} \right) \]

Based on these calculations, the arc length is 1.3x chord length.
ALLOGRAFT SIZING

Distance between blue lines = 3 mm

Length allograft (mm) = # of stripes in suture material x 3 mm x 1.3

SHUTTLE SETUP

Pull into Joint

ADD VIDEO OF SHUTTLE
Graft inserted halfway into joint and suture crossage assessed.

Black striped suture retrieved through modified MA portal.

Anteromedial end tied first, followed by posterolateral end.

Both ends of labrum fixated.

Remaining suture anchors placed in standard labral repair fashion.
**ANTEROMEDIAL ANCHOR**  
*RIGHT HIP EXAMPLE*

- Standard 2.3mm anchor
- **BLACK** striped sutures thru ADP (blue 5.5mm cannula)

**POSTEROLATERAL ANCHOR**  
*RIGHT HIP EXAMPLE*

- All suture **BLUE** striped anchor placed through ALP (8.5mm cannula)
- Hemostat together 2 suture limbs
CARREIRA SHUTTLE TECHNIQUE (CONT.)

3) The camera is then placed in the ADP portal and a second labral repair cannula is placed at the MAP. One of the suture limbs from the anteromedial anchor (BLACK striped) is passed through the MAP and one limb is passed through the ALP.

4) Using a knot pusher, the limb from the anteromedial anchor located in the ALP is used to measure the number of crossing lines between the two anchors. The overall length can then be calculated.

CARREIRA SHUTTLE TECHNIQUE (CONT.)

5) A free needle is used to pass the suture material through the graft outside of the joint. One limb from each suture anchor passing through the ALP is tied securely to the graft, allowing enough space once passed for suture tying.

6) The limb from the MA portal is pulled and fully seated into the anteromedial anchor fist, followed by the limb exiting the ALP. The limb connected to the anteromedial anchor is not fully seated until suture crossing has been checked and corrected if needed.

7) The ends of the labrum reconstruction are tied using a standard knot-tying technique.

8) Similar to a standard labral repair, the segment in between is tied with suture anchors.

SHUTTLE ALLOGRAFT & SECURE ENDS

1. Pass anchor suture thru each end of graft using free needle

2. Deliver anterior end of anchor (BLACK striped) into joint and secure at anchor

3. Pull BLUE striped suture to (shuttle) posterior end and anchor into place
PLACE INTERVAL ANCHORS

PITFALL
Make sure sutures are not crossed prior to seating down fully

Once posterior and anterior graft are anchored, intervening fixation similar to standard labral repair

CONCLUSION

• Patients demonstrate significant improvement with allograft labrum reconstruction.
• The shuttle technique is safe, effective and avoids the need to fixate the free end of the graft from inside the joint.
• Compared to historical controls of hip arthroscopy, this patient population may be:
  • Older
  • Higher rate of chondroplasty and microfracture

FINAL THOUGHTS

• Determination of reparable v irreparable
• Ideal graft material
  • Allograft v autograft?
  • Fascia lata v tendons [hamstring]?
• Define injuries and their outcomes across treatment techniques
REFERENCES