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ARTICLES IN THIS ISSUE

EXPERTS OPINE

Dr Sheetal Gupta

Simplifying complexity of meniscal repairs Technical tips & pearls

Meniscal repair has to be always done keeping the needle perpendicular to the tear, switch portals if necessary.

Biological stimulation is necessary to create a healing environment

Vertical Tear needs to be repaired both on upper and lower surfaces

Horizontal tears require circumferential compression stitches

The best repair configuration for radial tear is with inside out repair and rebar/ripstop horizontal & vertical mattress sutures

Use spinal needle always to probe the meniscal ramp area & repair is to be done using lasso/scorpion using PM portal

COMBINED ACL RECONSTRUCTION AND SEGONDS FRACTURE FIXATION

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Introduction:

Anterior cruciate ligaments (ACL) tears are frequent sports-related injuries, and over the past few decades, ACL reconstruction has represented the gold standard technique to address the injured structure. The incidence of Anterolateral ligament injuries associated with ACL tears is about 90% of cases, and the Segond fracture occurs in less than 10% of cases of acute anterolateral instability (1).

Segond Fracture is considered to be a tibial avulsion of the distal insertion of the ALL(type 4 ALL injury)(2).

Case Report:

We present a case of a 19-year-old male who presented to us one week post-injury while playing Football sustained an injury to his left knee with pain and instability.
On examination, he had a Lachman's positive grade 2, Pivot shift Grade 2 and tenderness over lateral proximal tibia. Radiographs showed a Segond fracture(Fig 1). MRI done showed an ACL tear(Fig 2), Avulsion fracture of ALL(Segonds Fracture)(Fig 3). Arthroscopic ACL reconstruction with Hamstring tendon and Segond fracture fixed with 4mm CC screw(fig 4) was performed. Postoperative rehab protocol was similar to routine ACL rehab protocol. At 2 years post-operative follow-up patient had no residual laxity and was back playing Football.

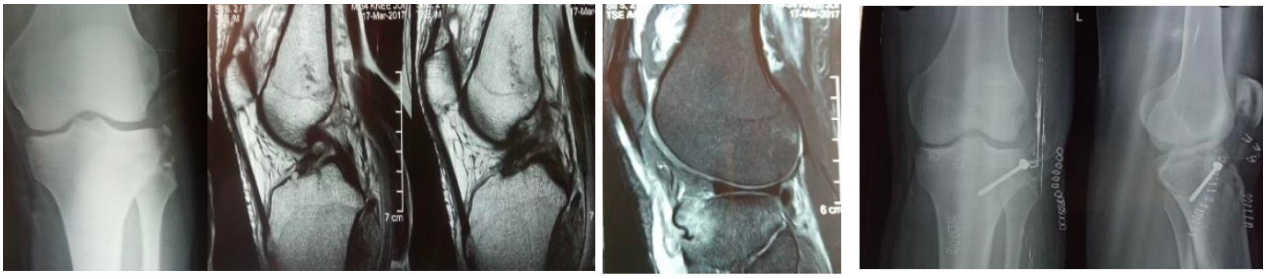

Fig 1. Fig 2. Fig 3. Fig 4.

Fig 1-4. Radiographs and MRI of ACL tear & segond fracture

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Researchers have documented that the anterolateral structures of the knee are important restraints to internal rotation of the knee, acting in synergy with the ACL. Lesions of these structures have recently been found to have a strong correlation with the degrees of the pivot-shift phenomenon seen after an ACL tear. A Segond fracture, the bony equivalent of an ALL tear, could therefore affect the pivot shift.
ALL expert group consensus on ACL and ALL injury(3)(Fig 5).

The repair of a Segond Fracture performed with a standard hamstring ACL reconstruction is a safe and successful procedure resulting in excellent recovery of knee stability and function with no major complications(4).

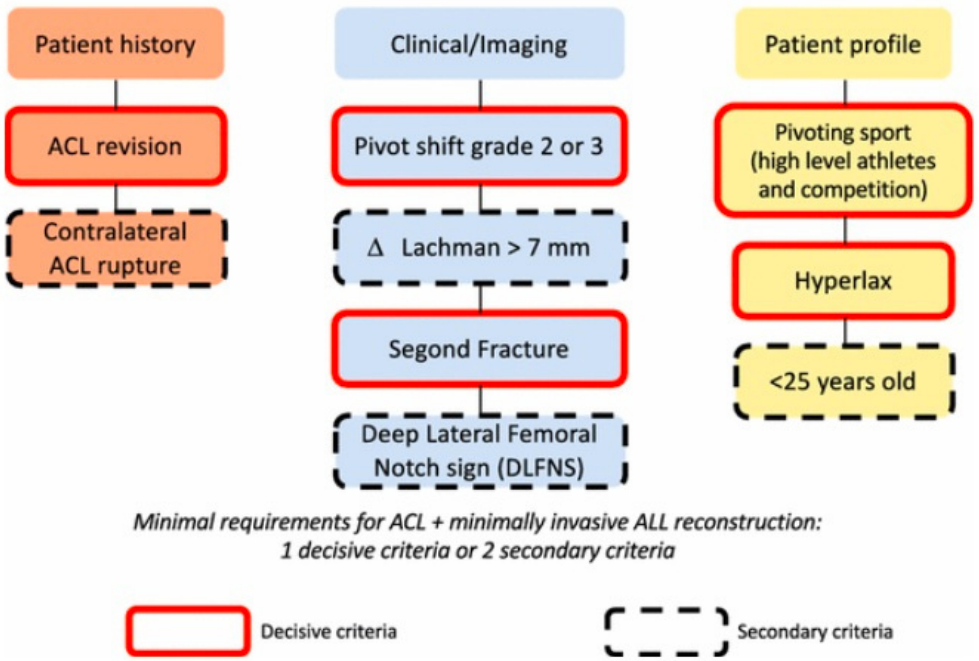

Fig 5: Consensus on ACL and ALL injury

CONCLUSION:

The goal of ACL surgery is to control rotational instability of the knee and pivot shift phenomenon because residual rotational instability is correlated with less satisfactory outcomes and a return to sports activity.

For this reason, the treatment of associated lesions, especially lesions of the ALL, is recommended at the time of ACL surgery.

REFERENCES:

1.A. Ferretti, E. Monaco, M. Fabbri, B. Maestri, A. De Carli Prevalence and classification of injuries of anterolateral complex in acute anterior cruciate ligament tears Arthroscopy, 33 (2017), pp. 147-154
2.S. Claes, T. Luyckx, E. Vereecke, J. Bellemans The Segond fracture: A bony injury of the anterolateral ligament of the knee Arthroscopy, 30 (2014), pp. 1475-1482
3. Bertrand Sonnery-Cottet,Matthew Daggett,Jean-Marie Fayard,Andrea Ferretti,Adrian Wilson,Stefano Zaffagnini,Steven Claes. Anterolateral Ligament Expert Group consensus paper on the management of internal rotation and instability of the anterior cruciate ligament - deficient knee. J Orthop Traumatol (2017) 18:91–106.
4. Andrea Ferretti, MD, Edoardo Monaco, MD, Megan Rianne Wolf, MD, Matteo Guzzini, MD, Angelo De Carli, MD, and Daniele Mazza, MD. Surgical Treatment of Segond Fractures in Acute Anterior Cruciate Ligament Reconstruction. The Orthopaedic Journal of Sports Medicine(2017) Oct 3;5(10).

AUTOLOGOUS CHONDROCYTE IMPLANTATION: A CASE SERIES

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Introduction:

•Autologous chondrocyte Implantation was first described in 1994 by Brittberg et al(1).

•It is a procedure done for medium to large full-thickness focal articular cartilage defects.

•It's a two-stage procedure- where cartilage graft is harvested in the first stage and implantation of the cultured cartilage cells is done in the second phase.

Steps:

Graft harvest:

•During initial arthroscopy a cartilage biopsy is performed.

•Can be obtained by using gouge or curet or biopsy instrument.

•Graft is most commonly harvested from the superior and lateral aspect of the intercondylar notch

•If prior Notchplasty has been performed then biopsy can be obtained from the medial aspect of the notch or the superomedial and superolateral periphery of the trochlea.

•5x10-mm piece of cartilage (approximately 200 to 300 mg) is usually sufficient and is placed in a sterile transport medium for transporting it to the culture facility.

Defect preparation & delivery of chondrocyte gel:

A medial parapatellar approach can be employed for accessing the defect

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All the fissured unstable cartilage is curetted to create a defect with stable contained borders.

The fibrin gel-based ACI is inoculated on the defect area.
It is important to keep the field dry and the defect parallel to the ground (gravity neutral) for containing the gel within the defect.

It takes about 8-10mins for the gel to solidify
Knee is then taken through a range of movement 3-5 times followed by a reinspection to cross check the stability of the cartilage gel.

Post op Non weight bearing is been advised for all patients for 6 weeks and quadriceps exercises.

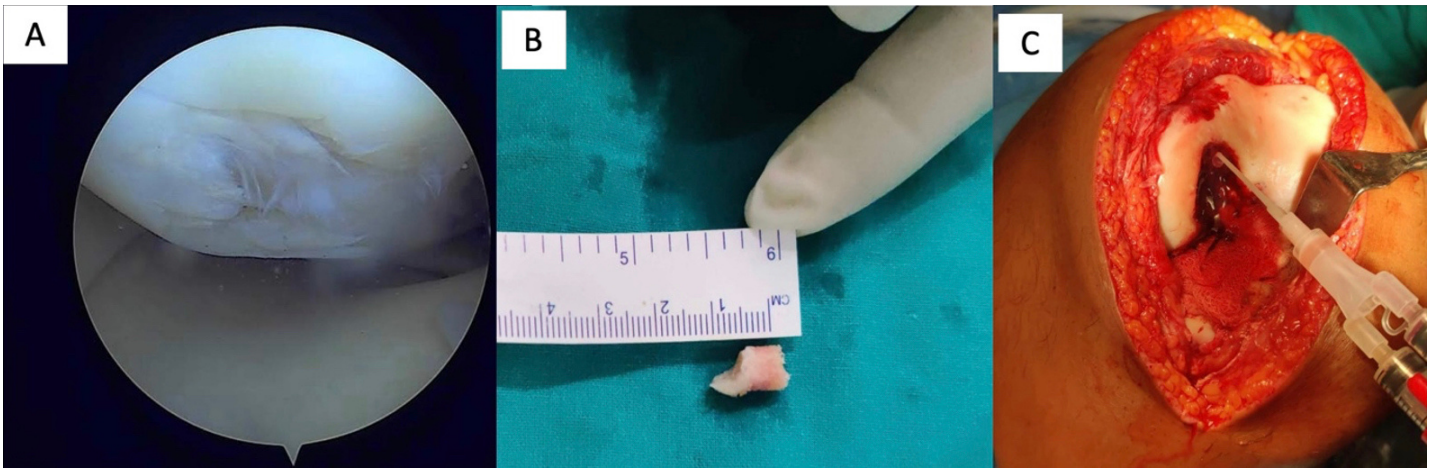

Figure 1: ACI for femoral chondral defect. A: Arthroscopic image showing the femoral defect, B: Harvested osteochondral plug. C: ACI inoculation

Discussion:

- Gel-based ACI is the most effective treatment in cartilage defects >4cm.
- In our case series we presented three cases in which two were femoral condyle lesions and one was a patellar cartilage lesion (FIG 1 & FIG 2).
- All patients showed excellent results in one year follow up.
- Chondromalacia patella grade 4 without any patella instability can be treated with ACI alone with excellent results.
- Simonetal(2) reported excellent and good results in 40% of their cases in Chondromalacia patella with ACI and 57 % with MACI.
  A systematic review on ACI by harris et al concluded that a defect size of more than 4 cm is definitely a predictive factor when comparing ACI with other cartilage restoration techniques(3).
- Knost YE et al(4) in their study on severe symptomatic unstable osteochondral defects treatment with combined autologous bone grafting and gel-based ACI will give excellent results (Sandwich ACI).
- Tables I & II outline the indications/contra-indications of ACI and its comparison with Microfracture.

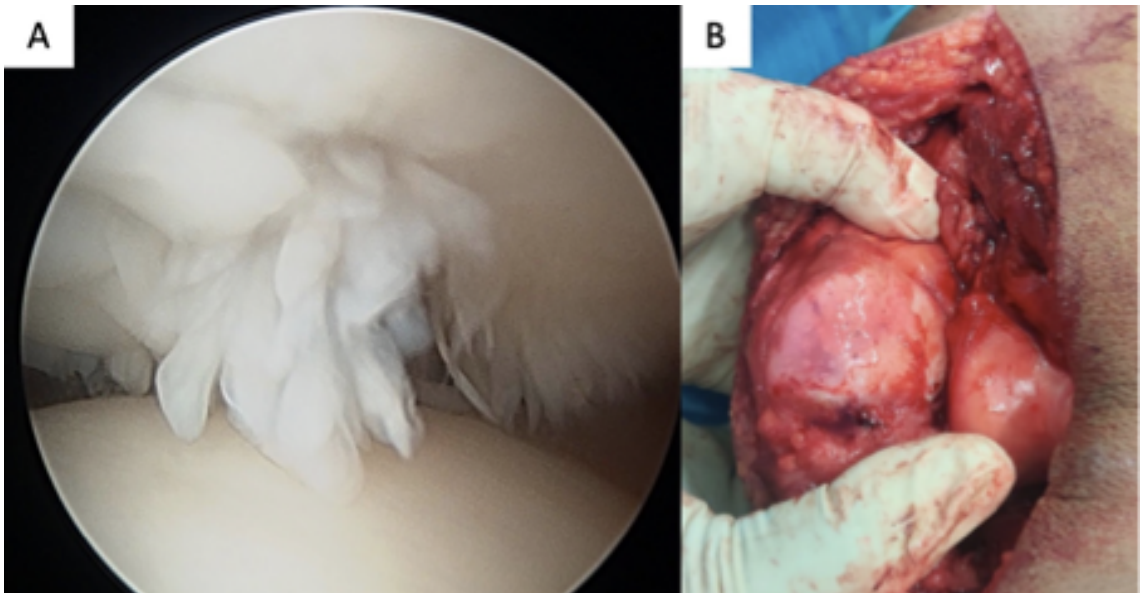

Figure 2: ACI for Chondromalacia patella.
A: Arthroscopic image depicting chondromalacia, B: Completed ACI

Table 1: Indications & Contraindications for ACI	
Indications	**Contraindications**
• Full thickness cartilage defect size generally more than 2 cm but smaller defects can be considered if the procedure is a revision or no alternative treatment options are available. • Intact subchondral bone (Within Outerbridge grade 2). • Stable well aligned knee with functional meniscus.	• Altered alignment of the knee • Bipolar defect (relative contraindication) • Inflammatory arthritis • Smoking and obesity

Table II : ACI versus microfracture	
ACI	Microfracture
• Covers larger area of defect from 2 to 20 cm • Forms almost hyaline cartilage • Uses scaffolds • Subchondral bone intact	• Covers only up to 2cm • Forms fibrocartilage • No scaffolds are used • Subchondral bone breached

Conclusion:

- Autologous chondrocyte implantation is an effective treatment that may result in a greater proportion of hyaline-like tissue at the repair site, which may, in turn, have a beneficial effect on durability and failure; it appears to be effective in larger lesions. .

- Autologous chondrocyte implantation with periosteum has been shown to be associated with symptomatic cartilage hypertrophy more frequently than autologous chondrocyte implantation with a collagen membrane. Gel-based autologous chondrocyte implantation is technically less challenging than the other techniques available, and in lesions greater than 4 cm2, it has been shown to be a more effective procedure than microfracture.

References:

1. Brittberg M, Lindal A, Nilsson A, Ohlsoon C, Isaasson O, Peterson L. Treatment of deep cartilage defects in the knee with autologous chondrocyte implanatation.New England J Med 1994;331(14):889-895.Medline.
2. Macmull S, Jaiswal PK, Bentley G, Skinner JA, Carrington RW, Briggs TW. The role of autologous chondrocyte implantation in the treatment of symptomatic chondromalacia patellae. Int Orthop. 2012;36(7):1371-1377. doi:10.1007/s00264-011-1465-6
3. Harris JD, Siston RA, Pan X, Flanigan DC. Autologous chondrocyte implantation: a systematic review. J Bone Joint Surg Am. 2010 Sep 15;92(12):2220-33. DOI: 10.2106/JBJS.J.00049. PMID: 20844166; PMCID: PMC7373451.
4. Könst YE, Benink RJ, Veldstra R, van der Krieke TJ, Helder MN, van Royen BJ. Treatment of severe osteochondral defects of the knee by combined autologous bone grafting and autologous chondrocyte implantation using fibrin gel. Knee Surg Sports Traumatol Arthrosc. 2012;20(11):2263-2269. doi:10.1007/s00167-012-1891-z