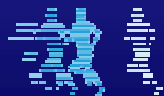


Osteo-chondral Transplantation (OATS)

The Unhappy ACL



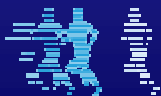
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The Unhappy ACL

ACL reconstruction highly successful surgery for restoring stability and return to pre-injury levels of sporting activity?



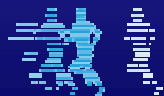
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Return to Sport Post ACL

- Carey et al (2006) – Professional NFL
- 21% didn't return to playing
 - significant decrease in performance
- Shah et al (2010) - 63% returned to playing
- Mc Cullough et al n - High School/College football
(2012) - 43% return



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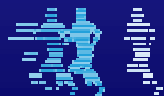
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Return to Sport Post ACL

Arden et al – meta-analysis

- 48 studies
- 5770 patients
- 44% return to sport at mean 44/12



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WHY

Anterior lateral ligament ?

Tunnel placement ?

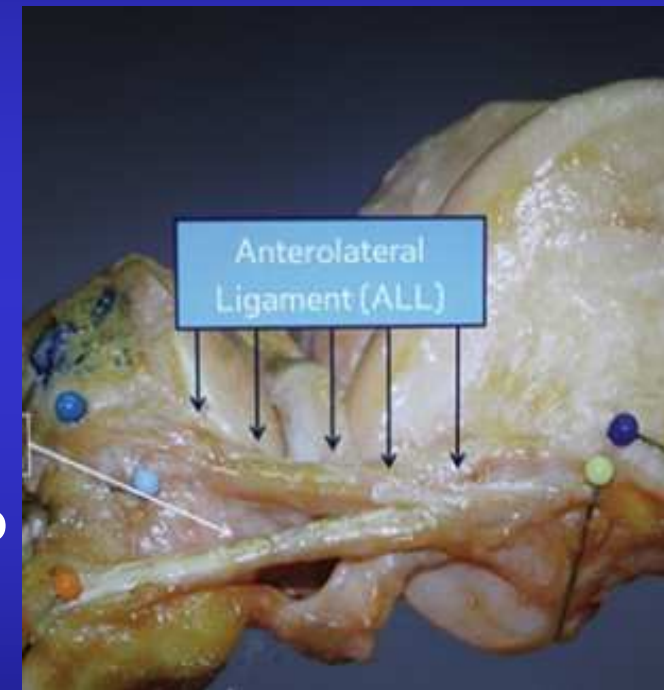
Graft choice and fixation ?

Synthetics ?

Accelerated / delayed rehab.?

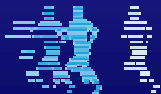
Single vs Double Bundle?

Varus knee?



Knee Stability

90% of patients have stable knees with objective and clinical measurement



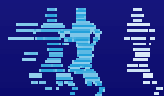
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Psychology

Psychological factors w.r.t. return to pre-injury levels of sporting activity appear to be very important



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Depression

- Rates of depression 7x higher in ACL patients c.f. controls
- Mood disturbance still present > 6 months post op
- Rates > concussion
- Higher in athletes
- More extreme in adolescents



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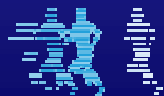
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Self-efficacy

Belief in ones self to achieve and execute actions

Thomee et al (2006, 2008)- high level of self efficacy pre and post op significant predictor for return to sport, knee related quality of life and functional testing

2 major determinates – patient reported symptoms and locus of control



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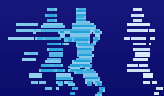
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Locus of Control

Persons belief in the relationship between action and outcome

- 1/ Internal – outcomes determined by own actions
- 2/ External- outcomes determined by others actions
- 3/ Chance - outcomes determined by chance

High internal locus correlates with high subjective knee scores, physical function, return to sport



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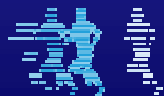
Athletic Identity

Identification with athletic role

Declines over 24/12 post surgery

Most significant decrease 6- 12/12 post op

(Brewer et al 2010)



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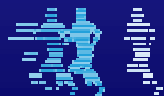
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Kinesiophobia

Fear of physical movement and activity resulting from a feeling of vulnerability to painful injury or injury

Significantly affects around 50 % of ACL patients Mc Cullough et al (2002)



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Adherence to Rehabilitation

- Adversely affected by low self efficacy, external locus of control, depression and anxiety states, kinesiophobia and loss of athletic Identity.



Management

Positive self actuation, goal setting, relaxation, emotional disclosure- beneficial

Role identifying patients at risk and referral to psychologist or sports psychologist



Articular Cartilage Injuries

- Shear or Large compression force
- Partial lesions common – asymptomatic
- Full thickness lesion – locking/ mechanical
 - pain
 - effusion
 - asymptomatic- Tx?

Diagnosed – MRI or at arthroscopy



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Articular Cartilage

Chondrocytes- 5% bw

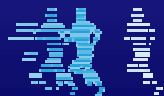
- maintenance and synthesis

Water – 75% bw

Collagen – predominantly type 2

- 10%

Proteoglycans - 10%

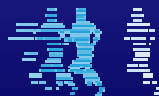
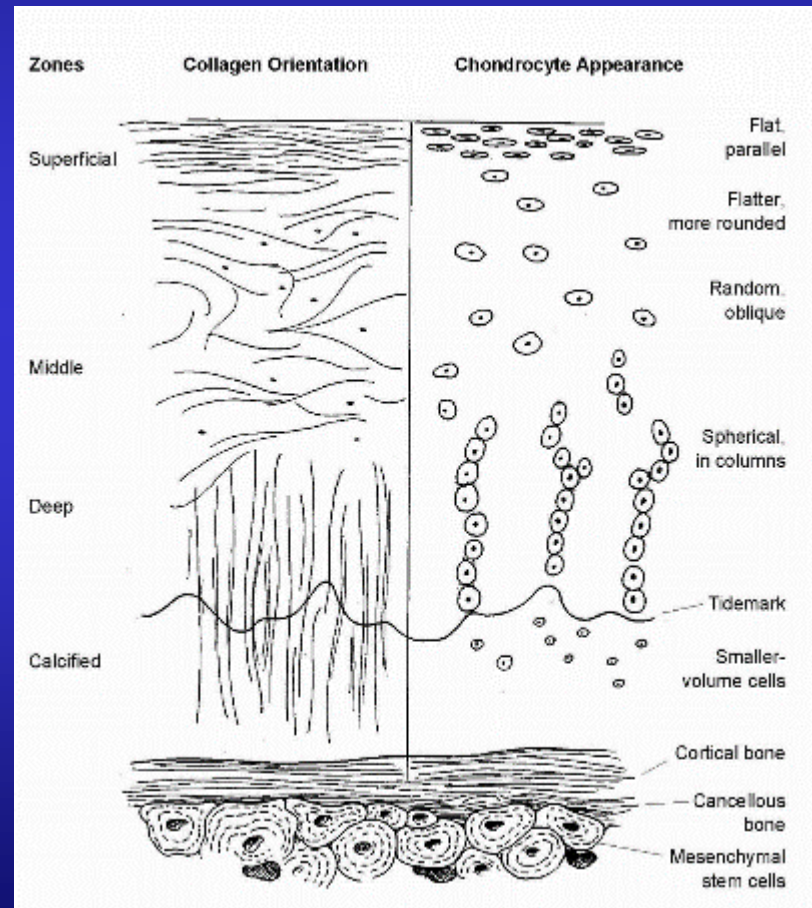


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Articular Cartilage



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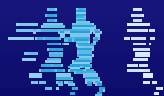
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Articular Cartilage Biomechanics

Low Friction/Shock absorption

- 1 Lamina splendens flat fibres smooth surface
- 2 Pores in lamina splendens in combination with hydrophilic action of proteoglycans creates hydrostatic pressure
- 3 Lamina splendens covered in phospholipids hydrophobic head attaches to collagen hydrophilic tail faces opposite joint surface creates electrostatic effect



Surgery

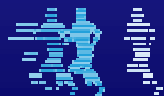
Reparative – doesn't fully restore

architecture , biomechanics

- may still relieve symptoms
- micro-abrasion, micro-fracture, MACI, Periosteal grafting

Restorative –restores architecture ,
biomechanics

- Osteo- chondral grafting



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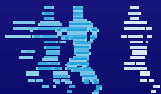
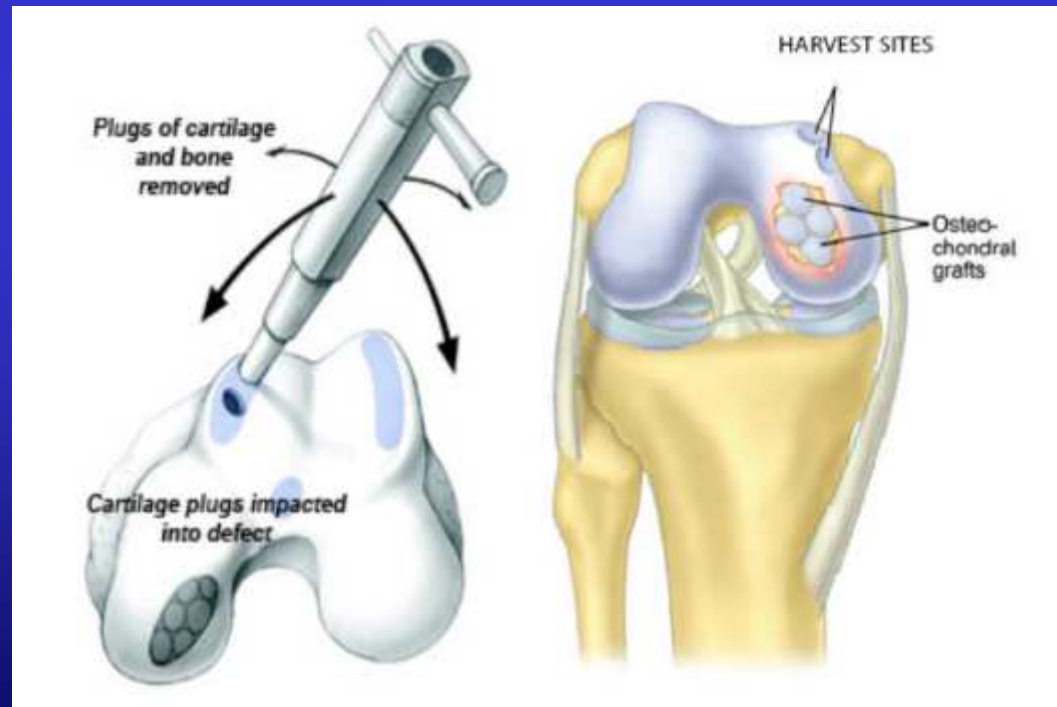
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OATS

osteo-chondral autologous transplantation

Restore weight bearing surface defects with
grafts from non weight bearing donor sites



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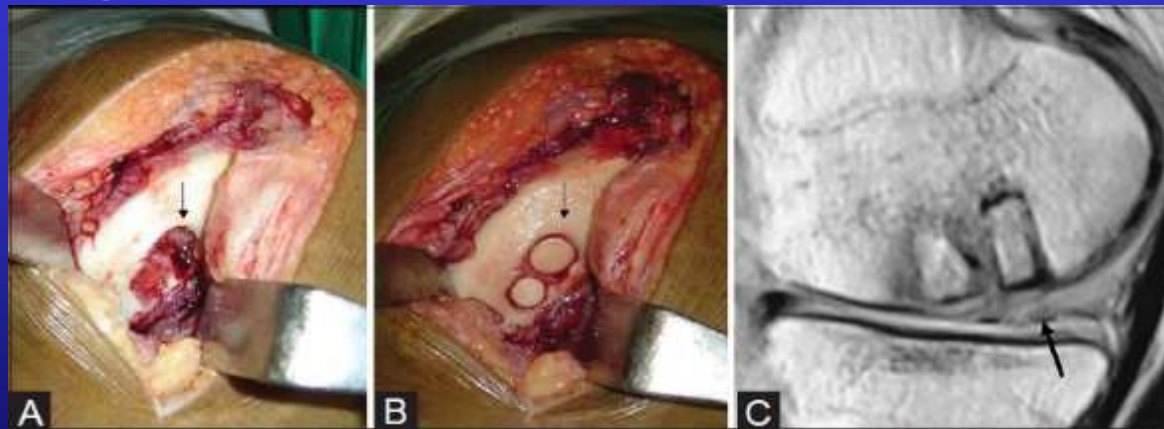
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OATS

Success rate 91% (Hangody et al)

Repeat arthroscopy biopsy maintenance of hyaline cartilage in grafts ,fibro cartilage between grafts sites



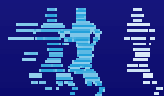
OATS

Advantages – Articular cartilage

- one procedure
- FWB as tolerated
- avoid osteotomy

Disadvantages – limits to donor tissue (autograft)

- donor site morbidity
- painful
- femur only

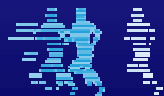
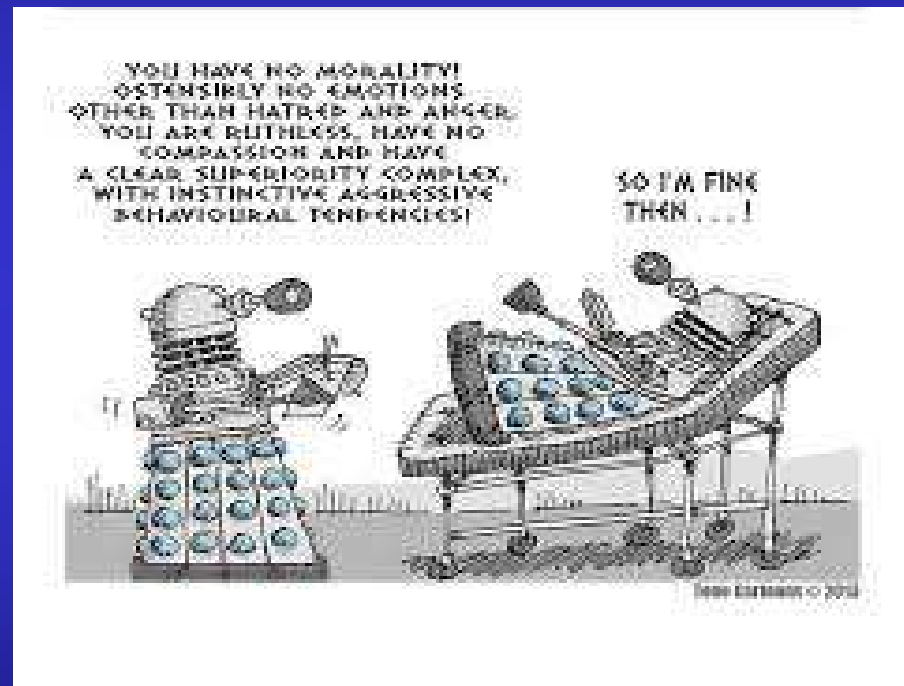


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Thank you



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