Osteo-chondral Transplantation (OATS)

The Unhappy ACL
The Unhappy ACL

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

- 21% didn’t return to playing
- significant decrease in performance

Shah et al (2010) - 63% returned to playing

Mc Cullough et al (2012) - High School/College football
- 43% return
Return to Sport Post ACL

Arden et al – meta-analysis
- 48 studies
- 5770 patients
- 44% return to sport at mean 44/12
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
Psychology

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

Identification with athletic role
Declines over 24/12 post surgery
Most significant decrease 6-12/12 post op
(Brewer et al 2010)
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)
Adherence to Rehabilitation

• Adversely affected by low self efficacy, external locus of control, depression and anxiety states, kenesiophobia 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

“You're the therapist—make it go away.”
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
Articular Cartilage

Chondrocytes - 5% bw
- maintenance and synthesis

Water - 75% bw

Collagen - predominantly type 2
- 10%

Proteoglycans - 10%
Articular Cartilage

Dr Ivan Popoff
Knee, Elbow & Shoulder Surgery
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 collage
   hydrophillic tail faces opposite joint surface
   creates electostatic 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
OATS
osteochondral autologous transplantation
Restore weight bearing surface defects with grafts from non eight bearing donor sites
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
Thank you