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Disclosures

I have the following potential conflicts of interest:

Consulting payments/royalties and research support directly related to products discussed:

- **Vericel**, Regentis, Geistlich, Novartis, Cartiheal, SBM, NuTech
- SLACK publishing (Book)

FDA-status of devices discussed:

Many of the applications presented are considered off-label

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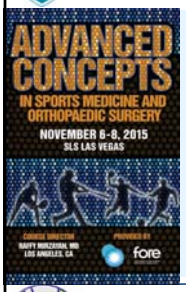

Current Techniques in Autologous Chondrocyte Implantation

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Since everything else is cheaper, the prime indication for ACI is where other things <u>don't work</u>

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Where does what work?

	MFx	OCA	ACI
Size	**Small (<2-3cm^2) +** Medium (>3cm^2) – Large (>5cm^2) –	Small + **Medium +** **Large +**	Small + **Medium +** **Large +**
Location	**Condyle +** Trochlea +/- Patella –	**Condyle +** Trochlea +/- Patella +/-	**Condyle +** **Trochlea +** **Patella +**
Depth	**Chondral +** Osteochondral -	Chondral + **Osteochondral +**	**Chondral +** Osteochondral +/-
Age	**<35 +** >35 –	<35 + >35 +	<35 + >35 +

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Results

- **Knutsen (RCT)**
  no difference between ACI and MFx!

- Knutsen – JBJS (2004)
- Saris – AJSM (2008, 2009)
- Basad – KSSTA (2010)
- Kon – AJSM (2009)
- Van Assche – KSSTA (2010)

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Results

- **Knutsen (RCT)**
  ACI for larger defects (>4cm^2)
- **Van Assche (RCT)**
  No difference at 2 years (2.4cm^2)
- **Kon (Cohort)**
  similar at 2y, MACI better at 5y (2.4cm^2)
- **Saris (RCT)**
  ↑histology, ↑outcomes at 3y, at 5y only for more acute defects (<3y) (2.7cm^2)
- **Basad (RCT)**
  MACI better at 2y (>4cm^2)
- **Saris (RCT)**
  MACI better at 2y (4.8cm^2)

- Knutsen – JBJS (2004)
- Saris – AJSM (2008, 2009)
- Basad – KSSTA (2010)
- Kon – AJSM (2009)
- Van Assche – KSSTA (2010)
- Saris – AJSM (2014)

Where do we use ACI?

Prime indications for ACI:

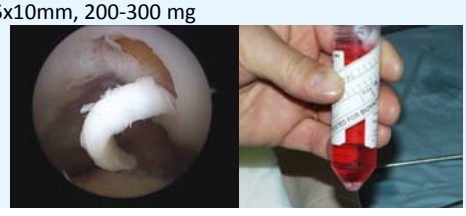
- Focal contained defect >3cm^2
- Femoral condyle, trochlea or patella (off-label)
- Intact subchondral bone (OCD ok in young)

ACI Technique

ACI

Technique (Biopsy):

- Biopsy
- intercondylar notch, prox./sup. to sulcus terminalis
- 5x10mm, 200-300 mg



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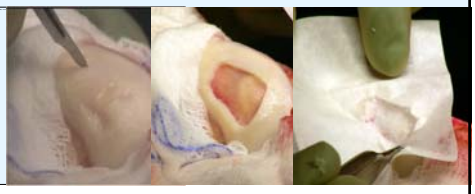
ACI

- Approach by defect location and other procedures
- Outline defect; include all soft/fissured cartilage
- Create stable vertical shoulders
- Template defect with glove paper or aluminum foil



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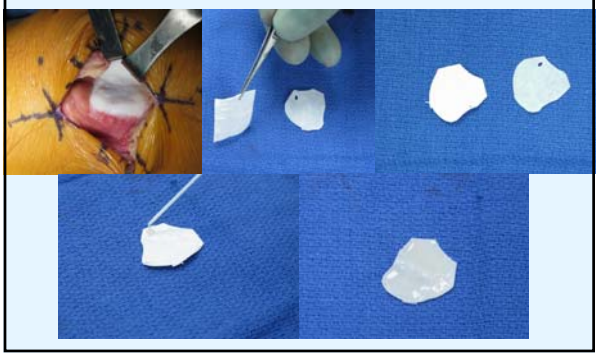
Cell seeding technique



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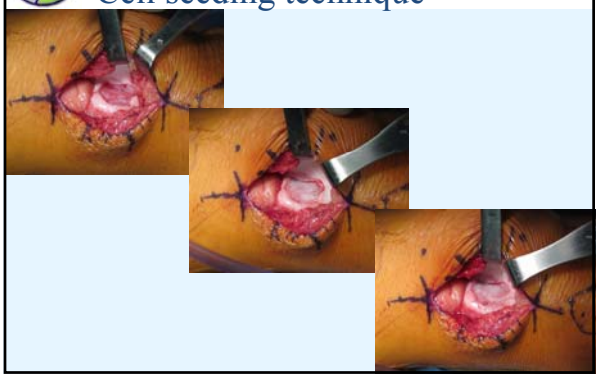
Cell seeding technique



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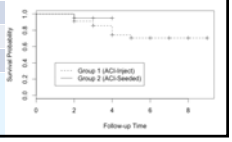
Cell seeding technique

	injected	seeded	P-value
N	45	39	
Age	33	31	0.25
Defect area	5.9	4.5	0.002
KOOS (Δ)			
- Pain	18.4	18.1	0.09
- Symptoms	6.5	5.0	0.45
- ADL	15.7	15.4	0.33
- Sport	21.0	24.7	0.12
- QoL	26.2	28.5	0.21
IKDC (Δ)	21.4	22.4	0.33
Lysholm (Δ)	12.5	21.7	0.34



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Summary

- ACI is expensive
- ACI is effective with success >80%
- It becomes cost-effective in larger and patello-femoral defects
- Here, it should be considered as 1st line Rx

Questions?