


Cartilage repair in Belgium

Current possibilities
Johan Vanlauwe MD PhD




Treatment flow chart



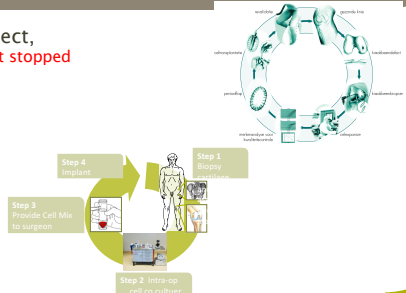

1. Correct **Bony** alignment
2. Treat **Ligamentous** instability
3. Treat **Meniscal** deficiency

Repair or Regenerate **Cartilage**




Chondrocyte Implantation techniques

- ChondroCelect, reimbursement stopped since 2015
- CartiOne

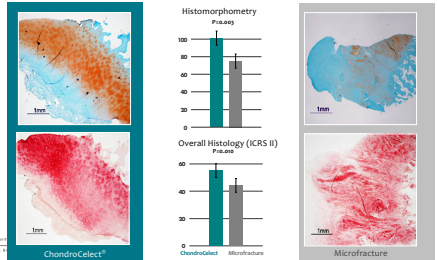



ACI with ChondroCelect

- 5 year results very promising
- BUT
- Two surgeries
- Cost-effectiveness 20000€/Cell culture
- ATMP Regulated



Superior structural repair at 12 months

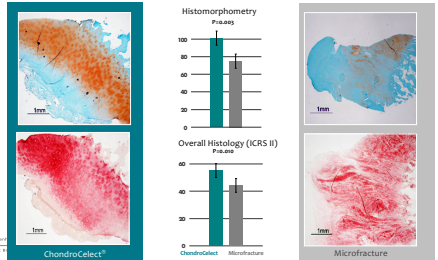



Histomorphometry (P=0.003)

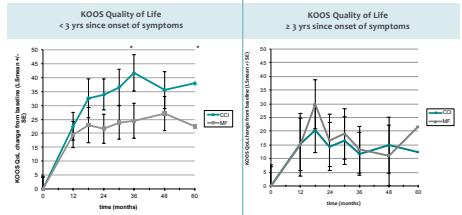
Group	Score (approx.)
ChondroCelect	85
Microfracture	65

Overall Histology (ICRS II) (P=0.002)

Group	Score (approx.)
ChondroCelect	75
Microfracture	55

KOOS QOL is clearly better in early




KOOS Quality of Life < 3 yrs since onset of symptoms

Time (months)	ChondroCelect (approx.)	Microfracture (approx.)
0	0	0
12	35	25
24	40	25
36	45	25
48	40	25
60	40	25

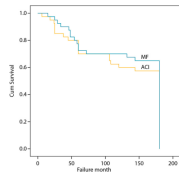
KOOS Quality of Life ≥ 3 yrs since onset of symptoms

Time (months)	ChondroCelect (approx.)	Microfracture (approx.)
0	0	0
12	30	20
24	25	20
36	25	20
48	25	20
60	25	20



Knutsen Series

- 40 vs 40 patients 18 to 50
- Chronic lesions
- 1,5 to 11 cm²
- RCT ACI vs Microfracture



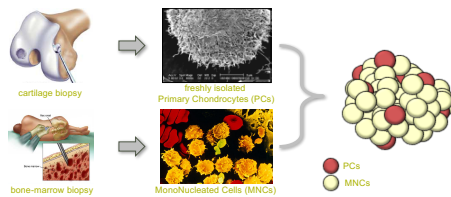
Knutsen series

- 2 years
- 5 years
- 10 years
- 15 years
- No difference, 23% failures
- Better quality reduced failure rate
- No difference, increasing rates OA
- No difference, OA problematic 50% cases, more TKA in ACI?



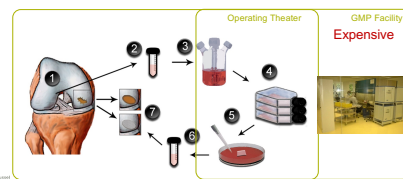
ACI: Single stage

- Co-Culture of cells



ACI: Single Stage

- 1 hour intra-operative cell processing
- Applicable on different scaffolds



CellCoTec 2-year post-op clinical trial results

- 40-patient multi-center trial in EU
- early hyaline cartilage formation → long term efficacy (69 % hyaline pos. 1-year post-op)
- good scaffold integration and defect filling = safe and well tolerated
- better safety profile than microfracture or ACI (i.e., less adverse events)
- excellent pain and Quality of Life scores (KDC, KOOS, and VAS)
- very positive surgeon and patient feedback
- clinically and statistically significant improvements in all patients at 24 months



2-year results submitted to ICRS, ISAKOS, BASK, AGA, EFORT

Alternatives?



Osteochondral grafting

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Typical surgical complications

- Orientation
- Length
- Plug breakage
- Deep seating
- Short plugs: cyst
- Subchondral plate
- Cartilage layer

Evidence-Based Status of Osteochondral Cylinder Transfer Techniques: A Systematic Review of Level I and II Studies

Deepak Goyal, M.B.B.S., M.S.(Orthop), D.N.B.(Orthop), M.N.A.M.S. | Schrabl Keyhani, M.D., Anjali Goyal, M.B.B.S., M.D., D.I.C.P., Eng Hin Lee, M.D., F.R.C.S.(C), F.R.C.S.(Ed), F.R.C.S.(Glas), F.A.M.S., James H.P. Hui, M.D., F.R.C.S.(Ed), Arash Sharafati Vazag, M.D.

Conclusions
 From the studies of a single center, OCT had an **advantage** over MF in younger patients with **small** chondral lesions. Comparison of outcomes between **OCT and ACI** showed **no significant differences** in 2 studies and contrasting results in another 2 studies. There was **insufficient evidence** for long-term results for OCT.

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Bone marrow stimulation.

EXPERIMENTAL ARTHRITIS: THE CHANGES IN JOINTS PRODUCED BY CREATING DEFECTS IN THE ARTICULAR CARTILAGE
 J. ALBERT KEY
J Bone Joint Surg Am. 1991;13:725-739.

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Microfracture: first line again

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Two years post Mfx

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Microfracturing - Critical Aspects

Identification of prognostic factors ?
 Who fails after treatment with microfracturing ?
 Technique-specific complications ?
 Superiority or Inferiority to other techniques in specific conditions ?

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Drilling vs microfracturing

less necrosis
compacting surrounding bone
local release of cartilage (stimulating growth factors)

Drilling and Microfracture Lead to Different Bone Structure and Necrosis during Bone-Marrow Stimulation for Cartilage Repair

Hongwei Chen,¹ Jun Sun,² Caroline D. Hickerson,³ Virginia Larcus-Cannon,⁴ Neil Oueang,⁵ Alan D. McKee,⁶ Matthew S. Wong,¹ Michael D. Buckwalter¹

¹Department of Chemical Engineering and Institute of Biomedical Engineering, Royal Free/Lancaster Medical School, F20, 8479 Station Centre Circle, Montreal, QC, Canada H3T 2M4; ²Department of Orthopedics, The General Hospital, Faculty of Medicine, HEC of University, Montreal, Canada; ³Journal of Biomedical Materials Research Part B: Applied Biomaterials, 2009; ⁴Journal of Biomedical Materials Research Part B: Applied Biomaterials, 2009; ⁵Journal of Biomedical Materials Research Part B: Applied Biomaterials, 2009; ⁶Journal of Biomedical Materials Research Part B: Applied Biomaterials, 2009

Powerpick?

Microfracture "Plus"

- AMIC
- Maioresgen
- BSTCarGel
- AgiliC

Intralesional Osteophyte

Conclusion Microfracturing

Benefits of arthroscopic microfracture are ...

- ... arthroscopic application
- ... cheap procedure
- ... „easy“ from technical point of view

can be recommended in ...

- ... small defects up to 2 cm²
- ... defect location on femoral condyle
- ... younger patients (from outcome point of view)

needs to be considered critically in ...

- ... larger defects
- ... younger patients (with regard to limited time)
- ... in patello-femoral locations
- ... highly active patients (?)

What if everything fails

- Fresh allograft: megaOats
- Episurf
- Arthrosurface

1. Cartilage repair with megaOats
2. Cartilage repair with Episurf
3. Map surface contours in both planes
4. Restore a congruent surface

THANK YOU

