



7<sup>TH</sup> Advanced Course on Knee Surgery  
14<sup>th</sup> to 18<sup>th</sup> January 2018  
Val d'Isère – France

Do we have to treat all types of  
lesion? Is palliative surgery  
sufficient?

Mike Carmont

Princess Royal Hospital

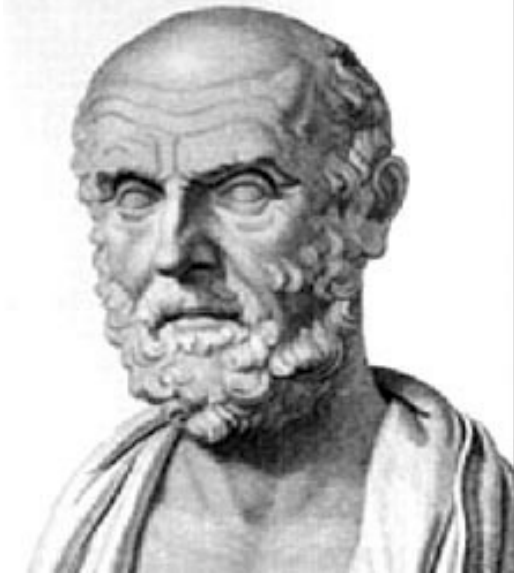
Shropshire, UK





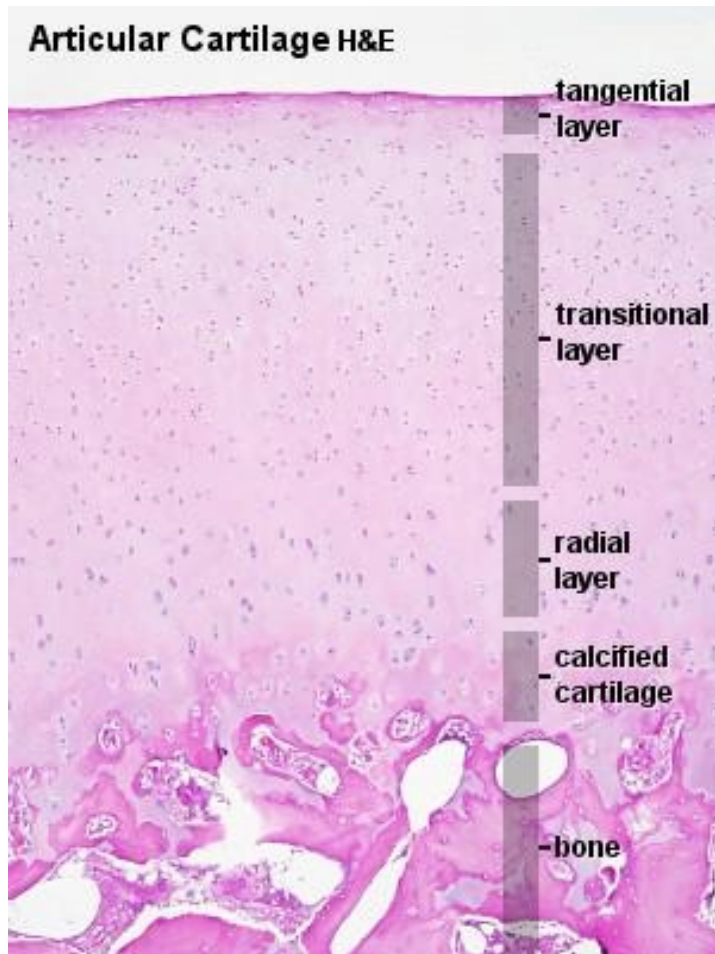
?

# Hippocrates II of Kos



“Cartilage once damaged  
should never heal.”

# Articular Cartilage



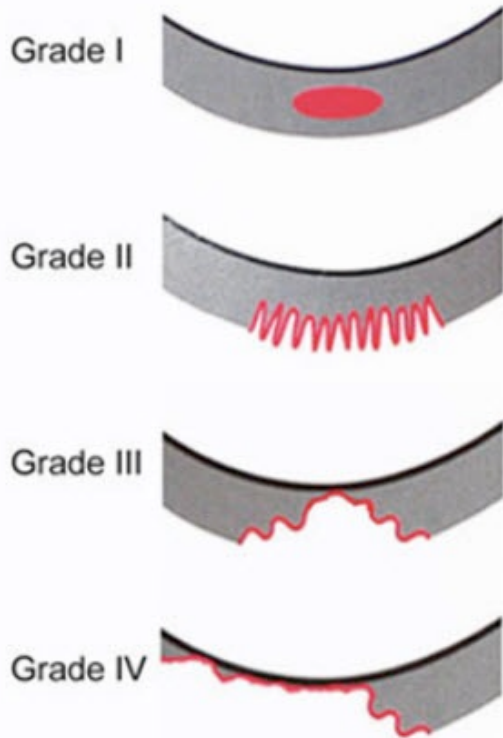
Avascular, aneural  
and a lymphatic  
privileged

# Classification lesions

**Table 1 Classification of articular lesions by severity**

Grade	Outerbridge	Modified outerbridge	ICRS
0	Normal cartilage	Intact cartilage	Intact cartilage
I	Softening and swelling	Chondral softening or blistering with intact surface	Superficial (soft indentation or superficial fissures and cracks)
II	Fragmentation and fissures in area less than 0.5 inch in diameter	Superficial ulceration, fibrillation, or fissuring less than 50% of depth of cartilage	Lesion less than half the thickness of articular cartilage
III	Fragmentation and fissures in area larger than 0.5 inch in diameter	Deep ulceration, fibrillation, fissuring or chondral flap more than 50% of cartilage without exposed bone	Lesion more than half the thickness of articular cartilage
IV	Exposed subchondral bone	Full-thickness wear with exposed subchondral bone	Lesion extending to subchondral bone

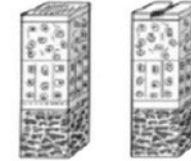
## Outerbridge classification



ICRS grade 0—normal



ICRS grade 1—nearly normal  
Superficial lesions. Soft indentation (A) and/or superficial fissures and cracks (B)

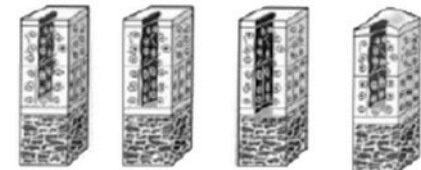


A B

ICRS grade 2—abnormal  
Lesions extending down to <50% of cartilage depth



ICRS grade 3—severely abnormal  
Cartilage defects extending down >50% of cartilage depth (A) as well as down to calcified layer (B) and down to but not through the subchondral bone (C). Blisters are included in this grade (D)



A B C D

ICRS grade 4—severely abnormal



A B



# Deep cartilage lesions, left with no treatment were considered to lead to permanent knee deterioration

Procedure	Indications	Outcome
Arthroscopic debridement and lavage	Minimal symptoms	Palliative
Marrow stimulation	Smaller lesions, low-demand patient	Reparative
Osteochondral autograft	Smaller lesions, low-or high-demand patients	Restorative
Osteochondral allograft	Larger lesions with bone loss, low-or high-demand patients	Restorative
Autologous chondrocyte implantation	Small and large lesions with and without bone loss, high-demand patients	Restorative
Genetic engineering	Investigational	Restorative

Garrick JG, editor: Orthopaedic Knowledge Update:  
Sports Medicine 3<sup>rd</sup> Edition, Rosemont IL, 2004 AAOS

# Dai Rees, Robert Jones Agnes Hunt Hospital



# Articular cartilage defects: Study of 25,124 knee arthroscopies

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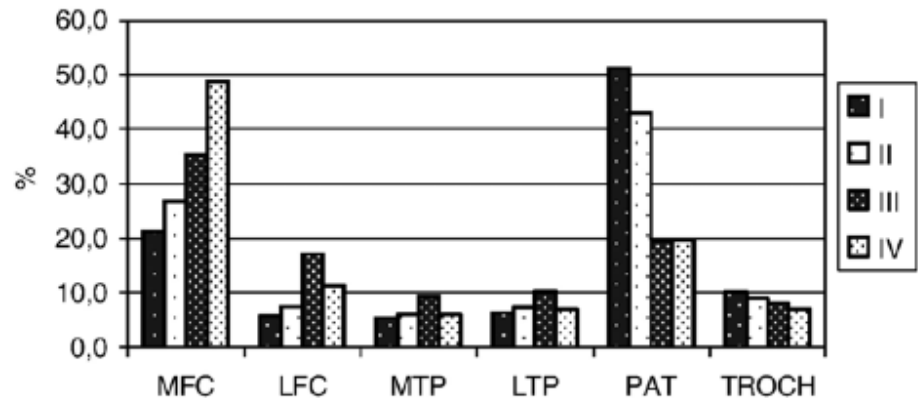
<sup>b</sup> Regional Centre of the Knee Surgery and Arthroscopy, Puszczykowo/Poznan, Poland

- Retrospective RV 25124
- Ax 1989-2004
- Found 60% Arthroscopy
  - 66% Male
  - 34% Female
- 46% sports participants
- Predominantly MFC and Patellar
- Traumatic 7.5x more frequent

Table 1  
The locations of diagnosed chondral lesions

MFC	LFC	MTP	LTP	PAT	TROCH
34%	9%	6%	7%	36%	8%

MFC — medial femoral condyle, LFC — lateral femoral condyle, MTP — medial tibial plateau, LTP — lateral tibial plateau, PAT — patella, TROCH — trochlea.





# OUTCOME OF UNTREATED TRAUMATIC ARTICULAR CARTILAGE DEFECTS OF THE KNEE

A NATURAL HISTORY STUDY

BY K. DONALD SHELBOURNE, MD, SANJIV JARI, BSC(HONS), MBChB,  
FRCS(ENG), FRCS(Tr & ORTH), AND TINKER GRAY, MA, ELS

- 1987-1999 2770 ACL reconstructions
- 125 Outerbridge 3 or 4 both menisci intact
- Mean defect size 1.7cm<sup>2</sup> (0.5-6.5cm<sup>2</sup>)
- Patellar tendon autograft
- No chondral treatment, rehab FWB & ROM
- 101 evaluated >2years mean 8.7years

TABLE II Subjective Scores

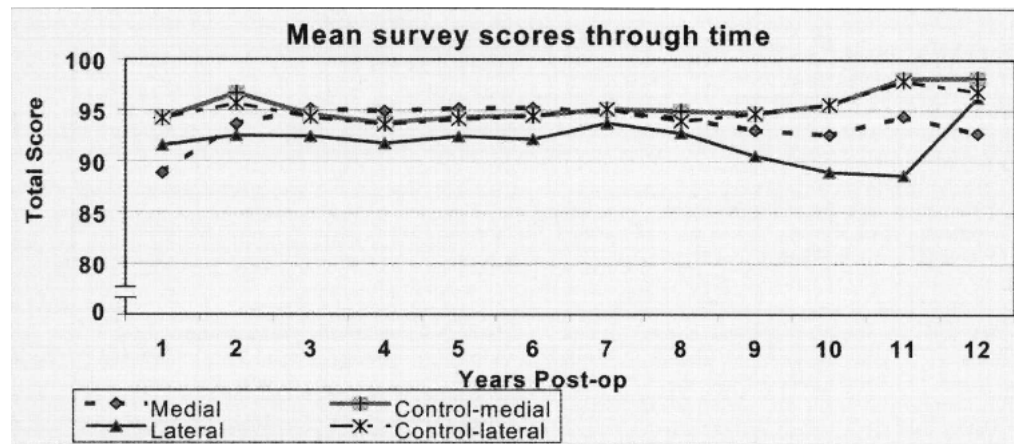
Compartment Involved	Defect Group*	Control Group*	P Value
Medial (n = 48)	94.0 ± 7.1	95.2 ± 6.7	0.0451
Lateral (n = 53)	92.8 ± 8.4	95.9 ± 6.5	0.0047

\*The values are given as the mean and standard deviation.

- Both groups scored greater than the 92 points survey athletes with no knee injury

**TABLE V Summary of Activity Level in the Two Groups at Latest Follow-up**

Time after Surgery	Chondral Defect Group	Matched Control Group	P Value
Within 1st postop. year (mean and standard dev.)	7.1 ± 3.7	7.1 ± 3.1	0.9735
At most recent follow-up			
Mean and standard dev.	7.7 ± 1.0	7.8 ± 0.8	0.6009
Range	3 to 9	6 to 9	



- No correlation defect size & post op subjective scores p=0.2543
- No difference radiographic ratings
- Scores fluctuate year to year
- Capable high activity level and few symptoms

# Long-term clinical and radiological assessment of untreated severe cartilage damage in the knee: a natural history study

W. Widuchowski, J. Widuchowski, R. Faltus, P. Lukasik, G. Kwiatkowski, K. Szyluk, B. Koczy

- 1991-1994, 4121 Knee Ax
- 37 isolated chondral lesions
- Outerbridge 4, 2-4cm<sup>2</sup>
- Follow up 15.3 years
  - Lysholm= 87.7
  - Tegner= 5.6
  - WOMAC= 88.7
- OA changes 39%
  - No difference injured and uninjured knee

Surgery	Group	
	FT group (26 patients)	P group (11 patients)
Untreated	20	6
Debridement	4	3
Shaving	2	1
Loose body removal	3	2

FT group, femoral and tibial condyles; P group, patella.

Surgery	Group	
	P group (three patients)	FT group (five patients)
Loose body removal	1	1
Debridement	2	2
Meniscal surgery	1	2
ACL reconstruction	1	2

ACL, anterior cruciate ligament; FT group, femoral and tibial condyles; P group, patella.

# **Long-term clinical and radiological assessment of untreated severe cartilage damage in the knee: a natural history study**

W. Widuchowski, J. Widuchowski, R. Faltus, P. Lukasik, G. Kwiatkowski, K. Szyluk, B. Koczy

- Preconception
  - Deep cartilage lesions, left with no treatment were considered to lead to permanent knee deterioration
- Conclusion
  - “Severe isolated single chondral damage, left with no treatment, has limited influence on clinical outcomes and the development of OA.”

# Isolated Full Thickness Chondral Injuries. Prevalance and Outcome of Treatment. A Retrospective Study of 5233 Knee Arthroscopies

Izolované chondrální zlomeniny – retrospektivní artroskopická studie  
na souboru 5233 kolenních kloubů

W. WIDUCHOWSKI, P. LUKASIK, G. KWIATKOWSKI, R. FALTUS, K. SZYLUK, J. WIDUCHOWSKI,  
B. KOCZY

- 1997-2002, 5233 Knee Arthroscopies

- 57.3% cartilage lesions
- 5.3% (153) Grade 3 & 4
- Lesion size 2.3cm<sup>2</sup> (2.0-3.6cm<sup>2</sup>)

MFC	LFC	MTP	LTP	PAT	TROCH
32.2%	9.3%	7.1%	6.8%	37.5%	7.1%

Debride- ment	Loose body removal chon- drectomy	Mosaic- plasty	Shaving	Micro- fracture	Drilling	Abrasion
41.8%	13.2%	10.9%	10%	8.6%	7.8%	7.7%

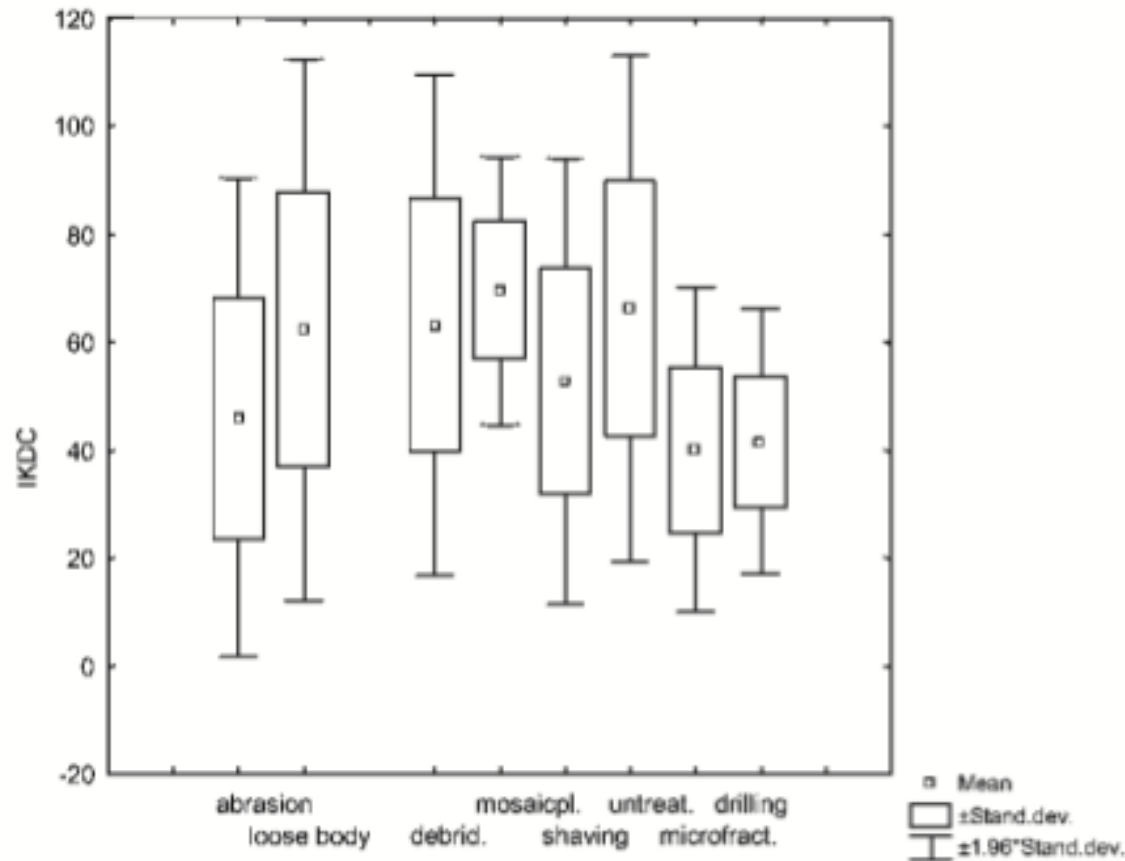
- IKDC at follow up mean 5.6 years (1 to 7 years)



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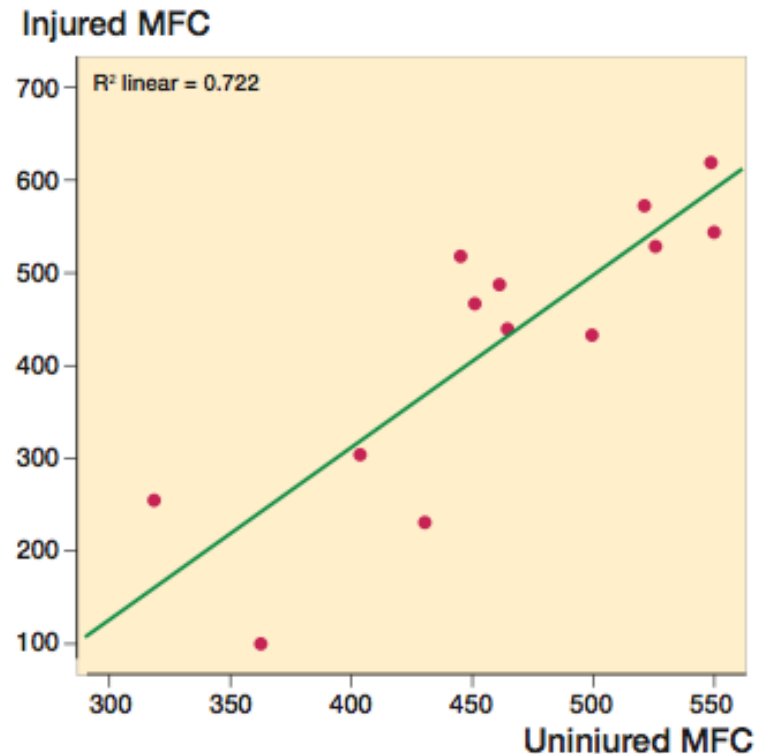


Little invasive Ax methods as well as no surgical treatment for grade 3 & 4 chondral lesions may be effective and improve symptoms and knee function at mid-term follow up

# No degeneration found in focal cartilage defects evaluated with dGEMRIC at 12-year follow-up

Cathrine Nørstad ENGEN<sup>1,2</sup>, Sverre LØKEN<sup>1,3</sup>, Asbjørn ÅRØEN<sup>1,4,5</sup>, Charles HO<sup>6</sup>, and Lars ENGBRETSSEN<sup>1,2,3</sup>

- 21 patients
  - Full thickness cartilage defect, stable knee, 50% both menisci intact
  - 10 repair microfracture or ACI
  - 11 no additional surgery/ simple debridement
- Follow up 12 (10-13) years
  - Lysholm 69 (52-81)
  - Tegner 4 (3-5)
  - KOOS Sports 45, QoL 56
- XR evident 13/21 knees



De Gad Enh MRI C > loss GAGs > early OA

# Take home message

- Do we have to treat all types of lesion?
- No!
- Debridement is option
- Future study needed

# 18<sup>th</sup> ESSKA Congress

## 9 – 12 May 2018



Glasgow, Scotland, UK

[www.esska-congress.org](http://www.esska-congress.org)



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# Au revoir!

