



Subchondroplasty: Phasing Out or Here to Stay

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Consultant

- Conmed – MTF
- Zimmer
- Depuy-Mitek
- Smith & Nephew
- Hyalex
- Vericel

Research Support

- KCRN
- MTF
- Zimmer
- Smith & Nephew
- Episurf
- Aesculap
- Moximed

Committees

- AOSSM Fellowship
- AOSSM Education
- AANA Research
- AANA Education



Terminology

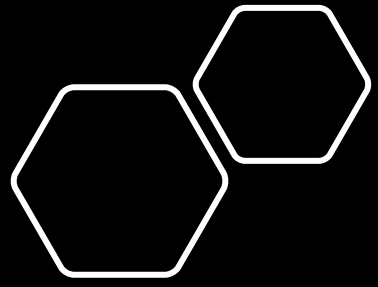
- Bone Marrow Edema
 - Wilson et al, Radiology 1988
 - Ill defined bone marrow hyperintensities on T2w MR
 - Poor term histologically
- Bone Marrow Lesion (BML)
 - Cystic or Non-Cystic
- BML with cartilage damage or OA (non Cystic)
 - Ischemic
 - Mechanical
 - Reactive
 - Traumatic vs Non Traumatic
 - Reversible or Irreversible



What are We Treating

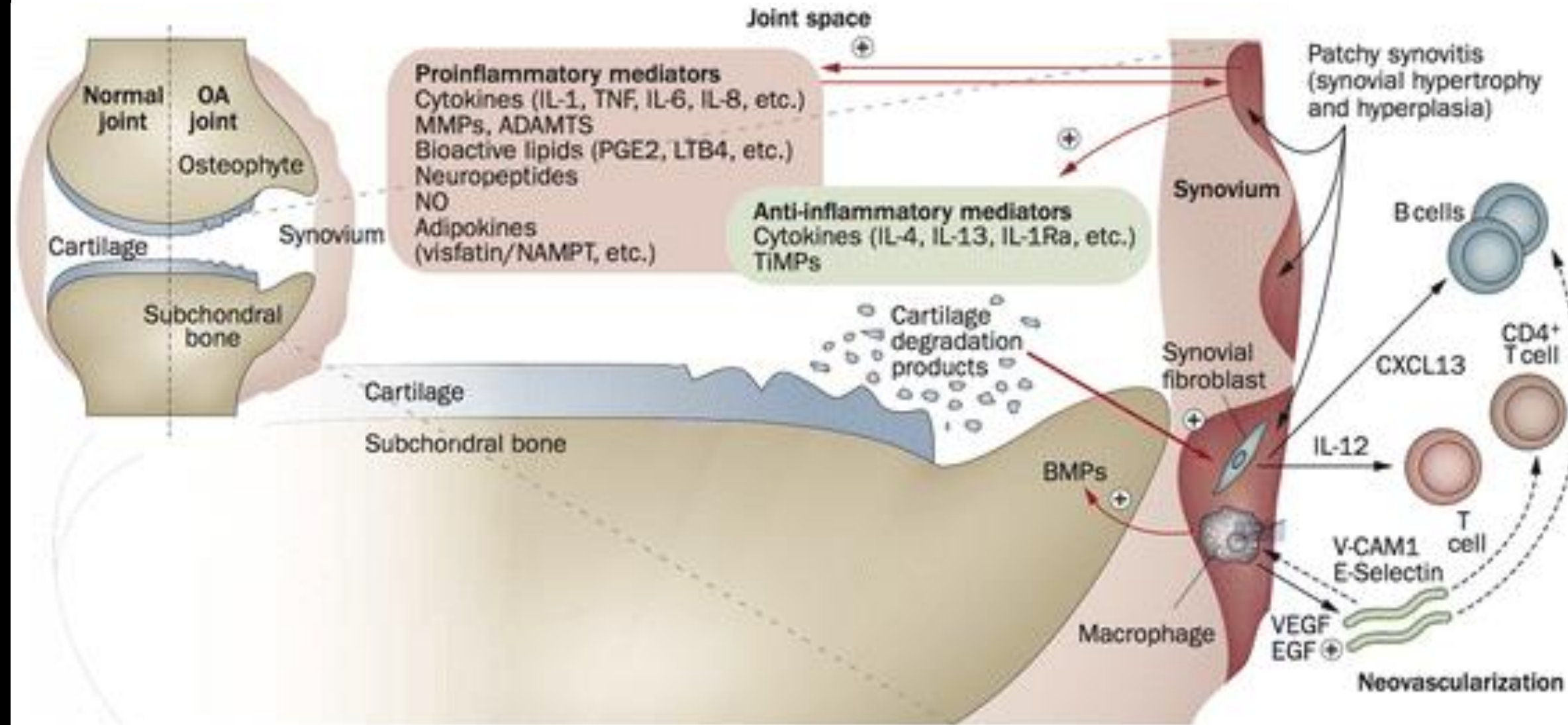
- Traumatic
 - ACL injury
 - Patella dislocation
 - Hyperextension
- Transient Osteoporosis
- Complex Regional Pain
- AVN
- Osteonecrosis
- Mechanical Overload
 - Osteoarthritis
 - Subchondral Insufficiency fractures





Osteoarthritis

- Organ System
 - Cartilage
 - Bone
 - Synovium





BML's Predictive of OA Progression

Regression over time not reliable

- Studies vary from full regression to <1%

Enlargement of lesion

- Predictive of
 - worsening cartilage loss
 - increased pain
 - higher probability of arthroplasty

Subchondral Bone Marrow Lesions Associated With Knee Osteoarthritis

Peter F. Sharkey, MD, Steven B. Cohen, MD, Charles F. Leinberry, MD, and Javad Parvizi, MD

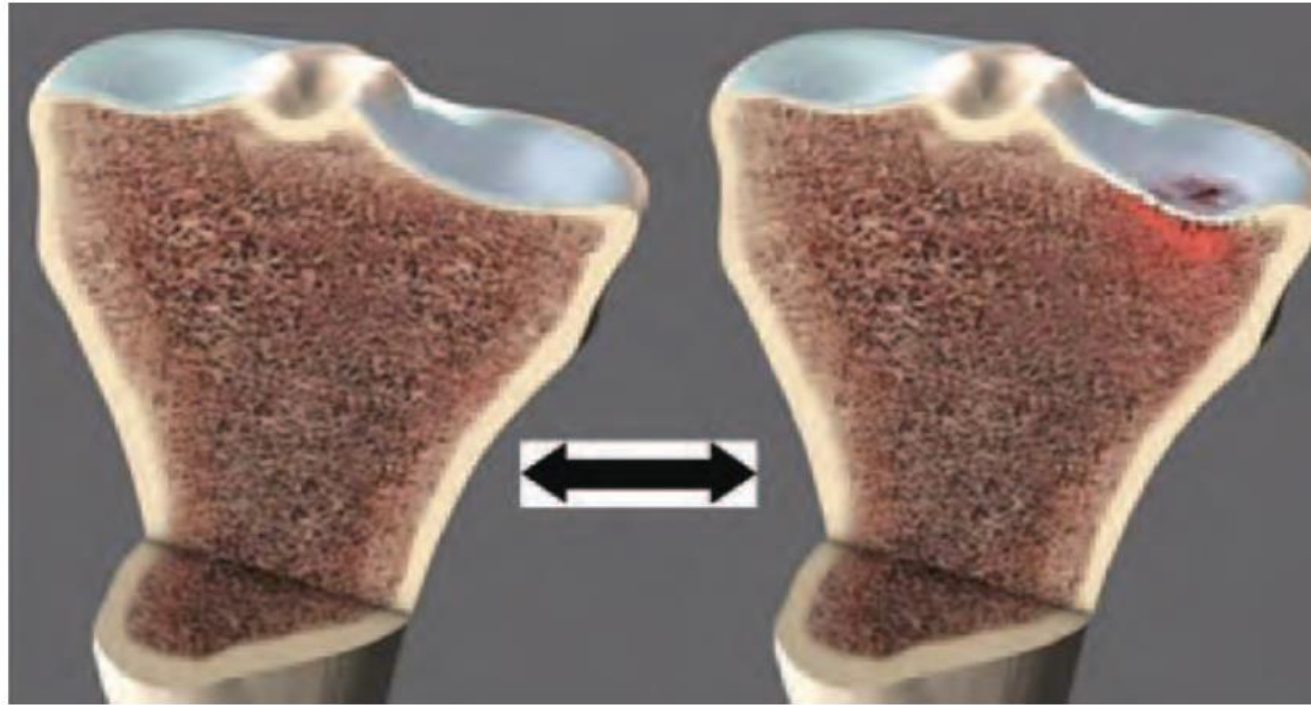


Figure 1. Schematic conception of physiologic and pathologic bone remodeling.

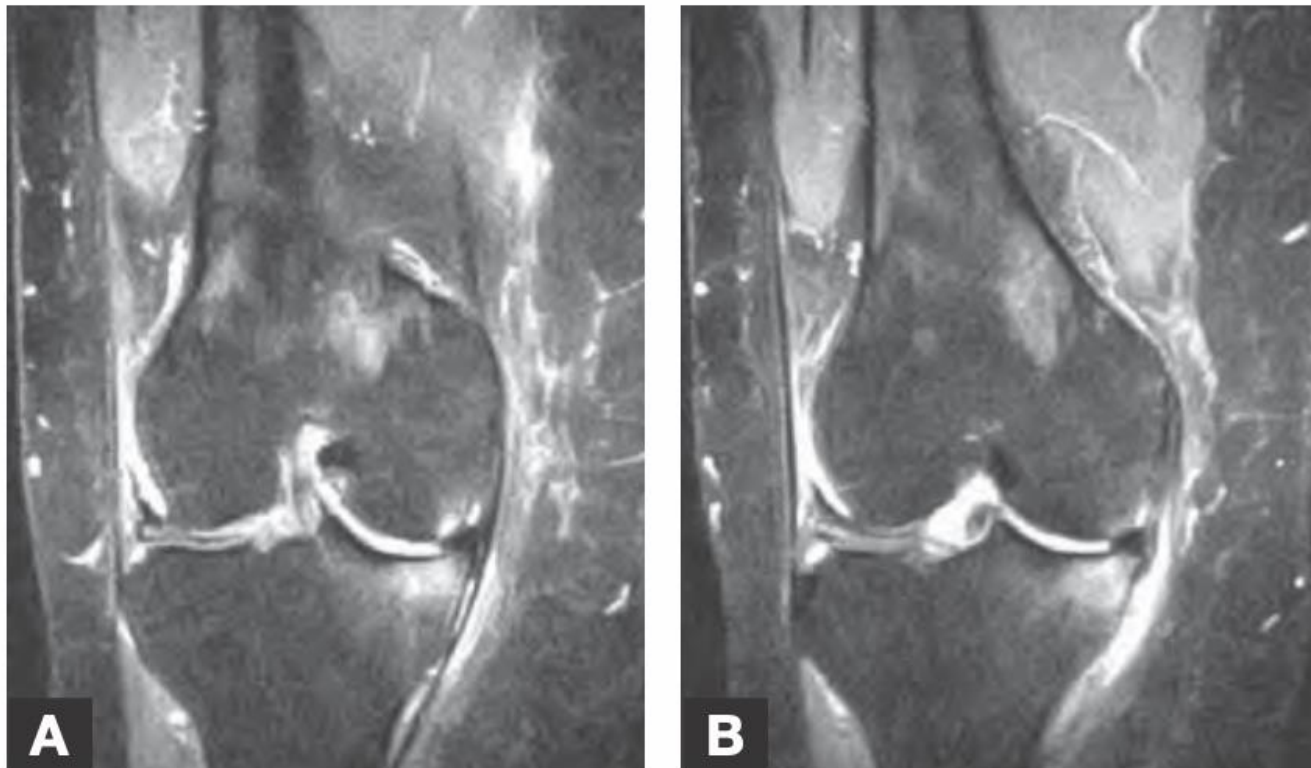


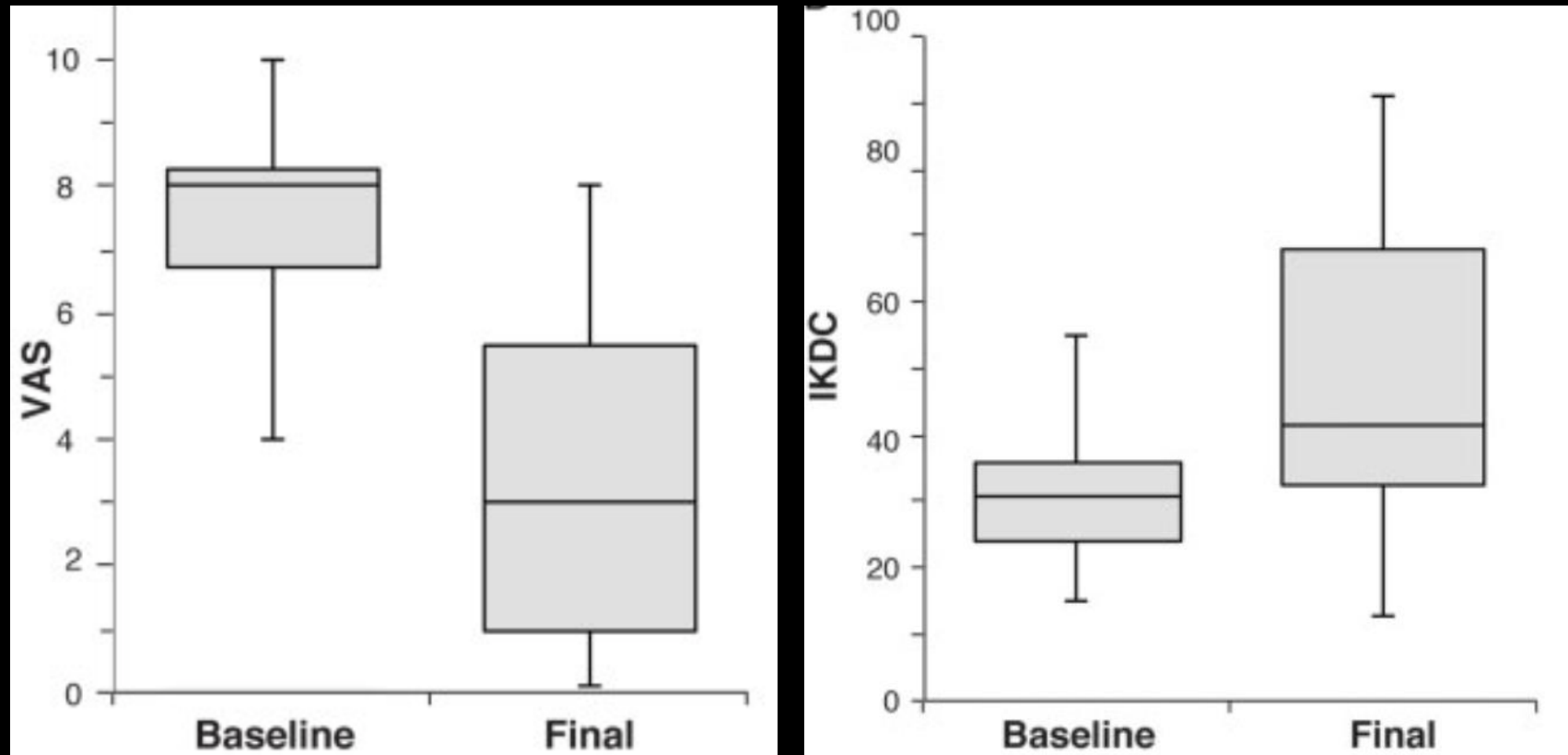
Figure 2. Two consecutive slices, (A) and (B), of a T2 fat suppressed MRI.

- Osteoarthritis with BML
- Failed conservative management
- Pain over bone
- Wanting to delay TKA
- Calcium Phosphate

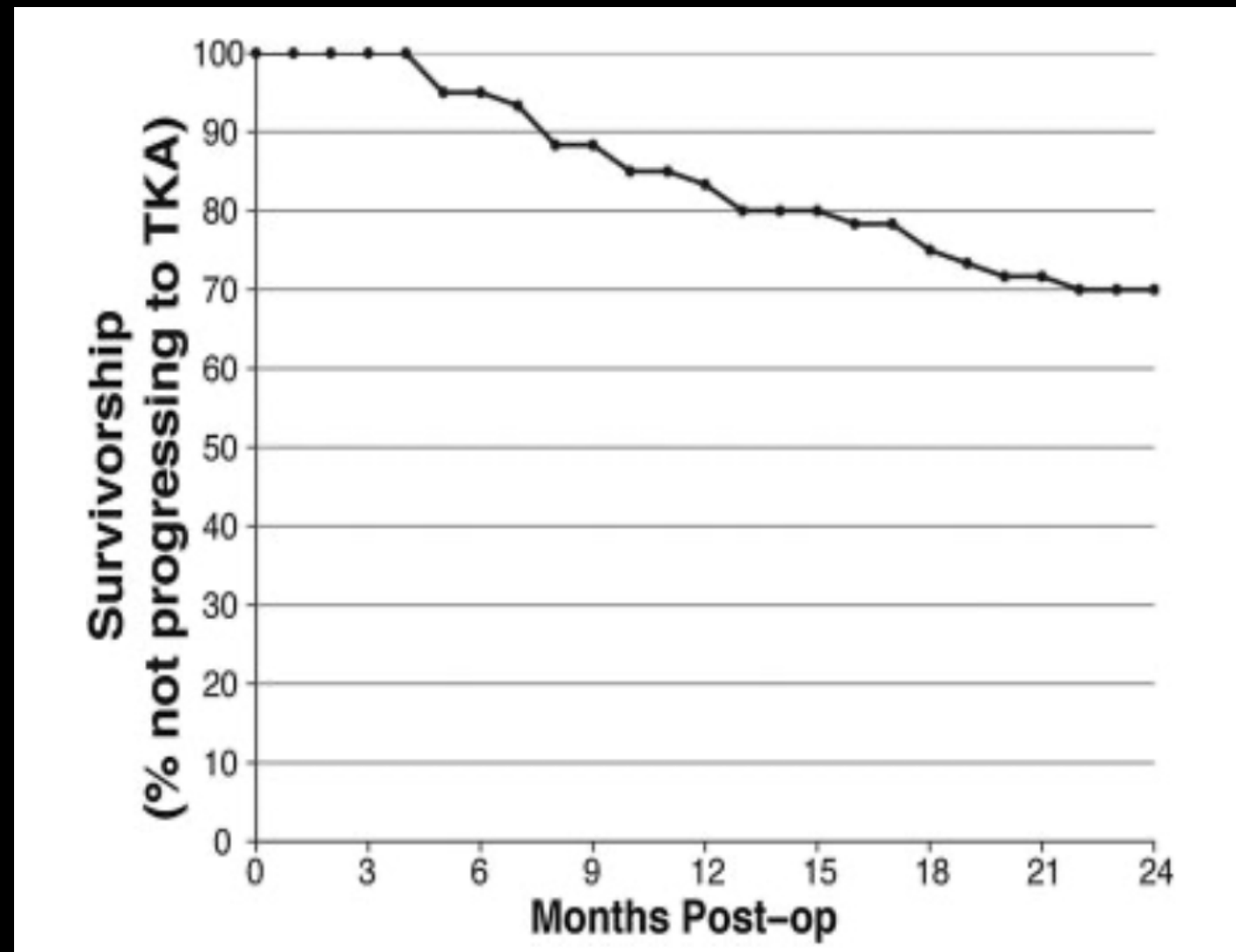


Subchondroplasty for Treating Bone Marrow Lesions

Steven Brad Cohen, MD¹ Peter F. Sharkey, MD¹



- 66 patients
 - Indicated for TKA
 - Failed conservative measures
- Moderate to severe OA same area as BML
- Improvement of Pain and Function
- 70% survivorship at 2 yrs
 - Non Arthroplasty



Promising Results

- Early Improvement of pain
- Improvement of function
- Improvement of gait
- High patient satisfaction
- Conversion to arthroplasty 8-25%

Subchondroplasty for treating bone marrow lesions in the knee – initial experience[☆]

Marcelo Batista Bonadio^{a,*}, Pedro Nogueira Giglio^a, Camilo Partezani Helito^a, José Ricardo Pécora^b, Gilberto Luis Camanho^b, Marco Kawamura Demange^b


Subchondroplasty for Bone Marrow Lesions in the Arthritic Knee Results in Pain Relief and Improvement in Function

Kenon Chua, MBBS, MMed, MCI¹ Joseph Yida Benjamin Kang, MBBS¹ Favian Ding Jie Ng, B Eng²
Hee Nee Pang, MBBS, FRCS¹ Denny Tjiau Tjoen Lie, MBBS, FRCS¹ Amila Silva, MBBS, MMed¹
Paul Chee Cheng Chang, MBBS, FRCS¹

Short-Term Outcomes of the Subchondroplasty Procedure for the Treatment of Bone Marrow Edema Lesions in Patients with Knee Osteoarthritis

Adrian Thomas Davis, MD¹, Jennifer Marie Byrd, MD¹, Justin Angelo Zenner, DO¹, Darren A. Frank, MD², Patrick J. DeMeo, MD³, Sam Akhavan, MD⁴

The Efficacy of Subchondroplasty for the Treatment of Knee Pain Associated with Bone Marrow Lesions

Nathan M Krebs, DO¹ ^a, James L. Kehoe, DO², Michael J. Van Wagner, DO², Carlos Rios-Bedoya, MPH, ScD³

¹ Cincinnati Sports Medicine and Orthopaedic Center, Mercy Health, ² McLaren Macomb Medical Center, ³ Division of Scholarly Inquiry, McLaren Health



But Results Not Always Good

- 25 patients
- Min 6 months (ave 12 mo)
- 18/25 Partial meniscectomy
- 55% favorable results

- Case Report
- Worsening pain
- Further bone damage

Subchondral Calcium Phosphate is Ineffective for Bone Marrow Edema Lesions in Adults With Advanced Osteoarthritis

**Dipal Chatterjee MD, Alan McGee MD, Eric Strauss MD,
Thomas Youm MD, Laith Jazrawi MD**

Changing MRI after subchondroplasty with partial meniscectomy for knee osteoarthritis[☆]

William K. Conaway, Ravi Agrawal*, Mark R. Nazal, John W. Stelzer, Scott D. Martin

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Who is the Right Patient

Biggest Dilemma

What factors predict poor outcome

How much do you need for effective treatment

Should mild OA be treated different than moderate OA

Biologics vs Calcium Phosphate

Thank you

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