

Capitellar OCD

Donald S. Bae, MD
Boston Children's Hospital



Osteochondritis Dissecans

Repetitive loading,
Limited blood supply



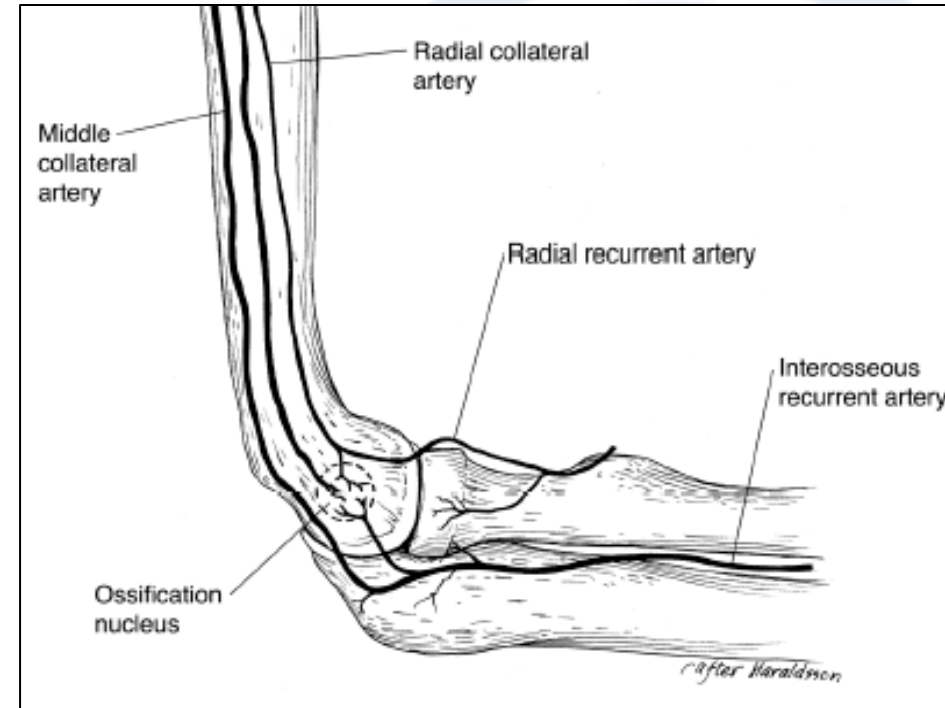
Inability to heal
after microtrauma



Subchondral fracture,
Articular cartilage failure



Loose body formation

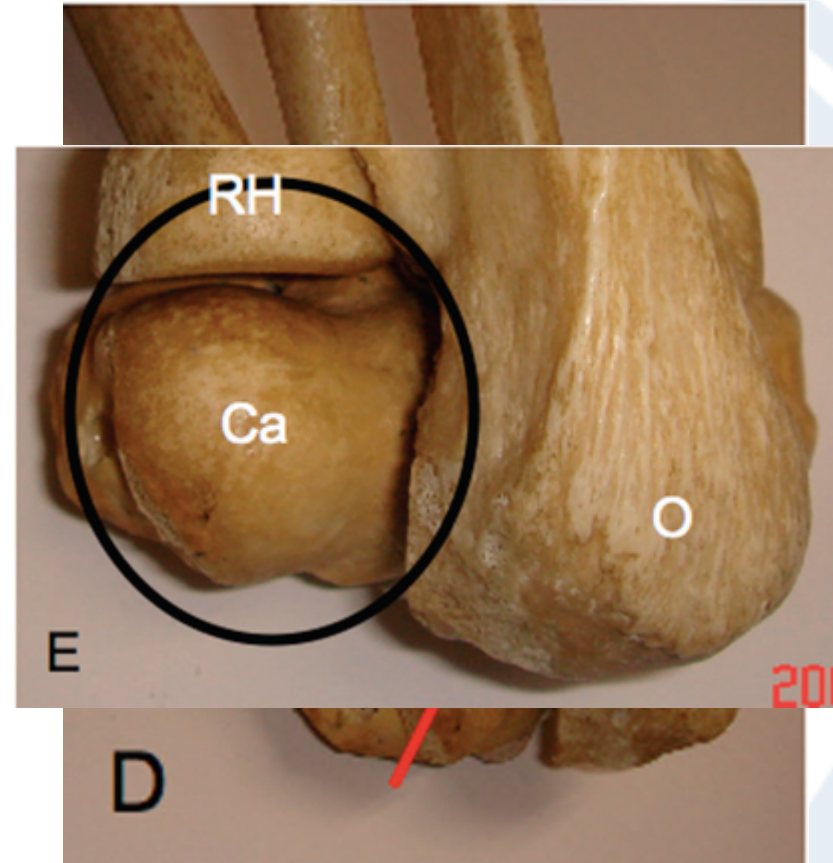


Kobayashi et al, JAAOS 2004

Clinical presentation

Adolescent throwing athletes

- Lateral elbow pain (90%)
- Stiffness (55%)
- Loose bodies → catching, locking (<20%)

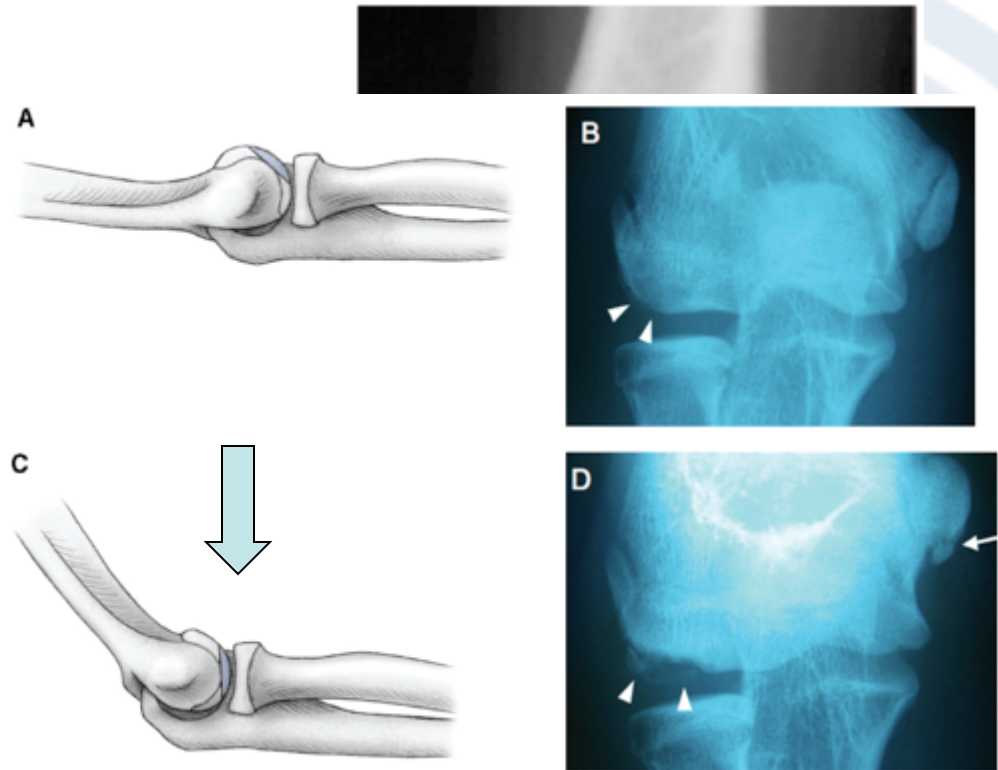


Takahara et al, JBJS 2008

Radiographic evaluation

Plain radiographs

- AP, lateral
- Contralateral views
- 45° flexion oblique



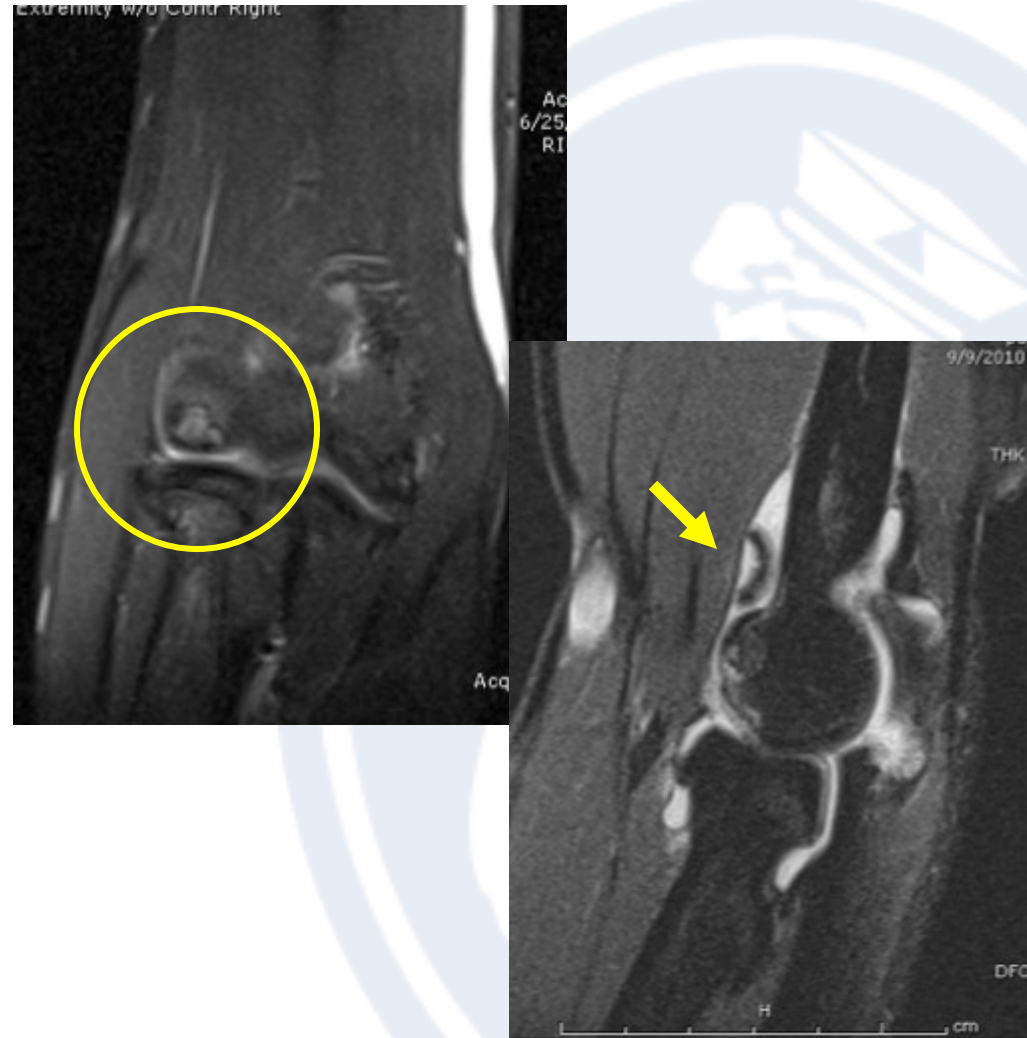
Takahara et al, JBJS, 2008

Kobayashi et al

Radiographic evaluation

MRI

- Assessment of cartilage surface
- Loose body
- Healing



Classification

Classification

- Radiographic
- Arthroscopic

Essential elements:

- Cartilage integrity
- Fragment stability

ICRS	
I	Stable, intact
II	Partial discontinuity
III	Complete discontinuity, located
IV	Loose fragment

Treatment: Stable lesions

Rest

Physical therapy

Serial examinations

- Clinical
- Radiographic

Interval throwing program,
pitching mechanics



Treatment: Stable lesions

Matsuura et al, AJSM, 2008

Stage I:

- 90% healing
- Mean 15 months

Stage II:

- 53% healing
- Mean 12 months

Conservative Treatment for Osteochondrosis of the Humeral Capitellum

Tetsuya Matsuura,^{*†} MD, Shinji Kashiwaguchi,[‡] MD, Takenobu Iwase,[§] MD, Yoshitsugu Takeda,^{||} MD, and Natsuo Yasui,[†] MD

From the [†]Department of Orthopedics, The University of Tokushima Graduate School, Institute of Health Bioscience, Tokushima, Japan, the [‡]Department of Orthopaedic Surgery, Tokyo Kosei-nenkin Hospital, Tokyo, Japan, the [§]Department of Orthopaedic Surgery, Tokushima National Hospital, Tokushima, Japan, and the ^{||}Department of Orthopaedic Surgery, Tokushima Red Cross Hospital, Tokushima, Japan

TABLE 1
Radiological Outcome in Patients With
Osteochondrosis of the Humeral Capitellum After
Conservative Treatment

	Stage I (n = 84)	Stage II (n = 17)
Healed	76 (90.5%)	9 (52.9%)
Mean period required for healing (range), in months	14.9 (4-60)	12.3 (8-16)
Failed	8 (9.5%)	8 (47.1%)

Surgical treatment

Surgical indications

- Symptomatic OCD
- Fragment instability
- Loose body

- Failed non-operative treatment



Surgical treatment

Unstable lesion

- Debridement
- Internal fixation
- Loose body excision
- Marrow stimulation



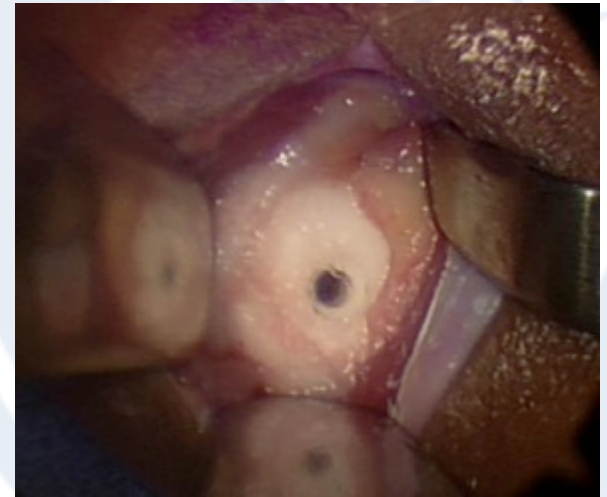
Surgical treatment

Internal fixation

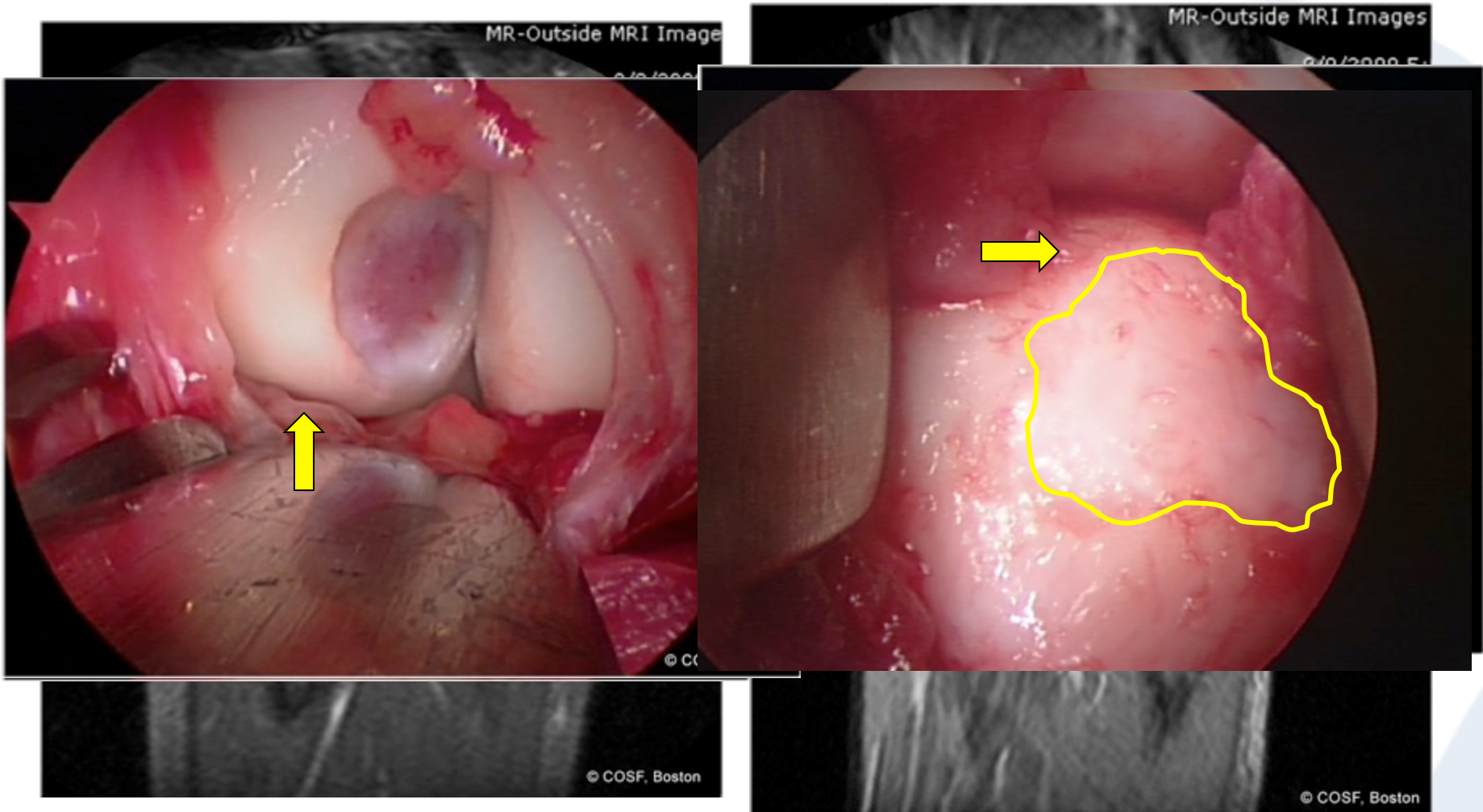
- Unstable in situ
- Fragment elevation, curettage, +/- grafting & fixation
- Best if ≤ 8 mm?

Nobuta et al, Ups J Med Sci 2008

Henrikus et al, in press



Surgical treatment



Results of treatment

Return to sports?

Byrd & Jones, AJSM, 2002.

- Mean 3.9 year f/u
- 4/10 returned to organized baseball

Takahara et al, JBJS, 2007

- Mean 7.2 years
- Open physis: 7/18
- Closed physis: 31/88

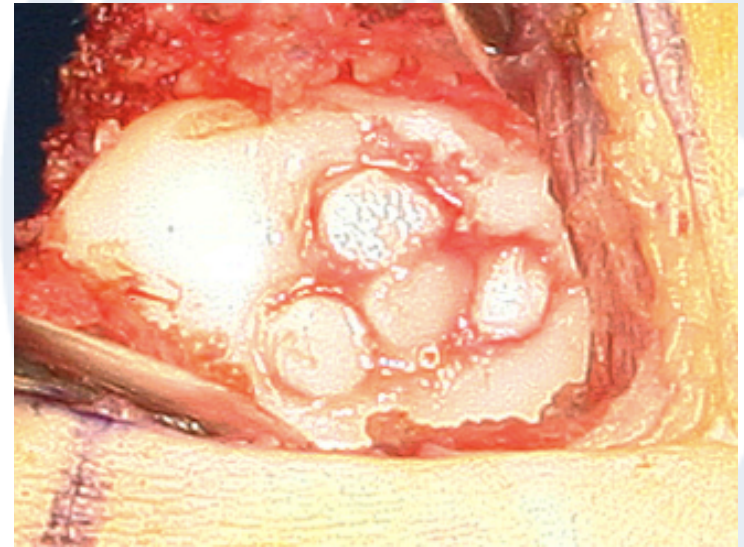
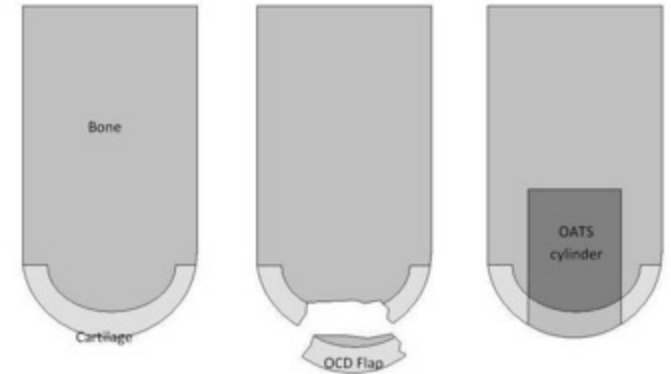
~ 40%

Surgical treatment

OATS

- Replacement with hyaline cartilage
- Better for large, uncontained lesions

Shi et al, JPO 2012



Surgical treatment

OATS superior in the knee?

Gudas et al, AJSM 2012

Gudas et al, Arthroscopy, 2013

- OATS > microfracture

Robb et al, AOB 2012

- 87.5% survival at 8yrs

Ten-Year Follow-up of a Prospective, Randomized Clinical Study of Mosaic Osteochondral Autologous Transplantation Versus Microfracture for the Treatment of Osteochondral Defects in the Knee Joint of Athletes
Rimtautas Gudas, Agne Gudaite, Arnoldas Pocius, Asta Gudiene, Emilis Cekanauskas, Egle Monastyreckiene and Algidas Basevicius
Am J Sports Med 2012 40: 2499 originally published online September 28, 2012
DOI: 10.1177/0363546512458763

Comparison of Osteochondral Autologous Transplantation, Microfracture, or Debridement Techniques in Articular Cartilage Lesions Associated With Anterior Cruciate Ligament Injury: A Prospective Study With a 3-Year Follow-up

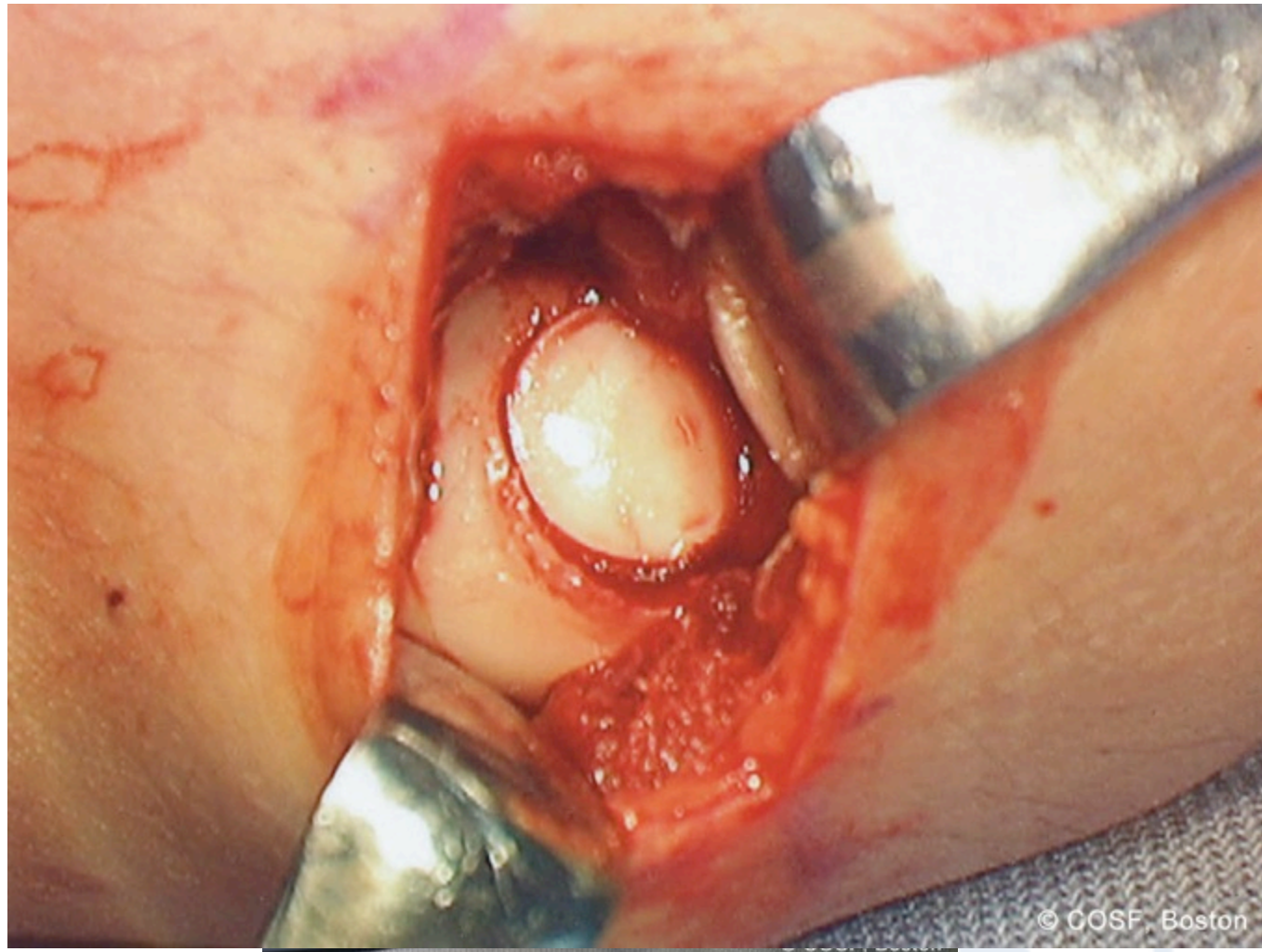
Rimtautas Gudas, M.D., Ph.D., Agnė Gudaitė, Tomas Mickevičius, M.D., Nerijus Masiulis, Ph.D., Rasa Simonaitytė, M.D., Emilis Čekanauskas, Ph.D., and Albertas Skurvydas, Ph.D.

Survival of autologous osteochondral grafts in the knee and factors influencing outcome

Curtis A. ROBB, Charlotte EL-SAYED, Gulraj S. MATHARU, Khalid BALOCH, Paul PYNSENT

From, the Royal Orthopaedic Hospital, South Birmingham, UK

Surgical treatment



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Surgical treatment

19 baseball players

Mean age 14.2 yrs

Ave f/u 45 mo

18/19 pain free

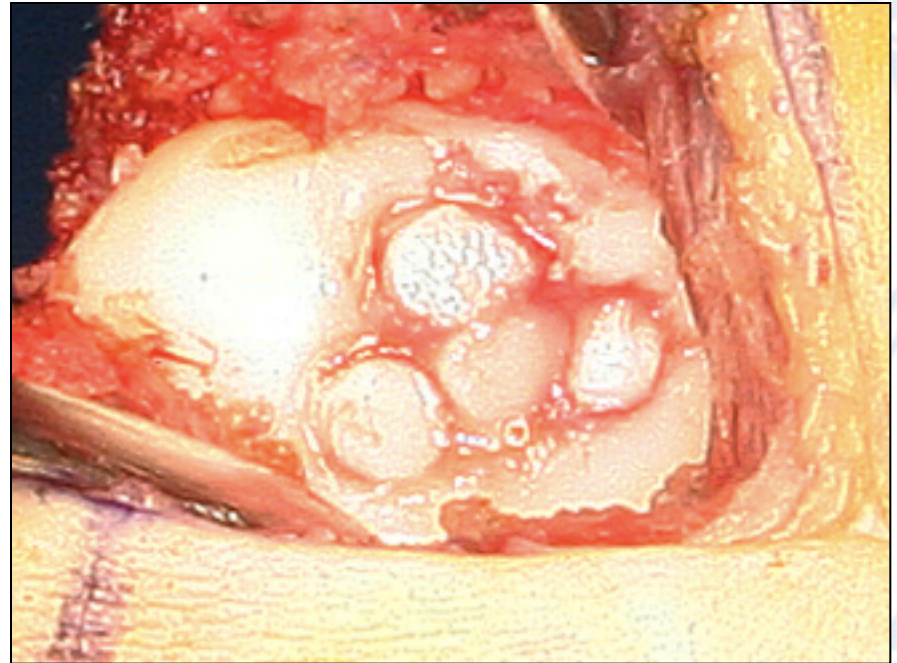
17/19 return to sports

Excellent functional
scores

Autologous Osteochondral Mosaicplasty for Osteochondritis Dissecans of the Elbow in Teenage Athletes

By Norimasa Iwasaki, MD, PhD, Hiroyuki Kato, MD, PhD, Jyunichi Ishikawa, MD, PhD, Tatsuya Masuko, MD, PhD,
Tadanao Funakoshi, MD, PhD, and Akio Minami, MD, PhD

*Investigation performed at the Department of Orthopaedic Surgery, Hokkaido University School of Medicine, Sapporo,
and the Department of Orthopaedic Surgery, Shinsyu University School of Medicine, Matsumoto, Japan*



Surgical treatment

18 baseball players

Mean age 13.6 yrs

Ave f/u 3.5 yrs

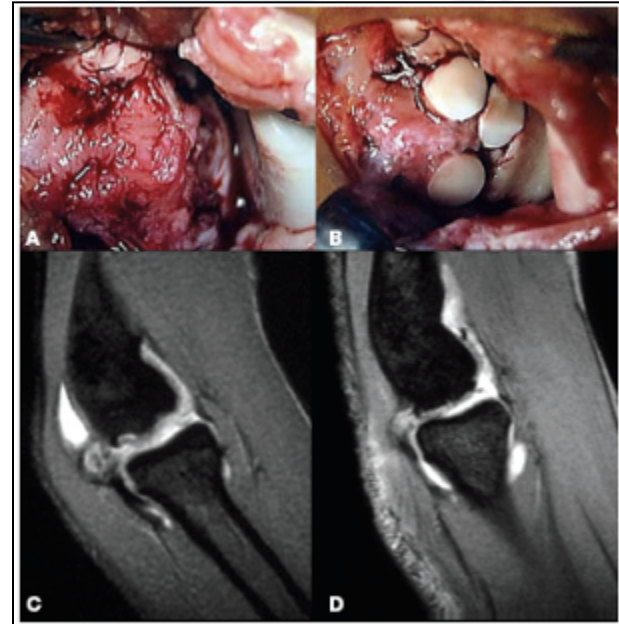
High healing rate, return to sports

Osteochondral Autograft Transplantation for Osteochondritis Dissecans of the Elbow in Juvenile Baseball Players

Minimum 2-Year Follow-up

Yuji Yamamoto,* MD, Yasuyuki Ishibashi, MD, Eiichi Tsuda, MD, Hideki Sato, MD, and Satoshi Toh, MD

From the Department of Orthopaedic Surgery, Hirosaki University School of Medicine, Hirosaki, Japan



Surgical treatment

11 males

OATS from LFC

Ave 26mo f/u

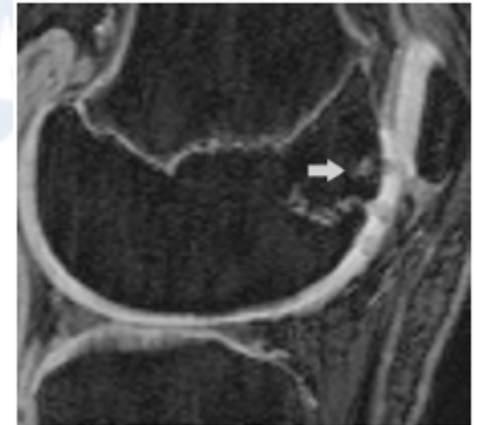
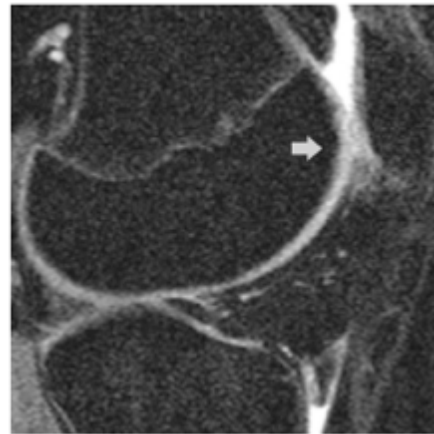
Excellent Lysholm, IKDC scores

6/9 50-100% fill

4/9 normal cartilage

Donor Site Evaluation After Autologous Osteochondral Mosaicplasty for Cartilaginous Lesions of the Elbow Joint

Norimasa Iwasaki,^{*†} MD, PhD, Hiroyuki Kato,[‡] MD, PhD, Tamotsu Kamishima,[§] MD, PhD, Naoki Suenaga,[†] MD, PhD, and Akio Minami,[†] MD, PhD
From the [†]Department of Orthopaedic Surgery, Hokkaido University School of Medicine, Sapporo, Japan, [‡]Department of Orthopaedic Surgery, Shinsyu University School of Medicine, Matsumoto, Japan, and [§]Department of Radiology, Hokkaido University School of Medicine, Sapporo, Japan



Surgical treatment

12 patients

- 14.4 yrs at surgery

10/12 pain free at 3 mo

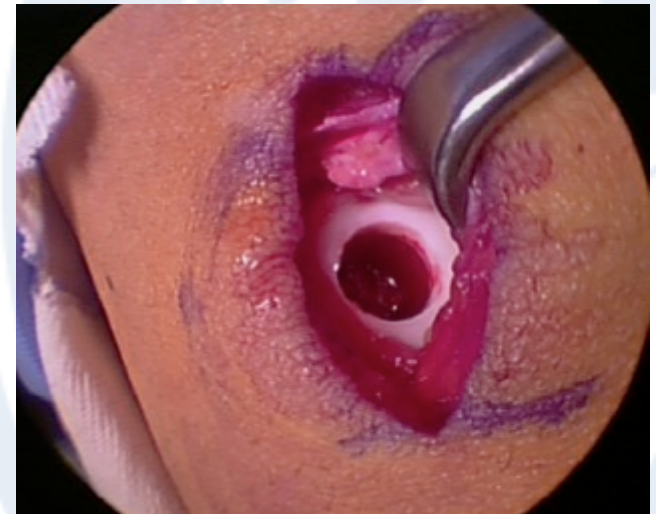
Lysholm score 100 at 6 mo

11/12 nl extensor strength at 12 mo

No degenerative changes at 24mo

Functional Recovery of the Donor Knee After Autologous Osteochondral Transplantation for Capitellar Osteochondritis Dissecans

Akinobu Nishimura,^{*†} MD, PhD, Akimasa Morita,[‡] MD, Aki Fukuda,[‡] MD, PhD, Ko Kato,[†] MD, PhD, and Akihiro Sudo,[§] MD, PhD
Investigation performed at Suzuka Kaisei Hospital, Mie, Japan



Case presentation

11yo F gymnast with R
elbow pain x 1 year

Mechanical symptoms

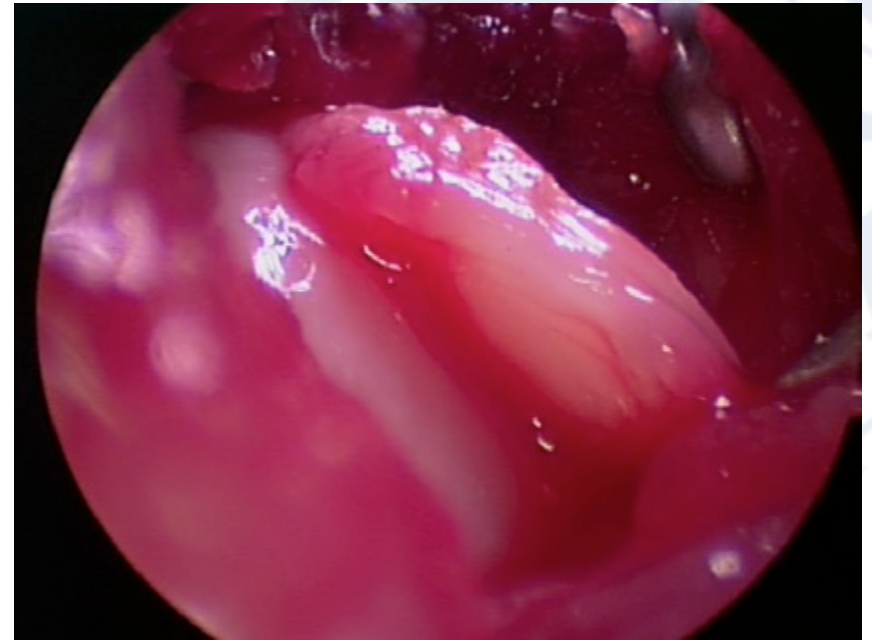
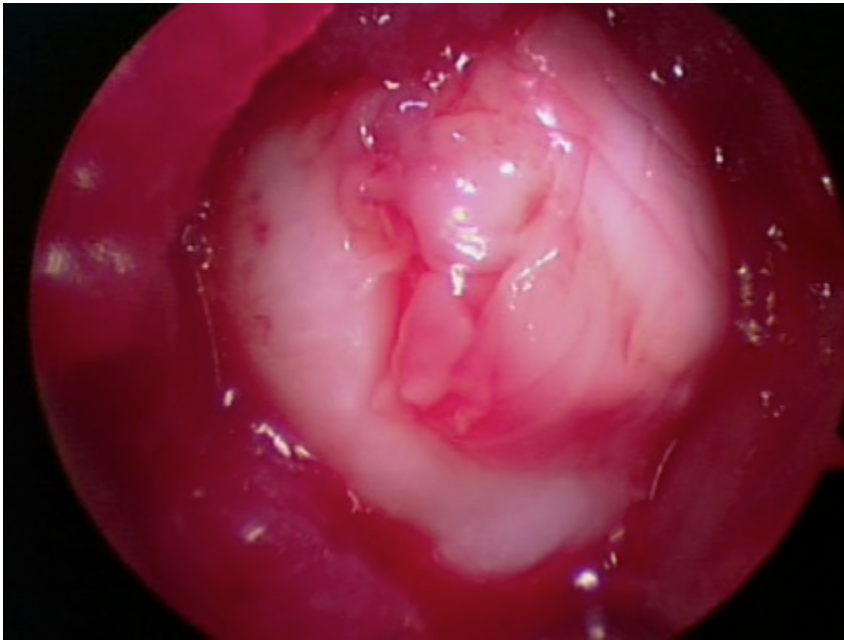
Capitellar OCD



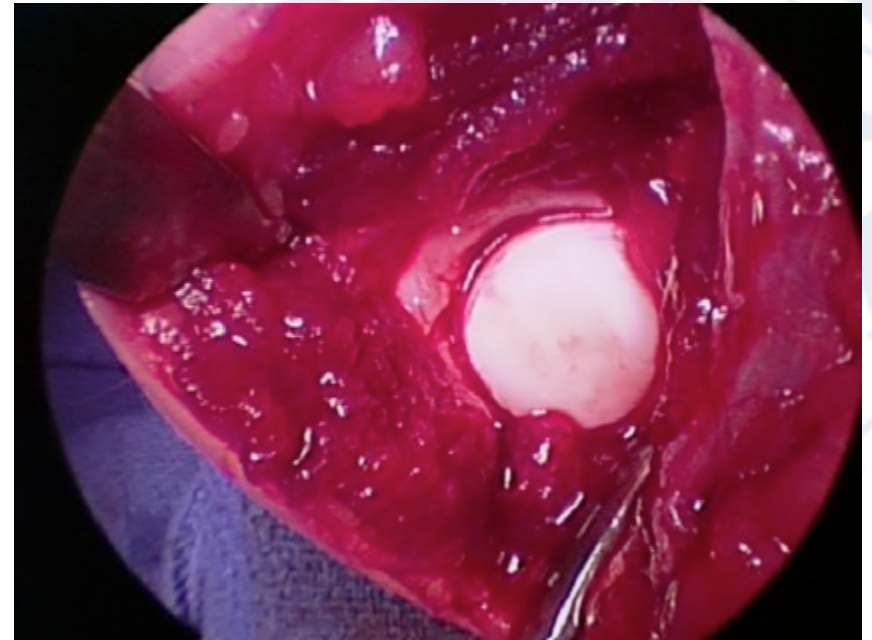
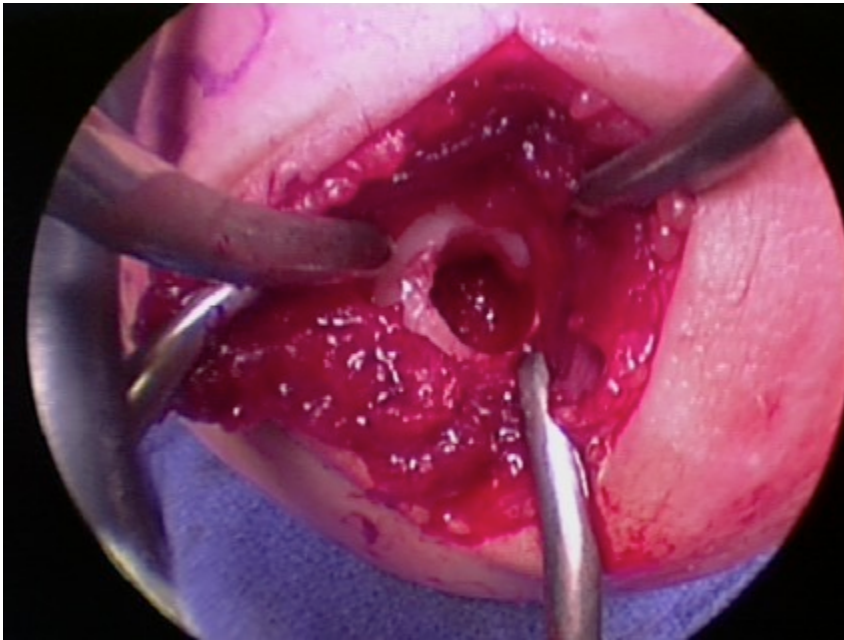
Case presentation



Case presentation



Case presentation



Case presentation



Case presentation



Conclusions

OATS is viable treatment option for capitellar OCD

Indications:

- Deep lesions
- Uncontained lesions
- Revision cases

Anconeus split

Single plug technique

