

5th course of advanced surgery of the knee
Val d'Isère, 02-2014

Osteochondritis dissecans: Definition, etiology, epidemiology

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Definition

Disorder of the subchondral bone that can secondarily affect the overlying articular cartilage and may, in some cases, lead to cartilage separation and fragmentation.

Ganley TJ, Flynn JM 2006

CM

1



In 1558, **Ambroise Paré** removed loose bodies from a knee joint.

In 1870, **Paget** described quiet necrosis within the knee.

In 1888, **König** created the term "osteochondritis dissecans." He proposed this condition was caused by spontaneous necrosis due to trauma.

Juvenile form

Open growth plates
5 – 15 years



Adult form

16 – 50 years

Localization

Size

Stability

Fragmentation

Non fragmented & repairable OCD



♂, 15 y., basketball

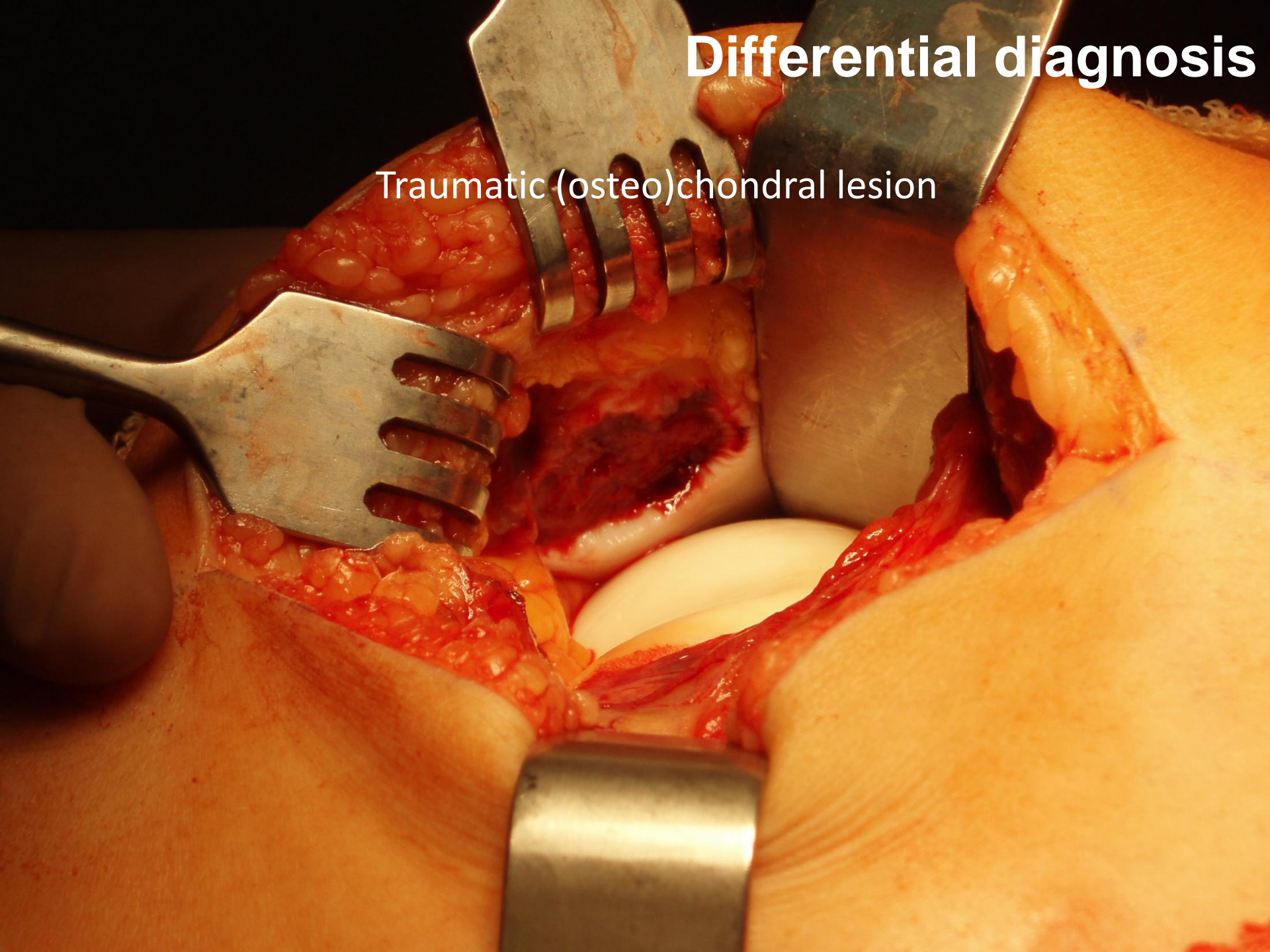
Fragmented & non-repairable OCD



♂, 18 y., basketball

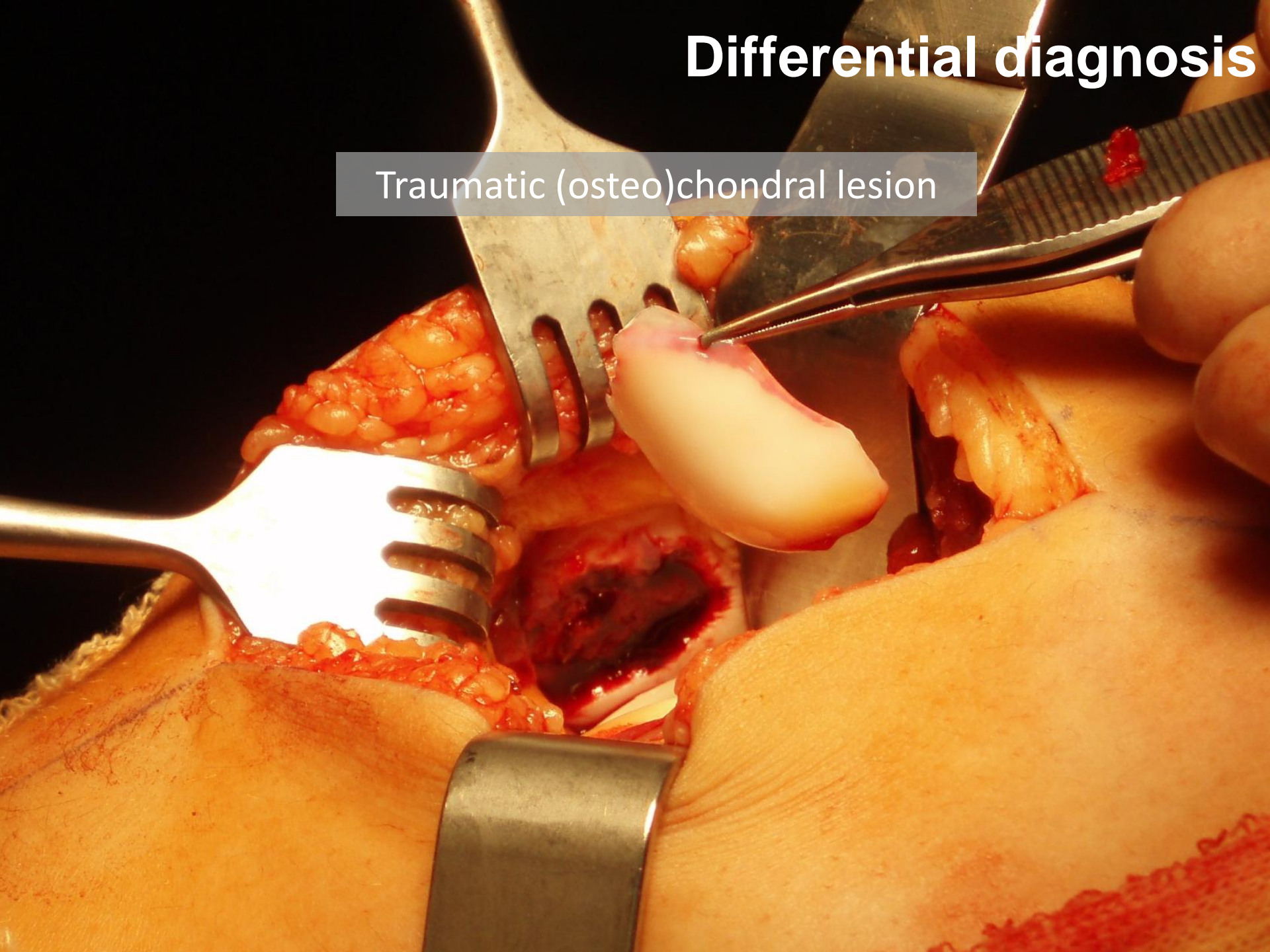
Differential diagnosis

Traumatic (osteo)chondral lesion



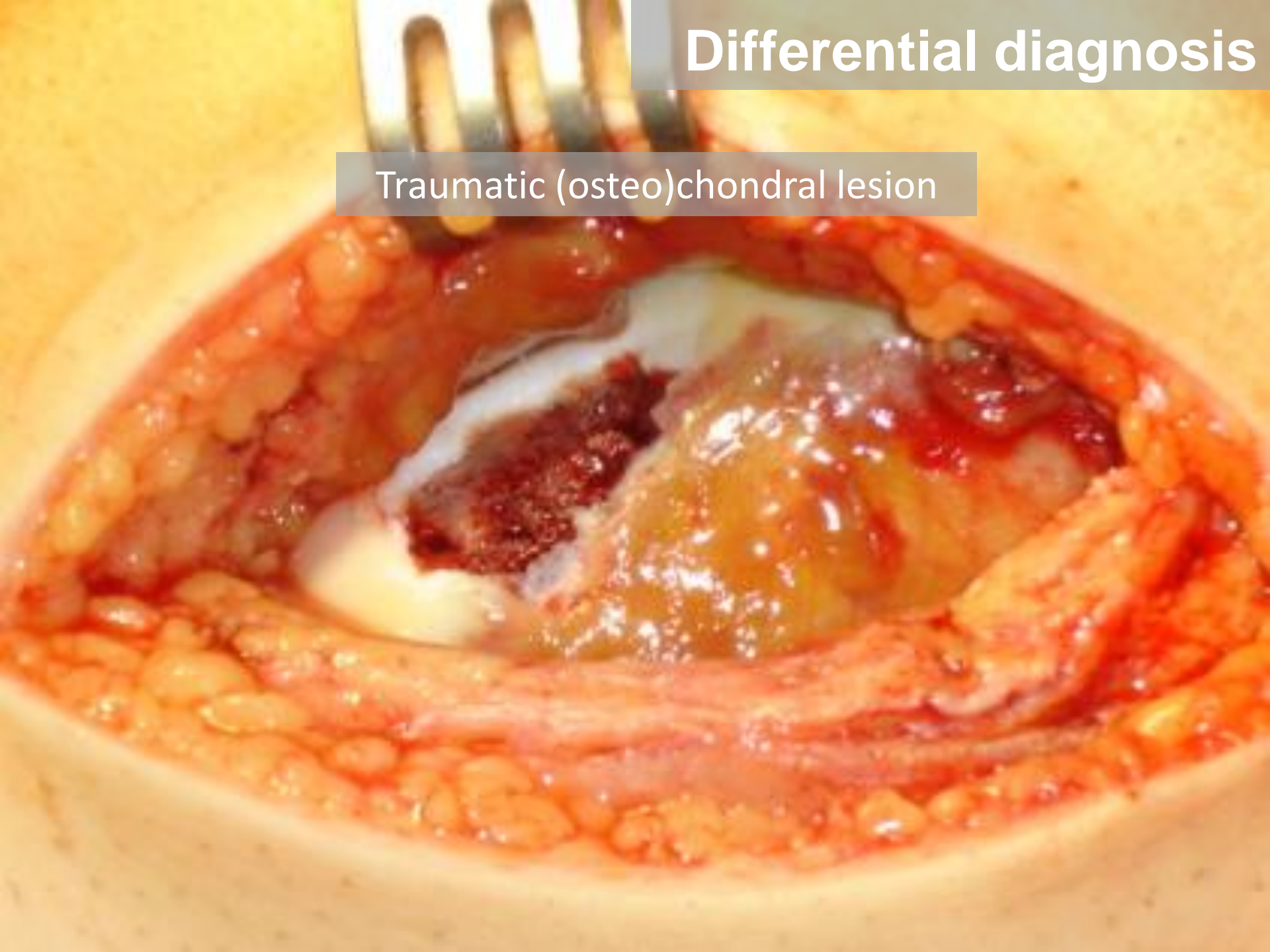
Differential diagnosis

Traumatic (osteo)chondral lesion



Differential diagnosis

Traumatic (osteo)chondral lesion



Differential diagnosis

Traumatic (osteo)chondral lesion



Differential diagnosis

Traumatic (osteo)chondral lesion



Differential diagnosis

Osteonecrosis



Synovial chondromatosis

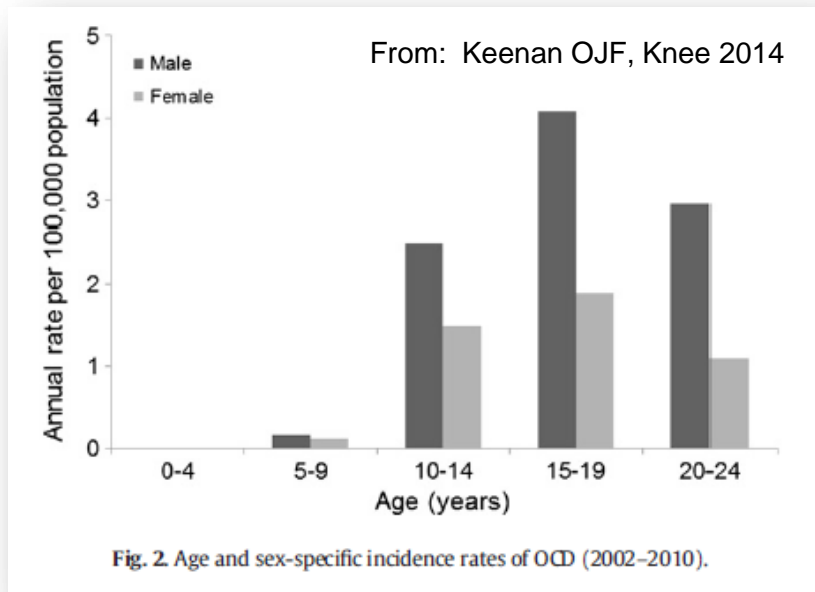


Normal variants of ossification in children



- DD of stage 1 OCD
- Ossification defects posterior condyles w. intact cartilage
- Accessory ossification centers
- Spiculation
- Lack of bone marrow edema

Gebarski K, Ramirez R, Pediatr Radiol 2005



Males > females

2:1

3:1

Schenk R, Goodnight JM, JBJS-A, 1996

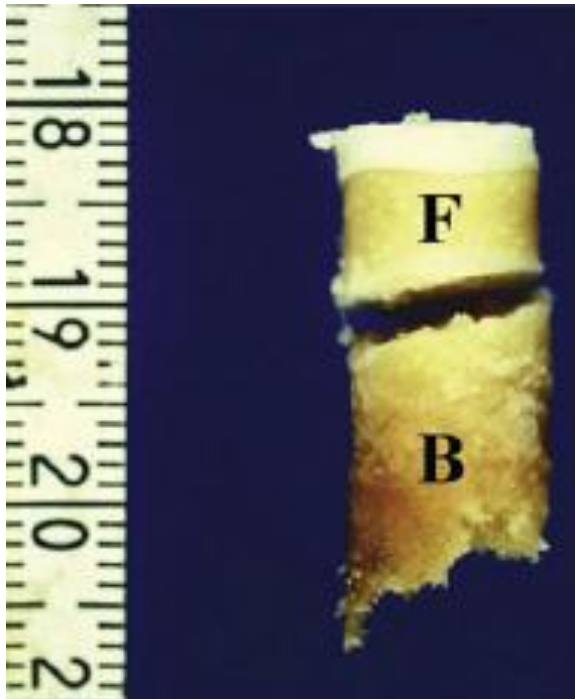
Prevalence: 3-6 / 10.000

Federico DJ, Arthroscopy 1990



2nd-3d decade

10 % bilateral



From: Uozumi H, Am J Sports Med 2009

Repetitive microtrauma
Ischemia
Genetic factors
Endocrine factors
Anomalies of ossification

It is NOT an inflammation
→ absence of inflammatory cells in histological sections

Shea KG, Clin Orthop Relat Res 2013

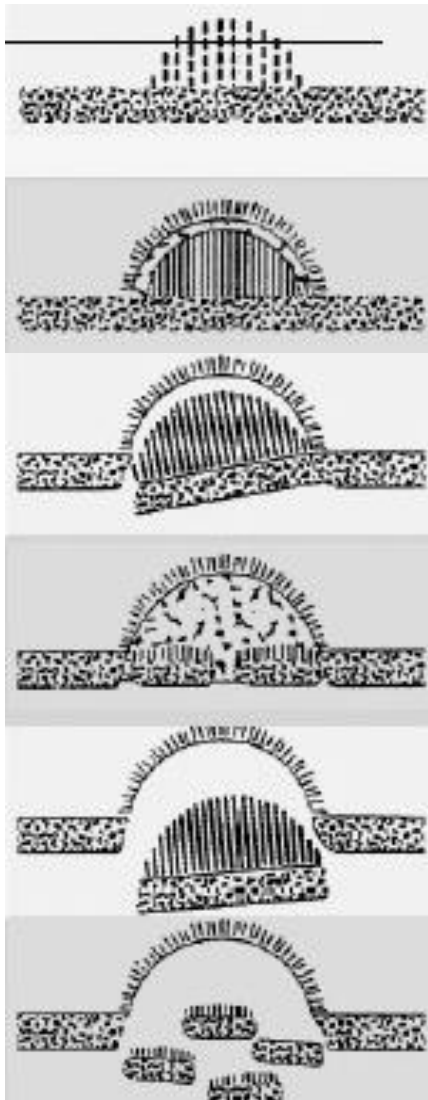
2 brothers



♂ 18 y.



♂ 16 y.



Repetitive microtrauma:

→ focal ischemia

→ reduced support of subchondral bone

→ cartilage softening

→ crater formation/fragment separation

Osteochondritis Dissecans Knee Histology Studies Have Variable Findings and Theories of Etiology

Kevin G. Shea MD, John C. Jacobs Jr BS,
James L. Carey MD, MPH, Allen F. Anderson MD,
Julia T. Oxford PhD

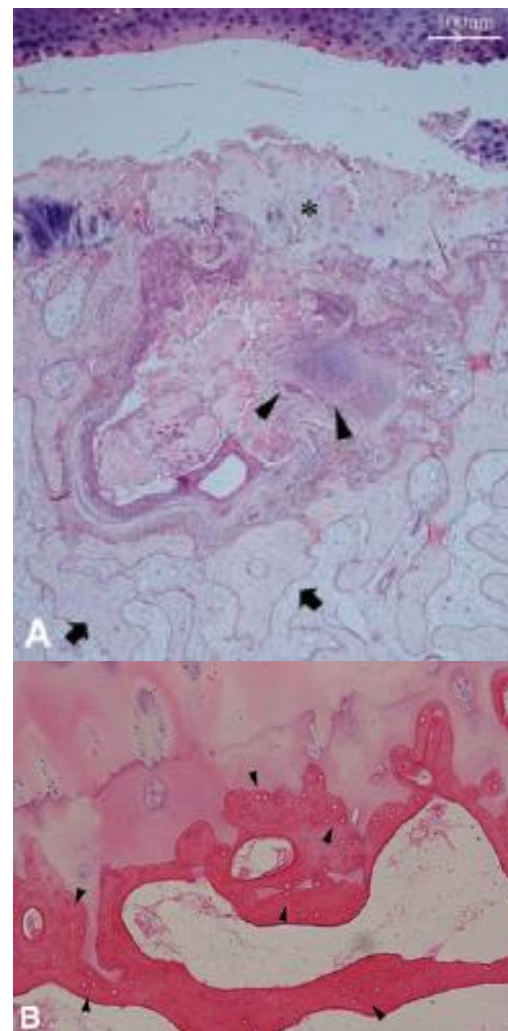
Fibrillated cartilage ←

Active bone remodelling ←

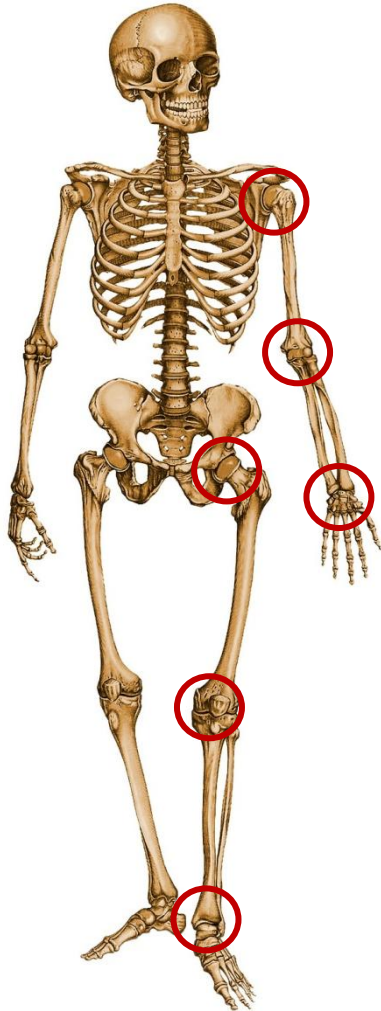
Necrotic bone ←

Present in 8 of 11 histologic studies

From: Uozumi H, Am J Sports Med 2009



> 50 anatomic OCD sites have been identified



1. Knee

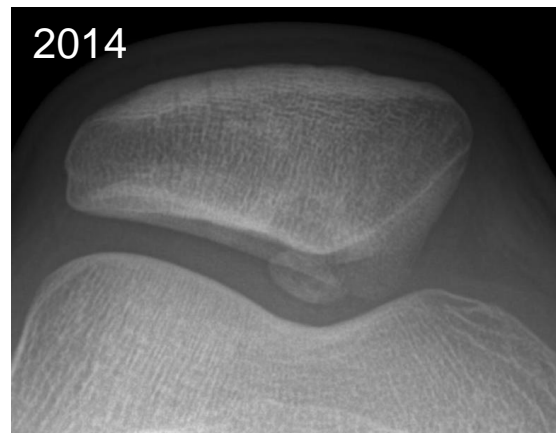
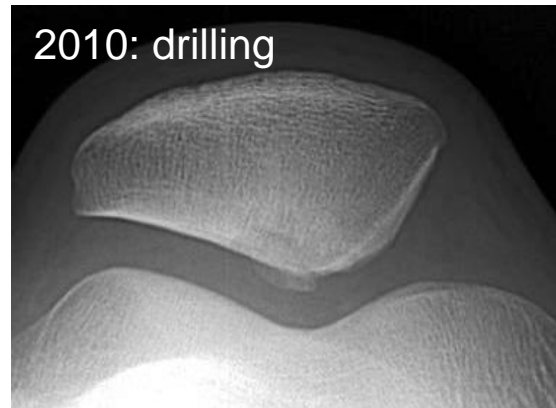
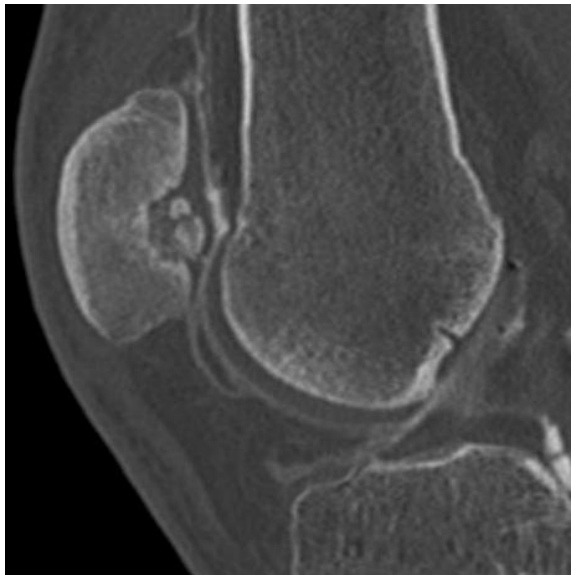
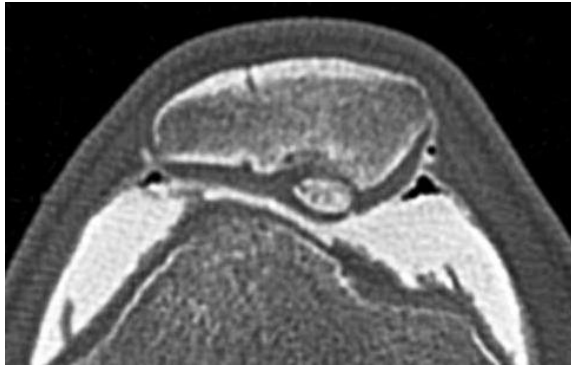
lateral aspect MFC
patella
trochlea

2. Ankle

medial talar dome

3. Elbow

capitulum humeri

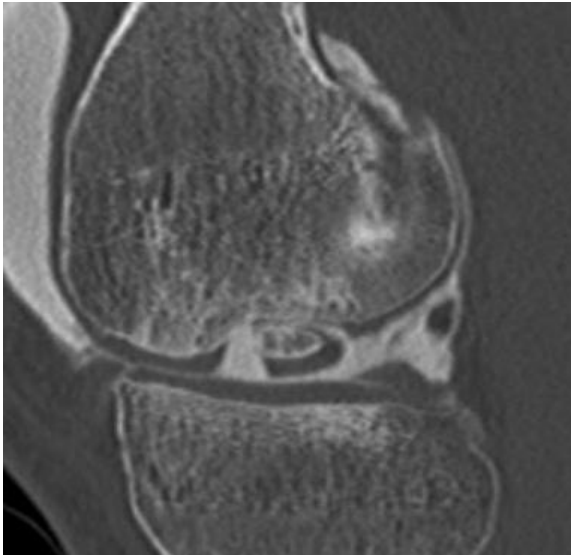


♂ 15 y.



OD of the capitulum humeri





- Affects present / future activity levels
- May contribute to degenerative joint disease

FU over 34 y.: 32 % of moderate to severe OA

Twyman RS, JBJS-B, 1991

- Juvenile form:

Depends on status of the growth plate

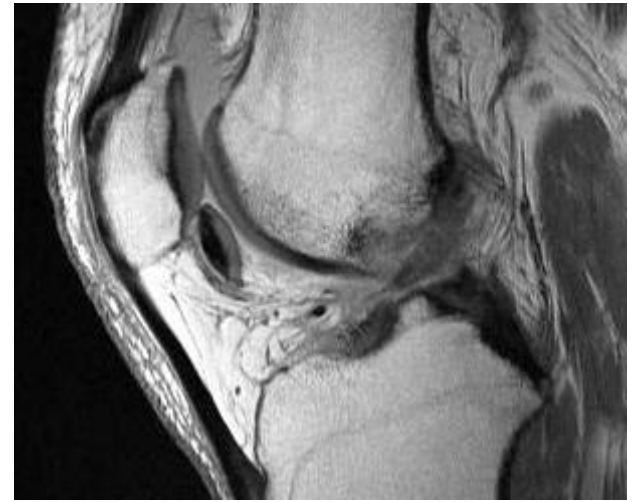
The younger the patient,
the higher the probability of spontaneous resorption !



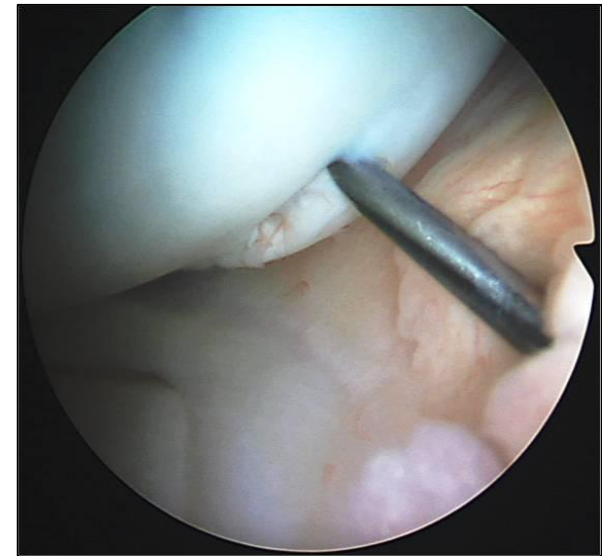
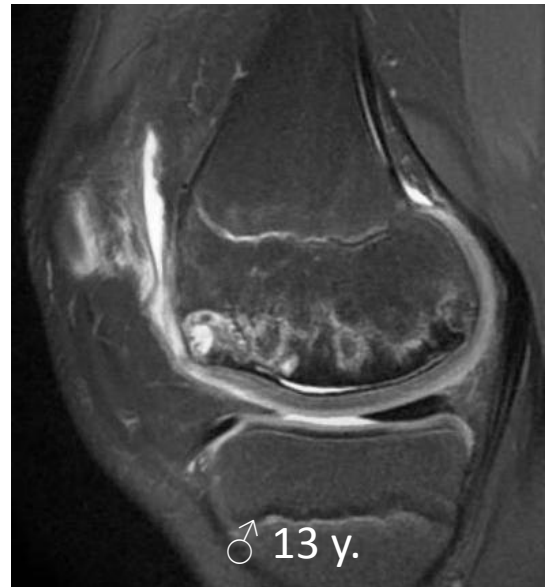
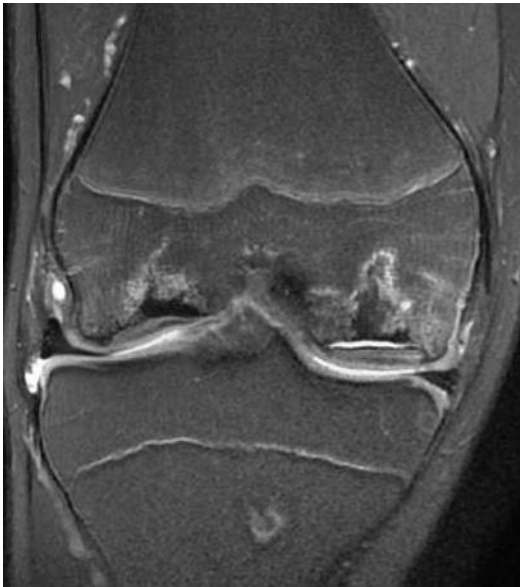
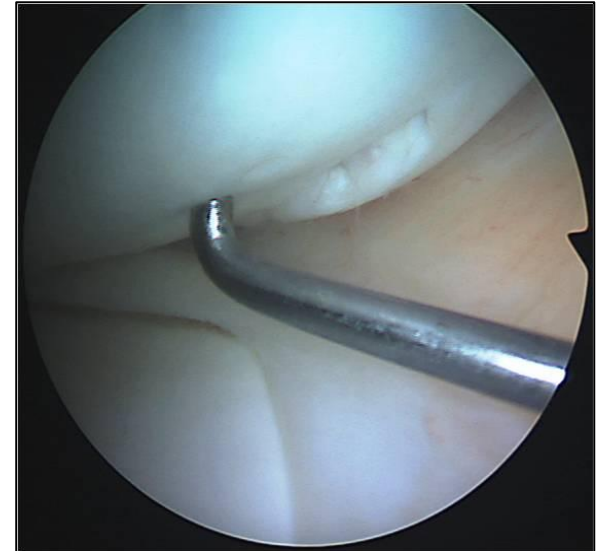
Prognosis

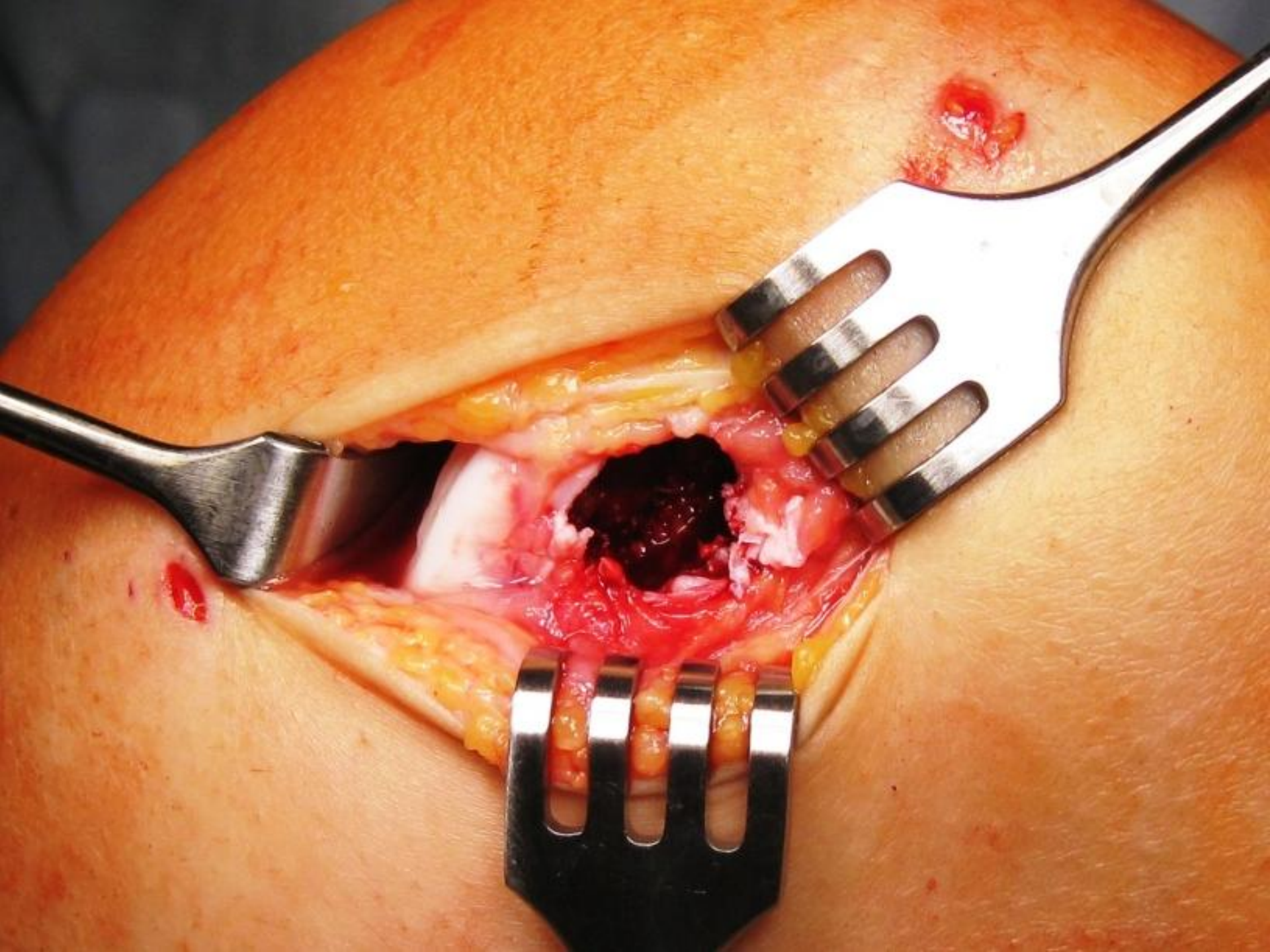


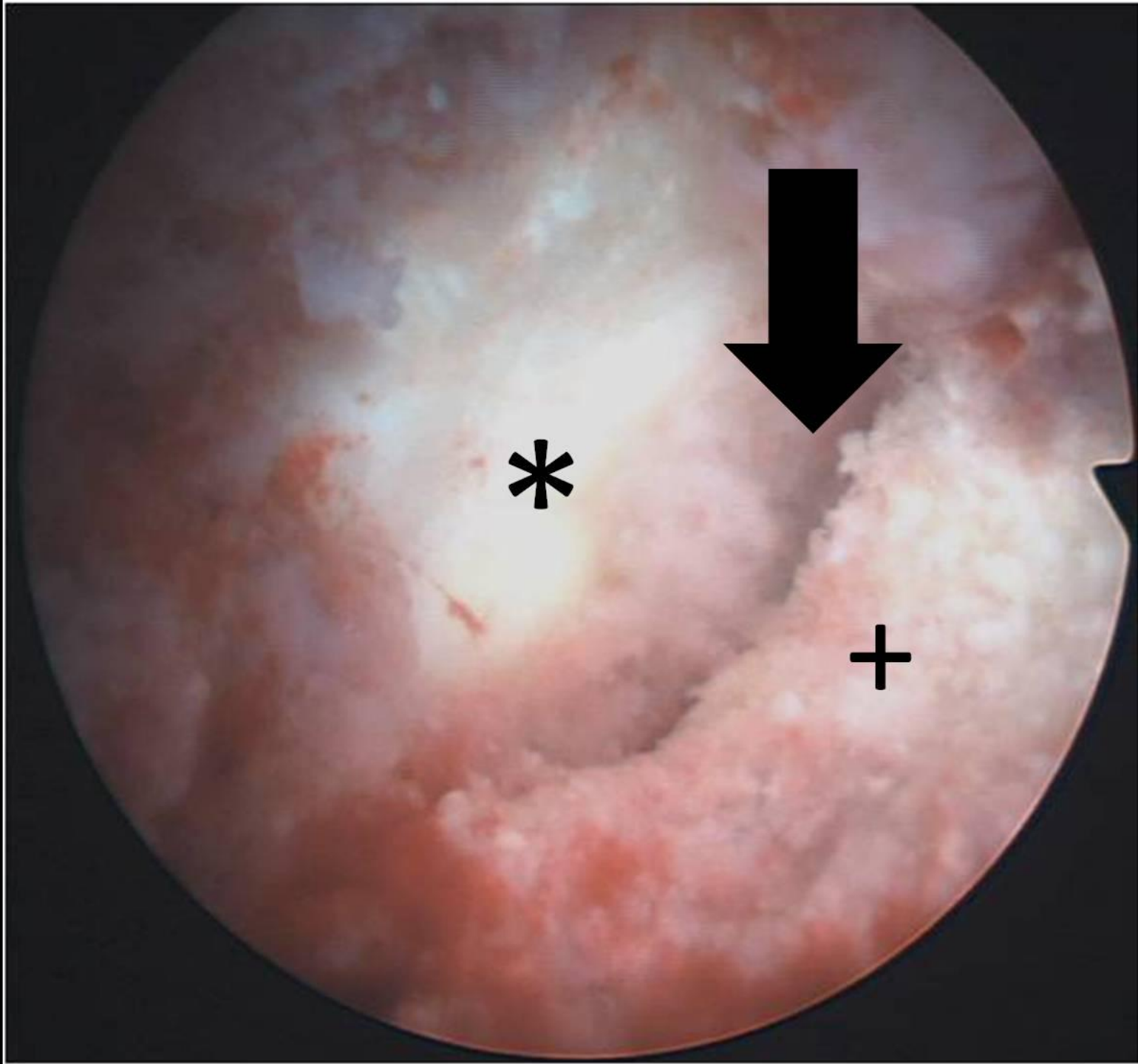
♂ 66 y.



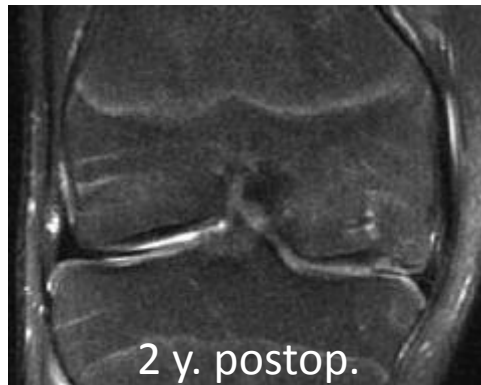
Prognosis: cartilage regeneration potential







Prognosis: cartilage regeneration potential



♂ 13 y.

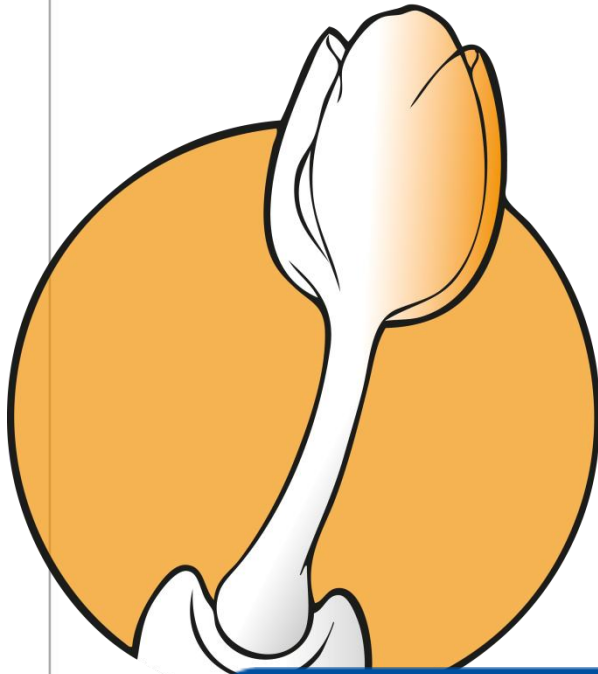


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