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

Osteochondritis dissecans: Definition, etiology, epidemiology

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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
In 1558, **Ambroïse 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 (osteoc)hondral lesion
Differential diagnosis

Traumatic (osteo)chondral lesion
Differential diagnosis

Traumatic (osteo)chondral lesion
Differential diagnosis

Traumatic (osteo)chondral lesion
Behandlung der akuten Patellaluxation

Differentialdiagnose

Traumatic (osteo)chondral lesion
Differential diagnosis

Osteonecrosis
Differential diagnosis

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
Epidemiology

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
Etiology

- 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
Epidemiology

2 brothers

♂ 18 y.  
♂ 16 y.
Pathomechanism

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

> 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.

Localisation

2010: drilling

2014
Localisation

♀, 13 y., gymnast

OD of the capitulum humeri
Prognosis

• 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.

Schuss, 45° PA

AP
Prognosis: cartilage regeneration potential

♂ 13 y.

13 y.
Prognosis: regeneration potential
Prognosis: cartilage regeneration potential

♂ 13 y.

6 w. postop.

4,5 mo. postop.

12 mo. postop.

♂ 13 y.

2 y. postop.

2 y. postop.
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