

Sportorthopädiekongress Uni Rostock 8/2010

Schulterinstabilität

Pathogenese, Klassifikation, Indikation

Tim Rose

Leipzig

Funktionelle Anatomie

- 4 Schichten

- Muskeln des Schultergürtels

- Rotatorenmanschette

- Labrum, Kapsel und Bänder

- Knöcherner Struktur

Bewegung

Stabilität

Dynamische Stabilisatoren

- Scapulare Rotatoren

- M. trapezius
- M. rhomboideus
- M. latissimus dorsi
- M. serratus anterior
- M. levator

- M. deltoideus

- 60% Kraft der Abduktion

Colachis 1971 Arch Phys Med Rehabil

Lee et al 2002 Clin Orthop Rel Res

- M. coracobrachialis und kurze Bizepssehne

Halder et al 2001 Clin Biomech

Scapulohumerale Rhythmus

Glenoid - Humeruskopf

- Caput humeri 24 cm²
- Glenoid 6 cm²



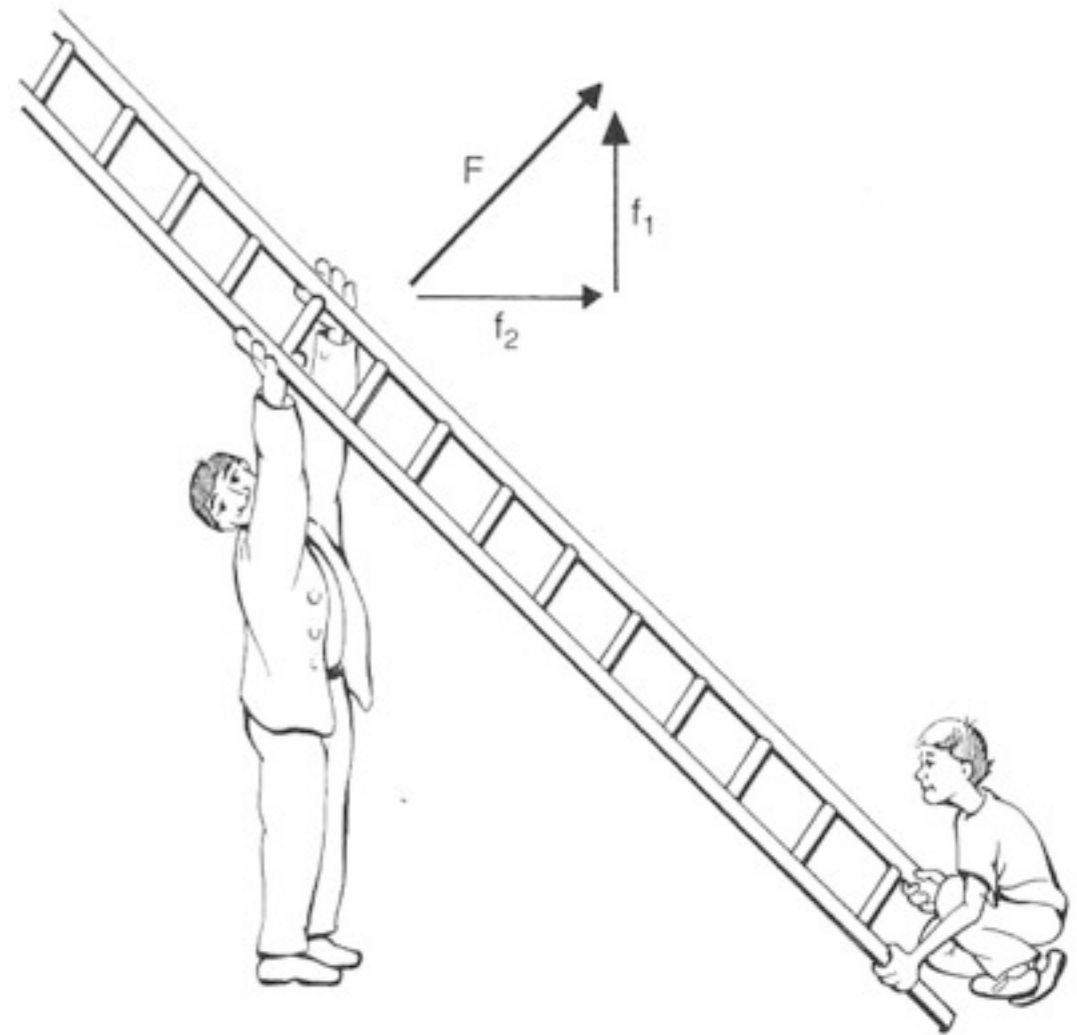
Die Muskulatur allein ist ausreichend
den Humeruskopf in der Pfanne zu halten

Funktion der Rotatorenmanschette

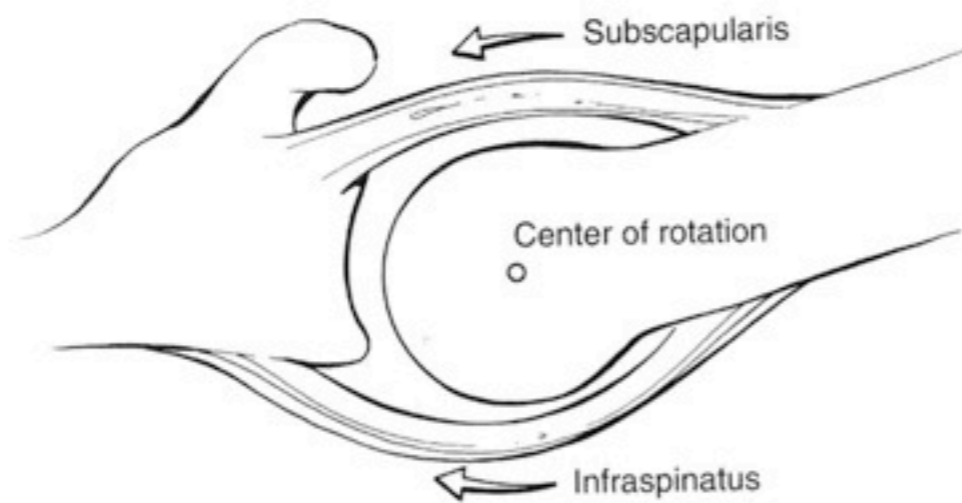
- Nah am Drehpunkt
- Geringer Muskelquerschnitt



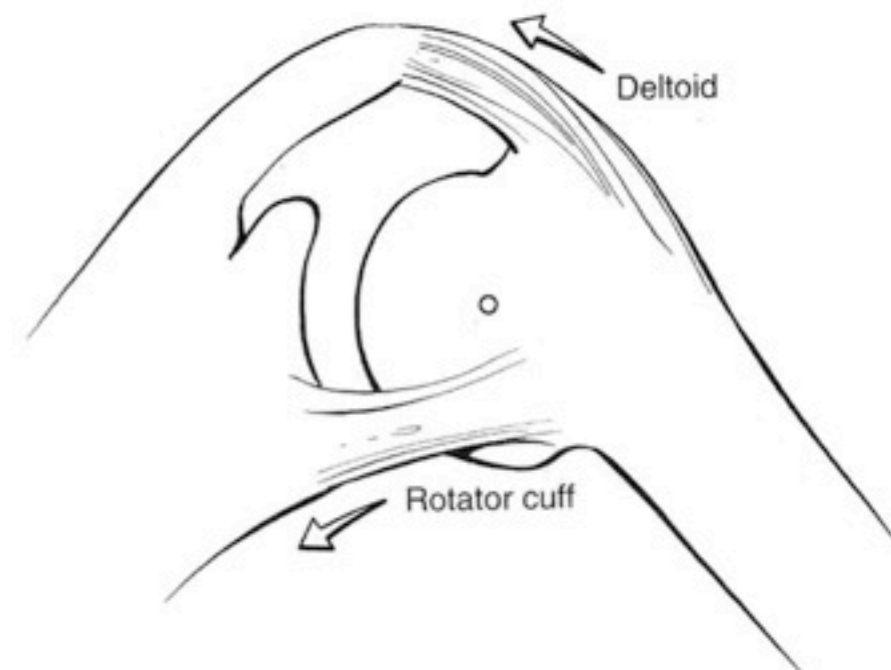
Dynamischer Stabilisator!



Dynamischer Stabilisator



Horizontal-Ebene

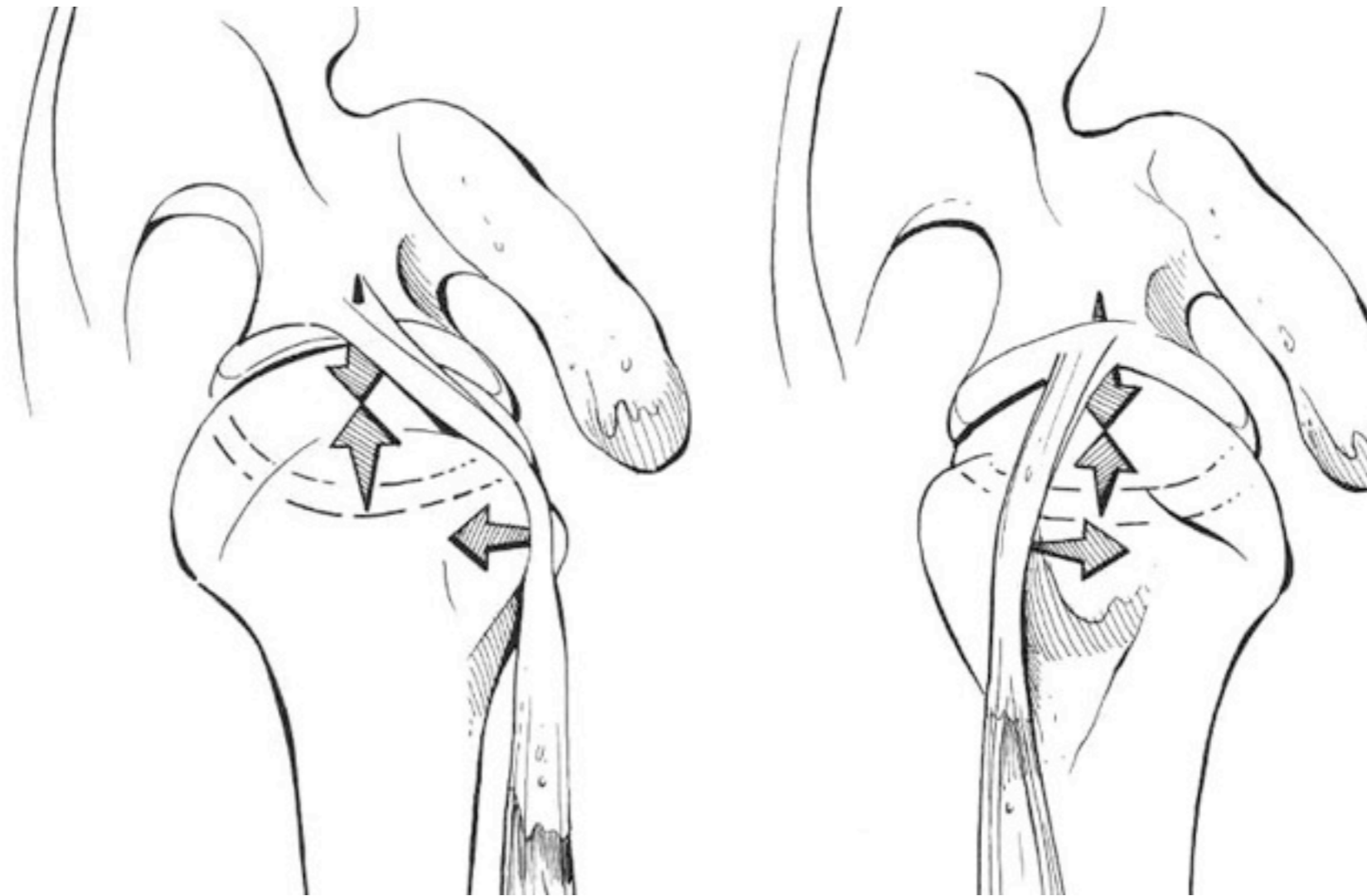


Sagital-Ebene

Imman et al. 1944 JBJS

Halder et al 2001 Clin Biomech

Lange Bizepssehne

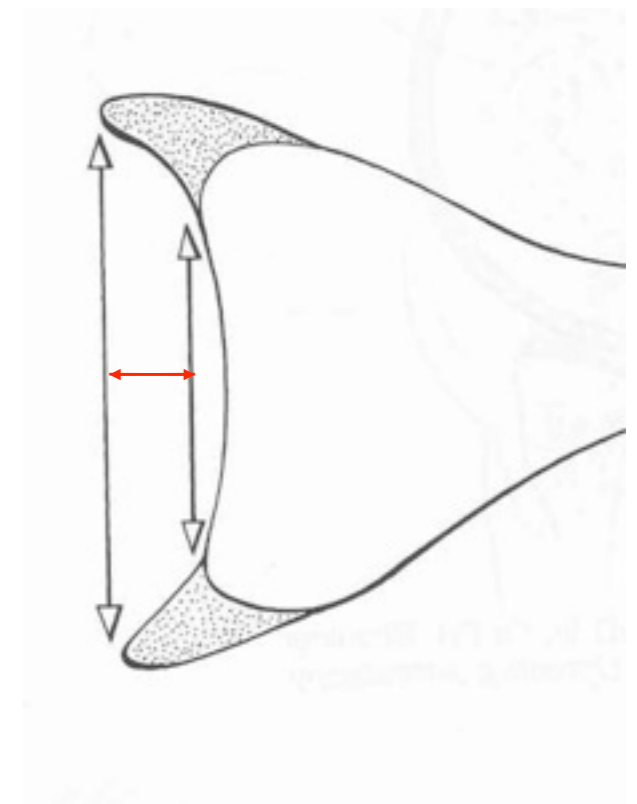


klinisch

Insbesondere bei Abd/Außenrot.

Labrum glenoidale

- **Erhöhung der Stabilität**
 - **Befestigung der capsulo-ligamentären Strukturen**
 - **Vergrößerung der glenoidalen Tiefe (80%)**
→ **Verringerung der Translation (65%)**
 - **Vergrößerung der Kontaktfläche („Meniscus“)** → **Kraftaufnahme**



Moseley et al, 1961 JBJS; Howell et al. 1989 Clin Orthop; Soslowski 1992 J Orthop Res
Lazarus 1996 JBJS

Negativer intrartikulärer Druck

- Hoher osmotischer Druck im Interstitium
- 42-82 cm H₂O
- Verminderung der Translation
- Bankart Läsion → atmosphärischer Druck
- Keinen Einfluß in der Therapie der Schulterinstabilität

Habermeyer et al. 1992 Arthroscopy; Matsen 1992; Browne 1990 Orthop Trans
Iannotti 2000

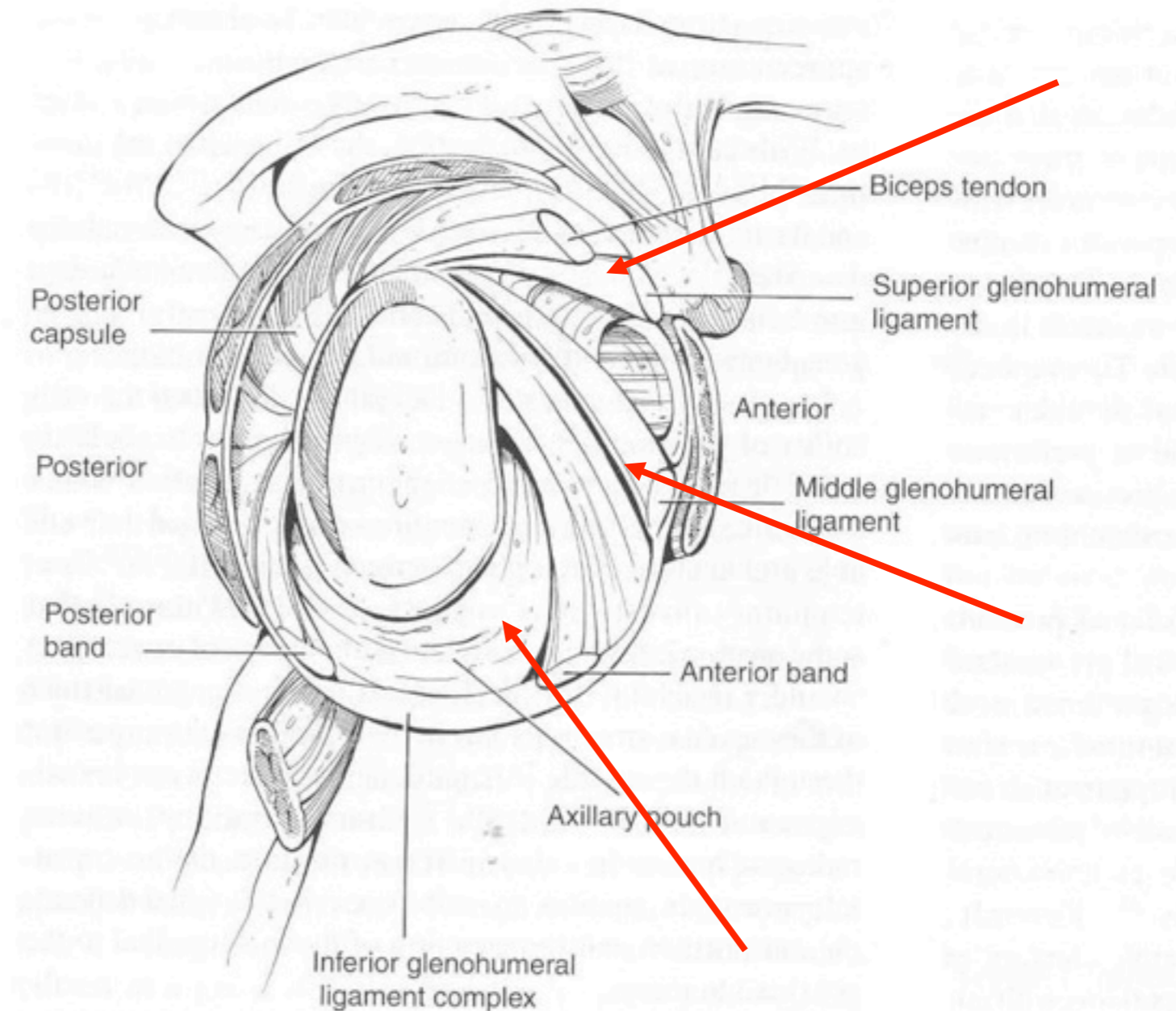
Adhäsionskräfte

- Synovialflüssigkeit
- Negativer intraartikulärer Druck
- Visköse und intermolekuläre Kräfte
- Limitierung der Translation und des Auseinanderweichen der Gelenkflächen
- Sehr geringe Kräfte → Kaum Relevanz

Gelenkkapsel

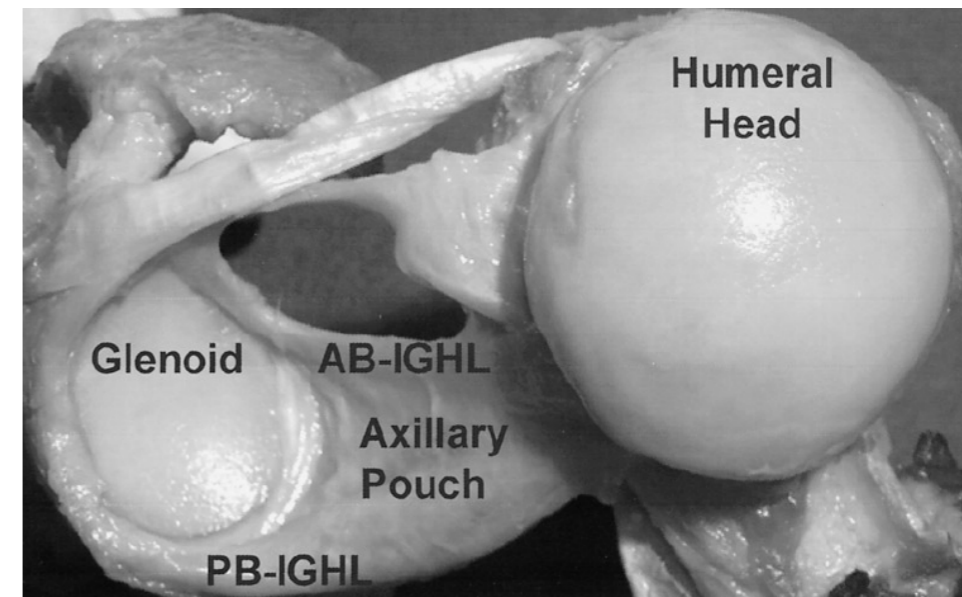
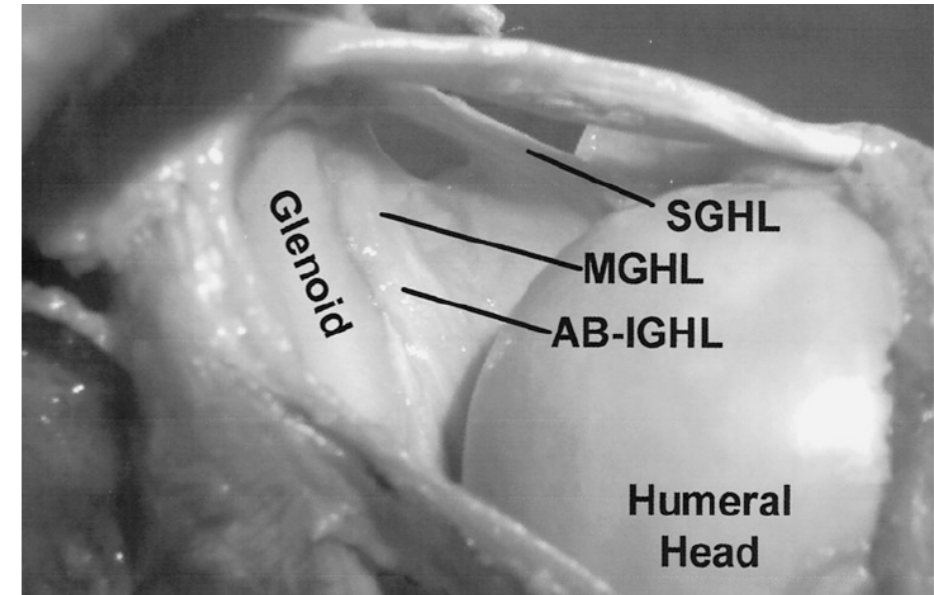
● 3 Faserzüge

- Lig. glenohumerale superius
- Lig. glenohumerale medius
- Lig. glenohumerale inferius



Inferiores glenohumerale Ligament (IGHL)

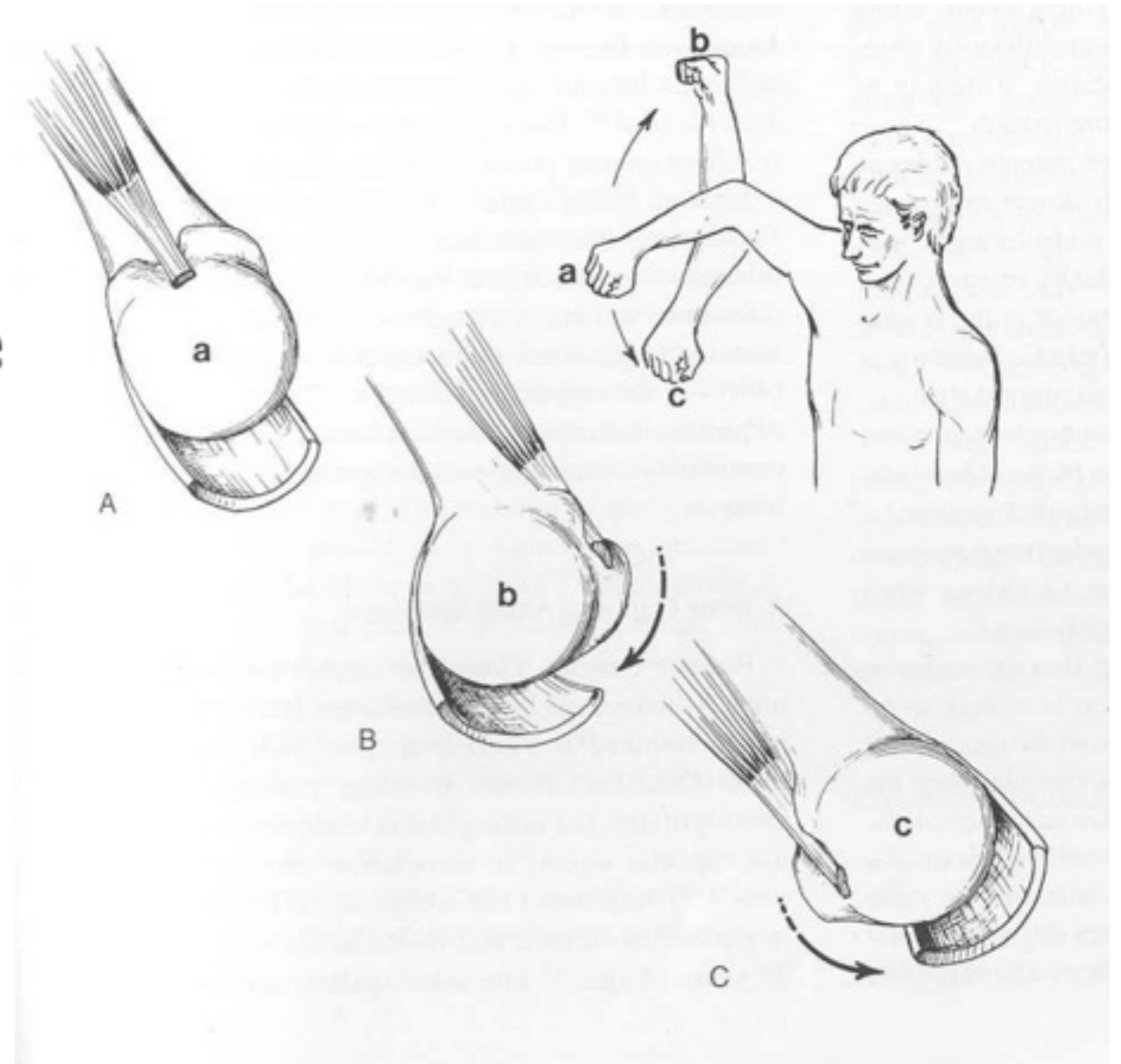
- Anteroinferiores Labrum – Humerus
- 3 Teile: anteriores + posteriores Band
- Dazwischen dünnere Schicht
- „Hängematte“



O'Brien et al. 1990 Am J Sports Med; Burkart & Debski 2002 Clin Orthop Rel Res

Inferiores glenohumerales Band (IGHL)

- In Abduktion: limitiert inferiore Translation
- Innenrotation: posteriore Verschiebung
- Außenrotation: anteriore Verschiebung



Inferiores glenohumerale Ligament (IGHL)

- Anteriore und posteriore Stabilisierung
- Primärer Stabilisator bei 90° Abduktion



Defekt

Vordere Instabilität



Ziel

Anatomische Rekonstruktion

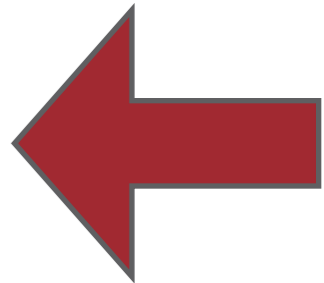
O'Brien et al. 1995 J Shoulder Elbow Surg; Bankart 1938 Br J Surg
Nebelung et al. 2001 Arthroscopy

Klassifikation nach Thomas und Matsen

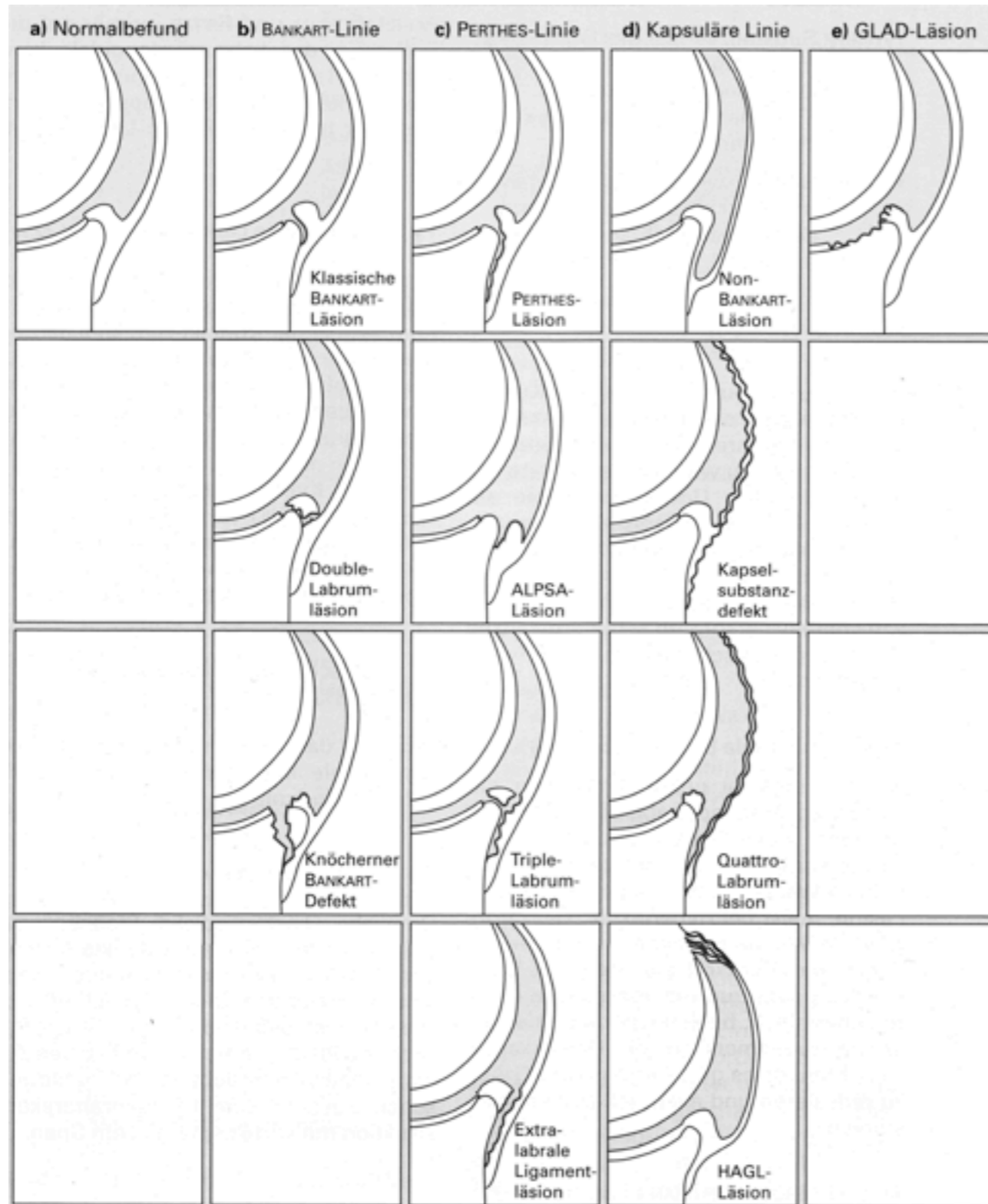
- **A**traumatisch
- **M**ultidirektional
- **B**ilateral
- **R**ehabilitation
- **I**ntervallverschluß
- **I**nferiorer Kapselshift
- **T**raumatisch
- **U**nidirektional
- **B**ankart-Läsion
- **S**urgery

Klassifikation

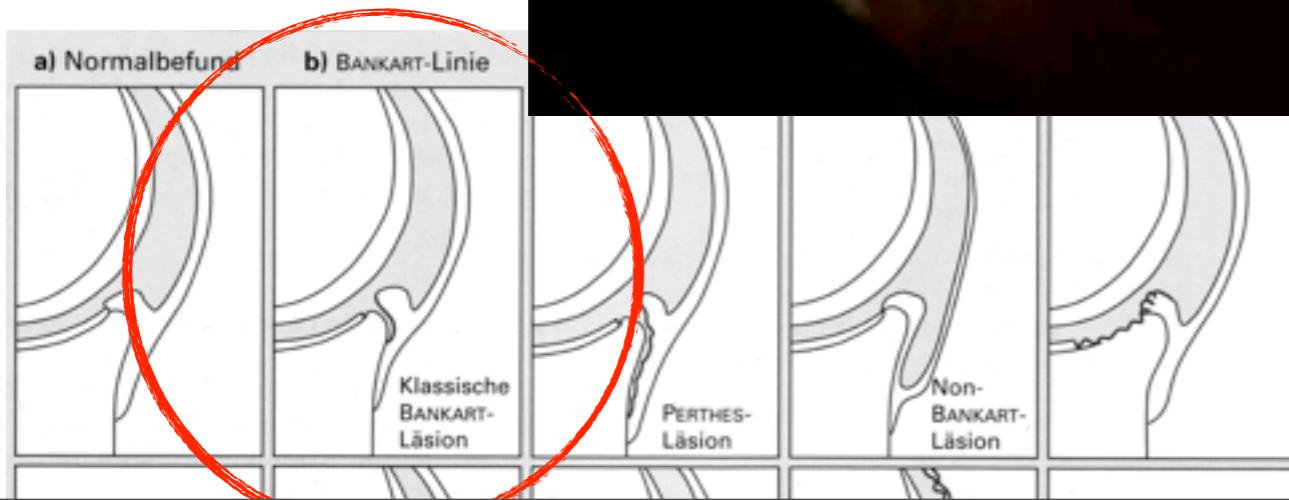
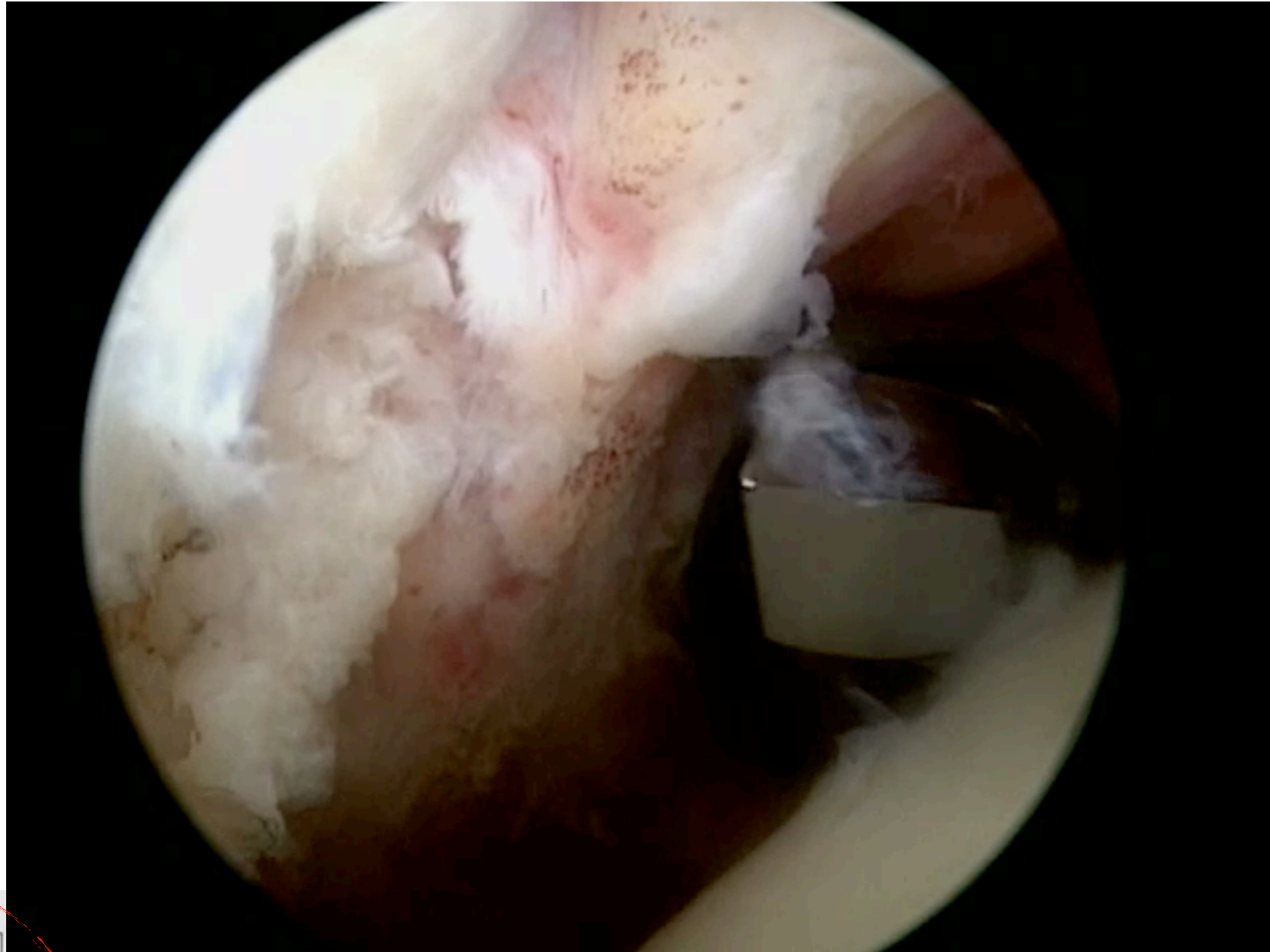
1. chronische Luxation
2. unidirektionale Instabilität ohne Hyperlaxität
3. unidirektionale Instabilität mit multidirektionaler Hyperlaxität
4. multidirektionale Instabilität ohne Hyperlaxität
5. multidirektionale Instabilität mit multidirektionaler Hyperlaxität
6. willkürliche Luxation



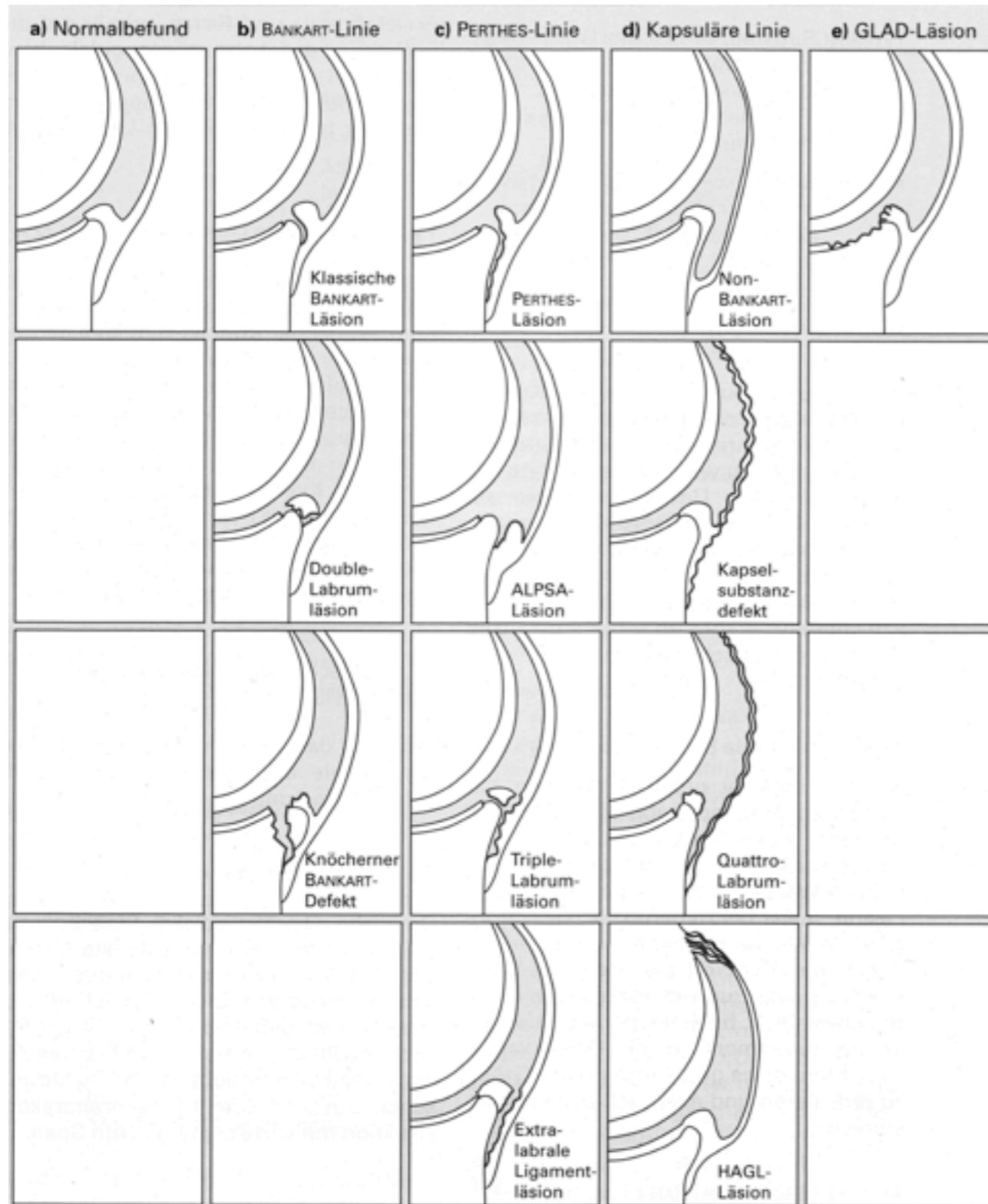
Klassifikation: antero-inferiore Instabilität



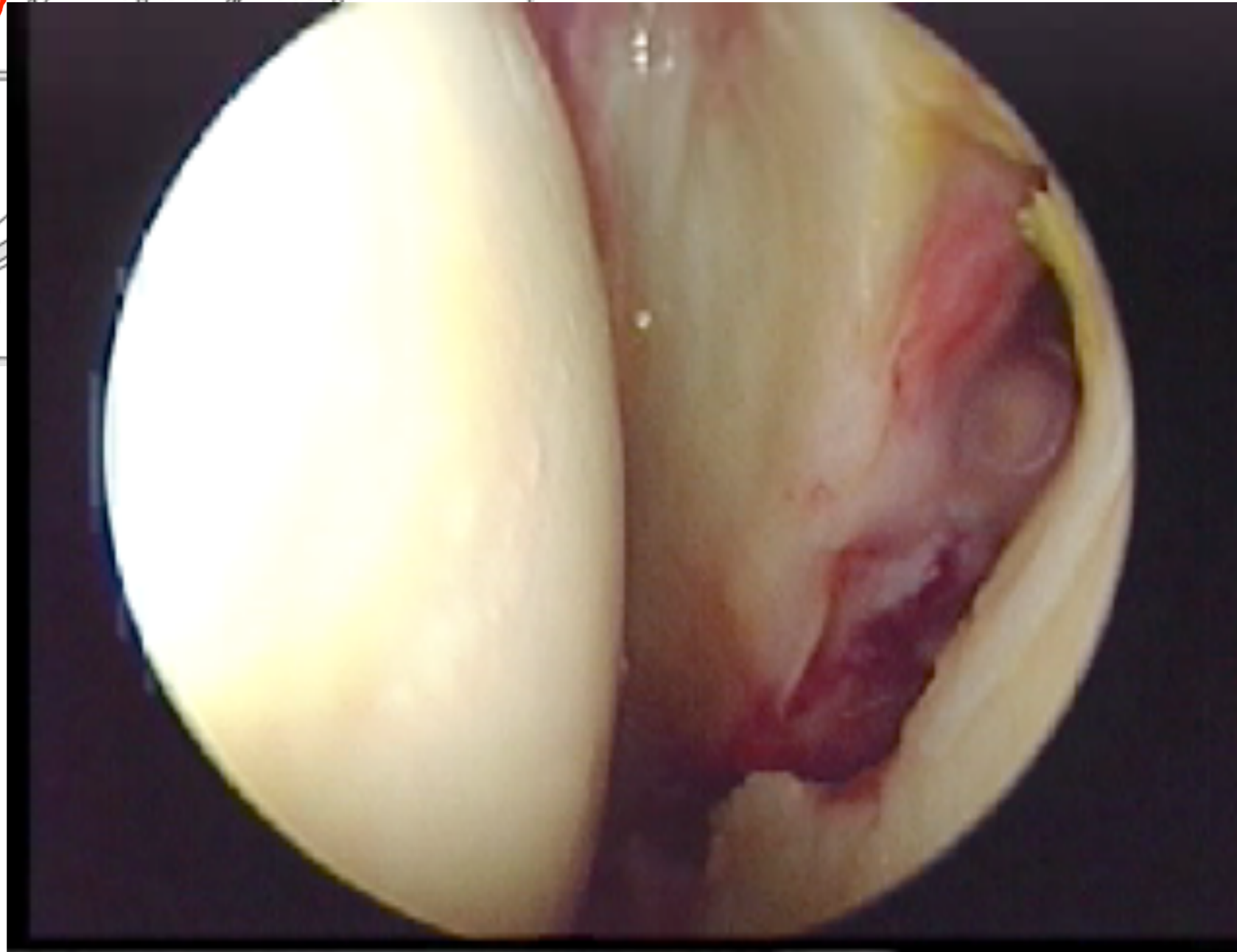
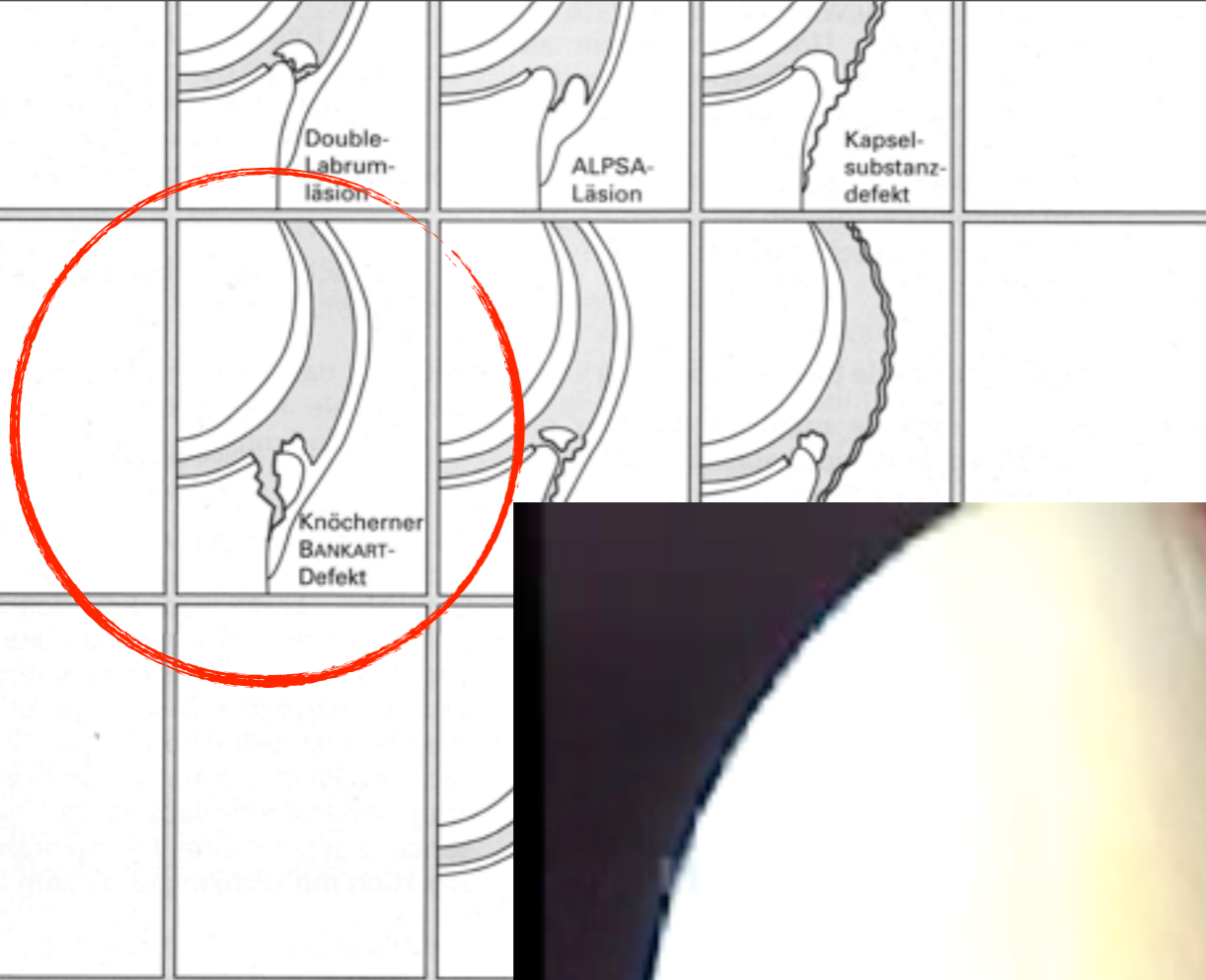
Bankart-Läsion



Klassifikation: antero-inferiore Instabilität

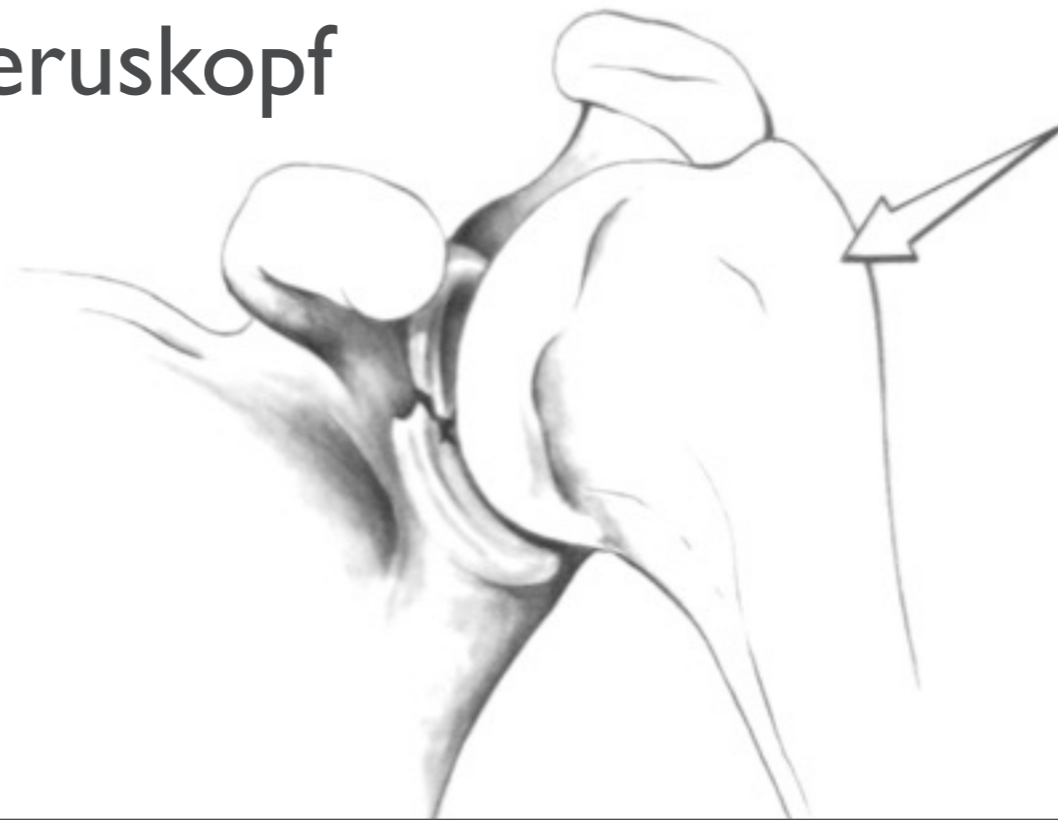


knöcherner Bankart

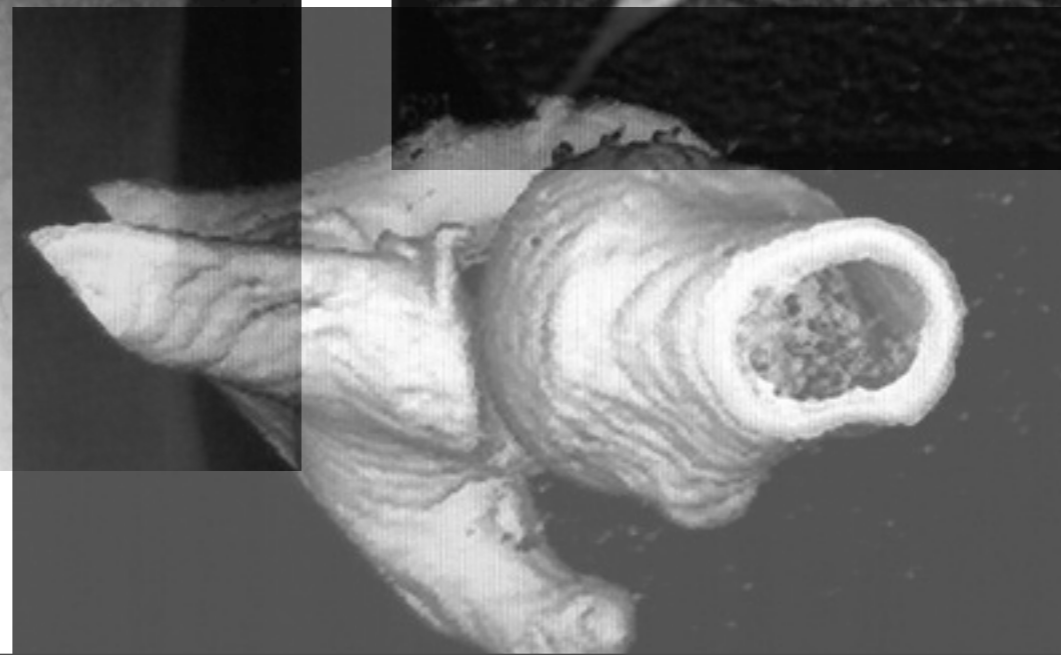
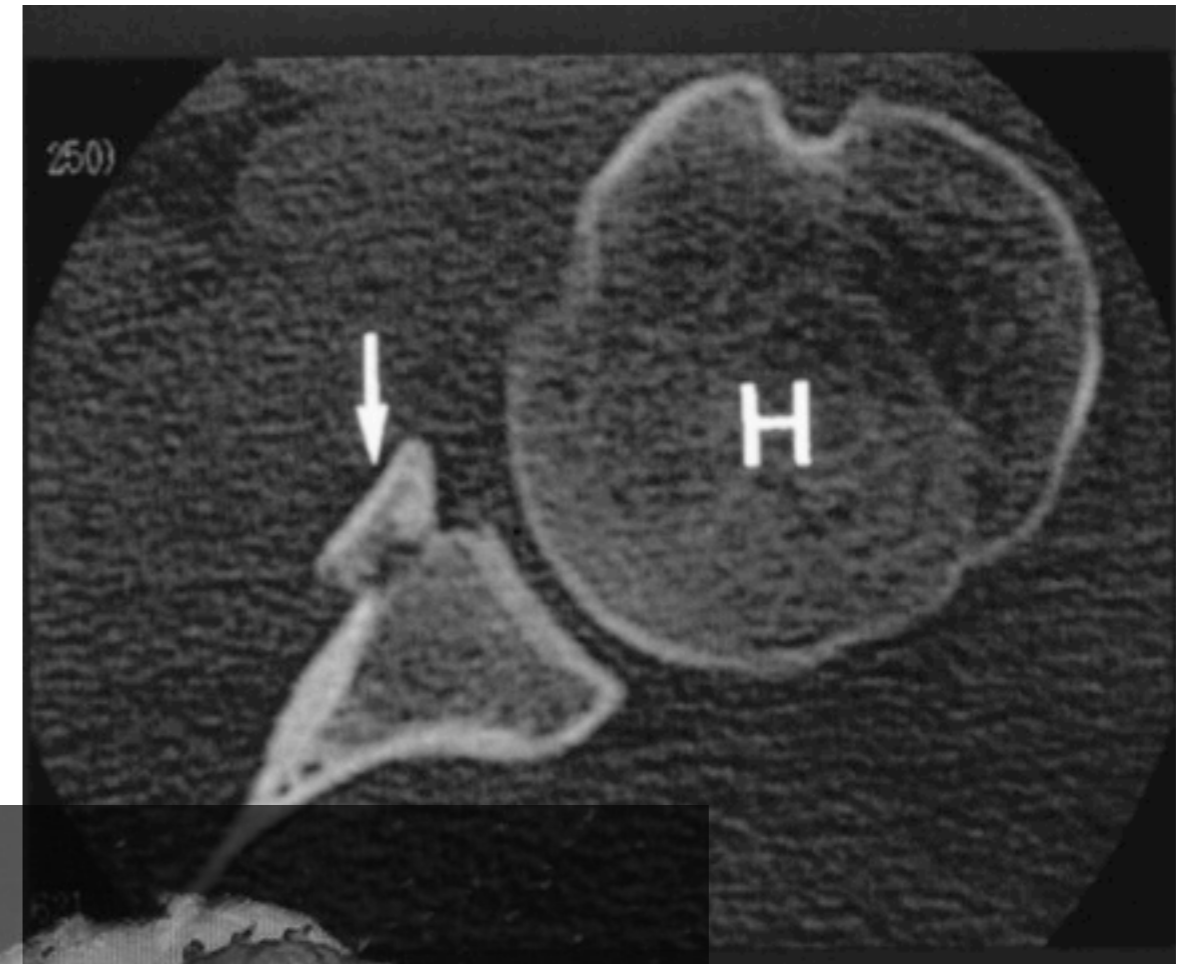


Ätiologie

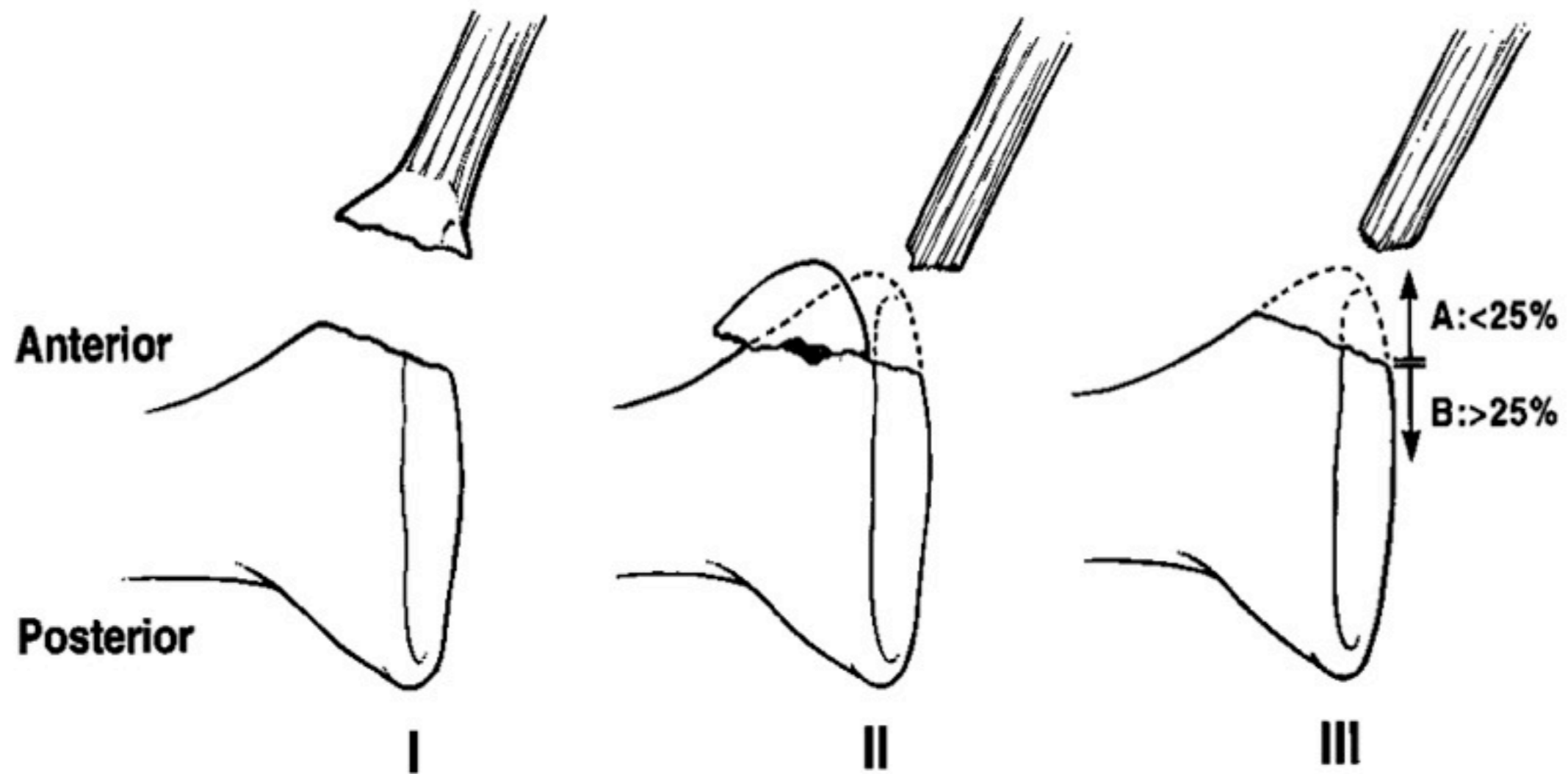
- Krafteinwirkung auf das Glenoid durch Humeruskopf
 - Bigliani 1998 AJSM
- Dislokation des Humeruskopf adduziertem Arm
 - Aston 1973 JBJS



Rö + CT

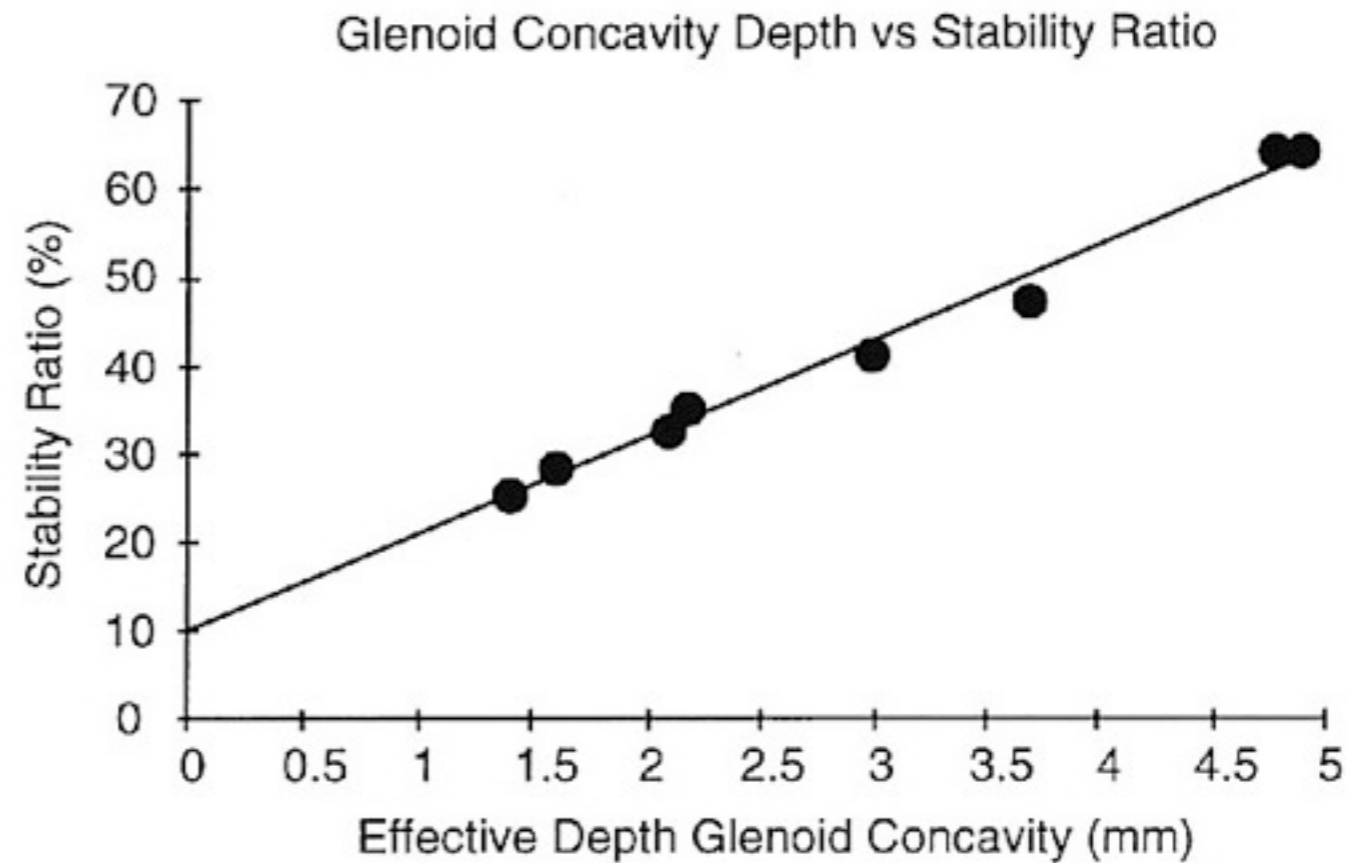
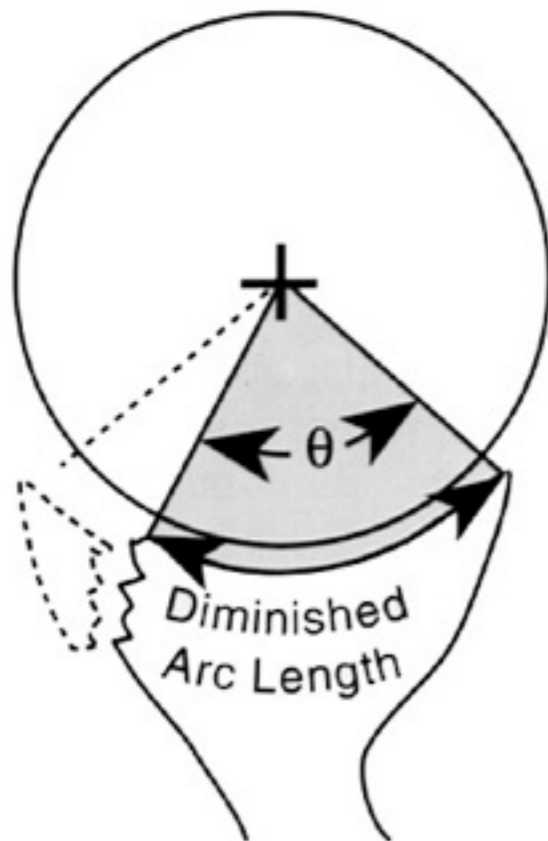


Klassifikation



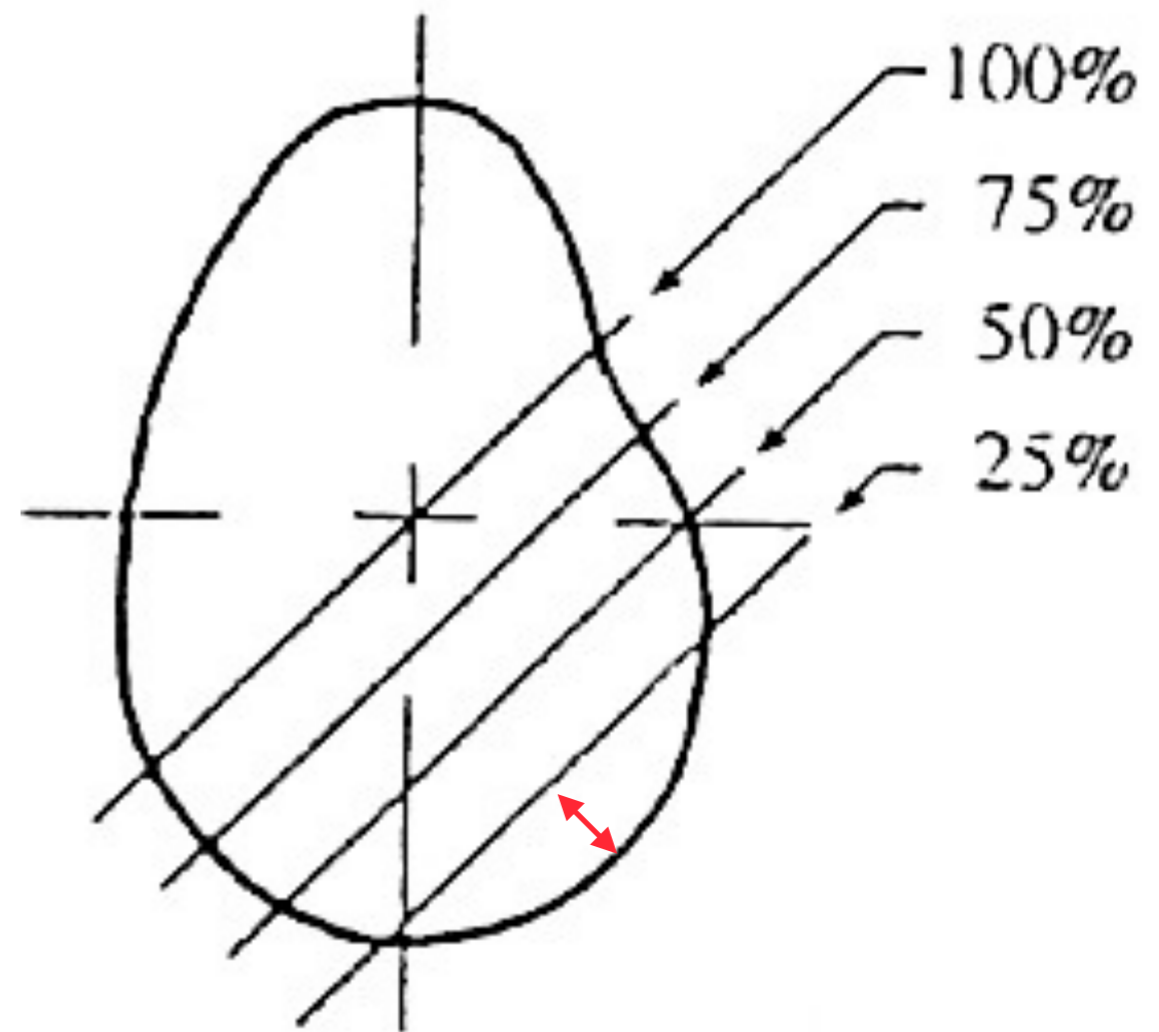
Bigliani 1998 AOSSM

Verlust der Konkavität durch glenoidalen Knochendefekt



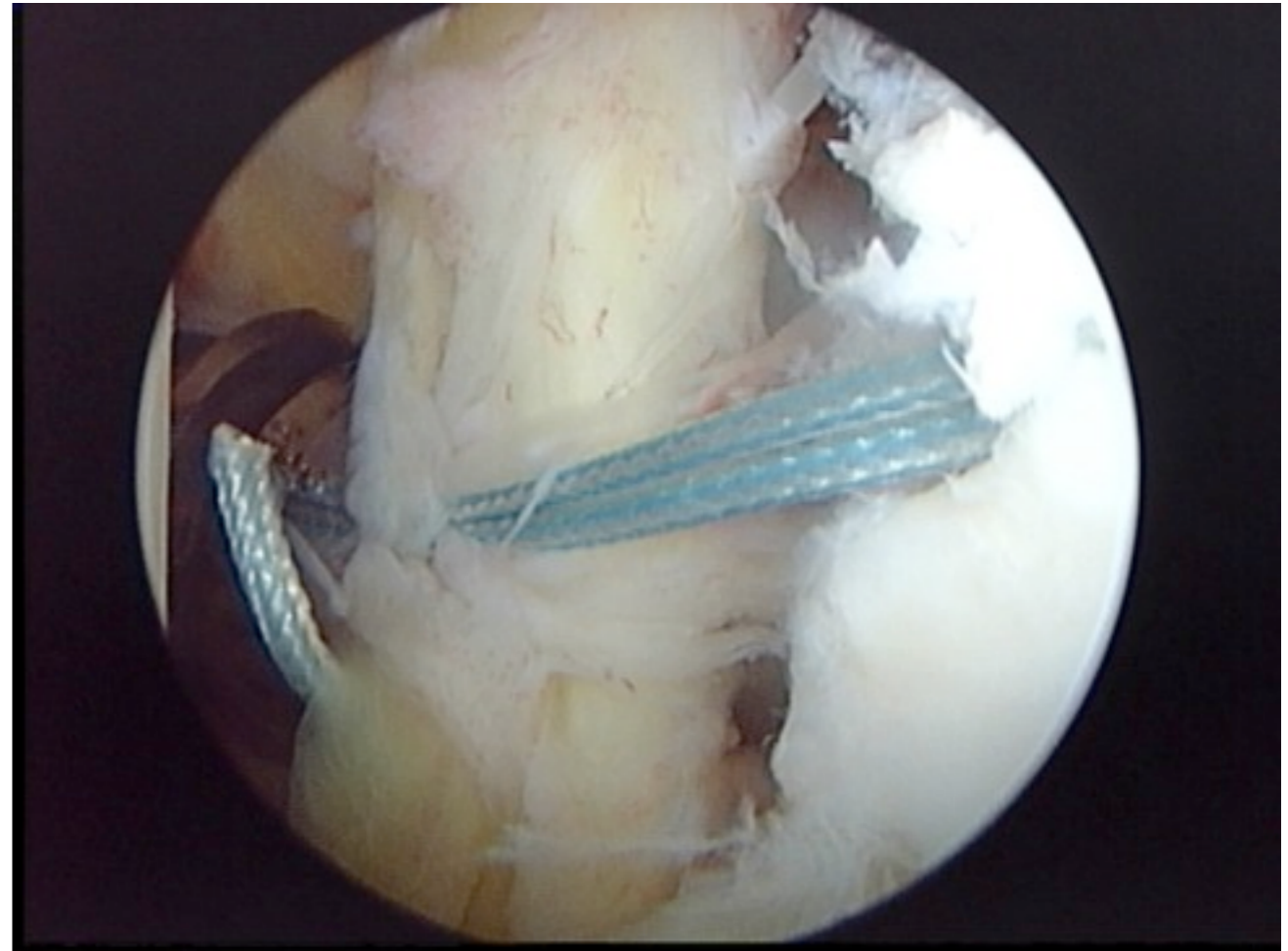
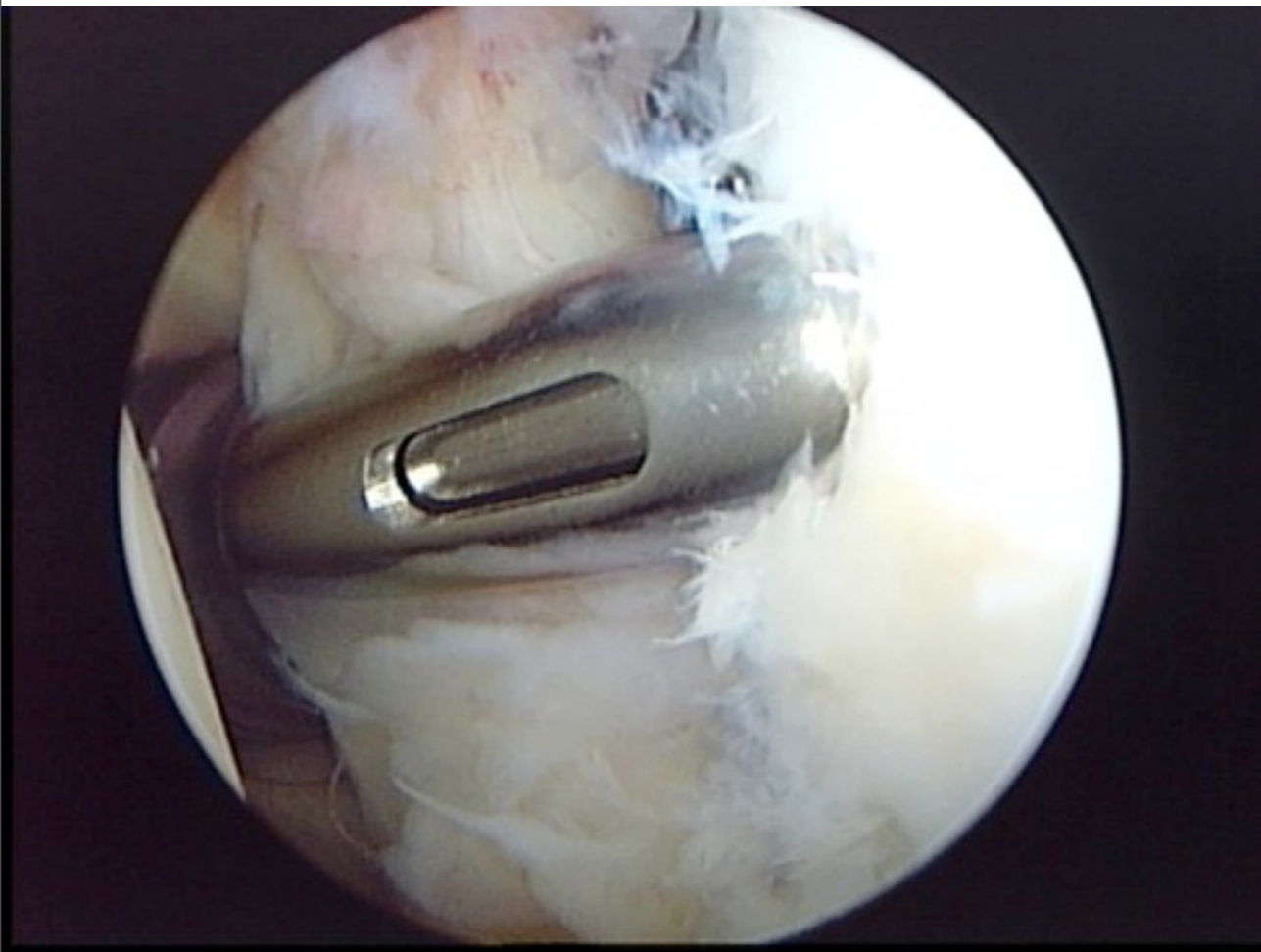
Indikation für Kapsel-Labrum-Rekonstruktion

knöcherner Bankartläsion,
kleine Glenoidfrakturen
($<21\%$ des Glenoiddurchmessers)

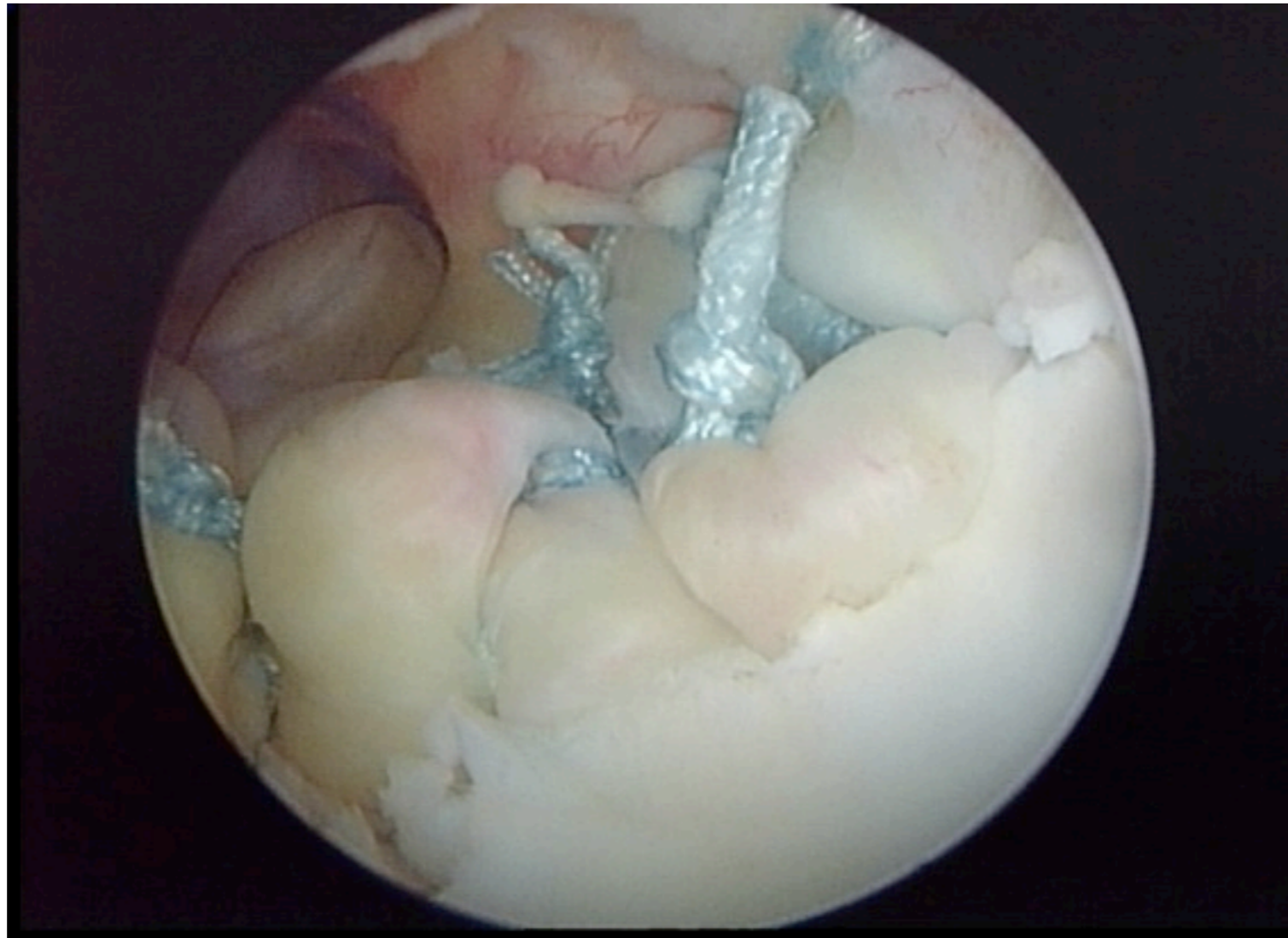


ITOI et al. JBJS 2000

Knöcherner Bankart

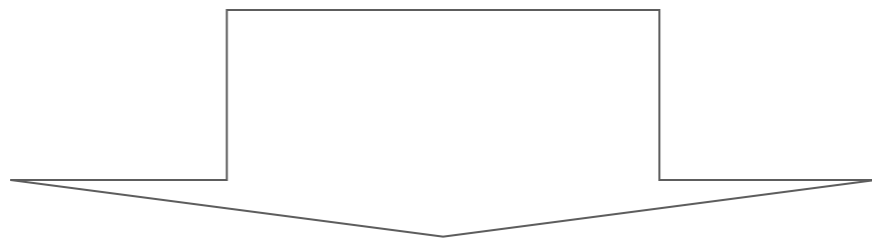


Knöcherner Bankart

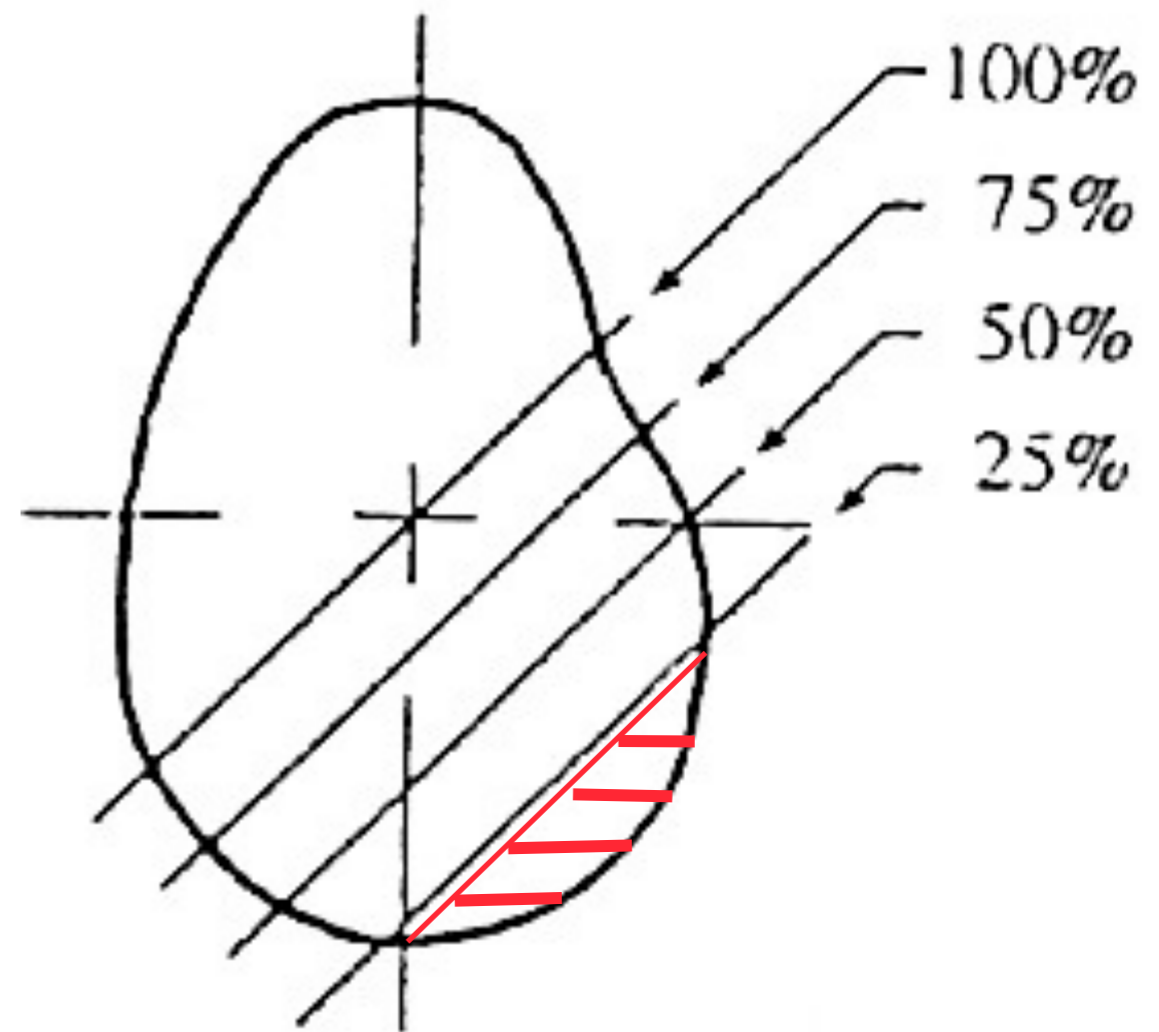


Indikation für Rekonstruktion des Glenoids

knöcherner Defekt mehr als
50% anteroinf. Glenoidfläche
($> 21\%$ des Glenoiddurchmessers)



Bankart-Repair nicht suffizient



ITOI et al. JBJS 2000

Therapy

Open reduction and internal fixation

Coracoid process transfer

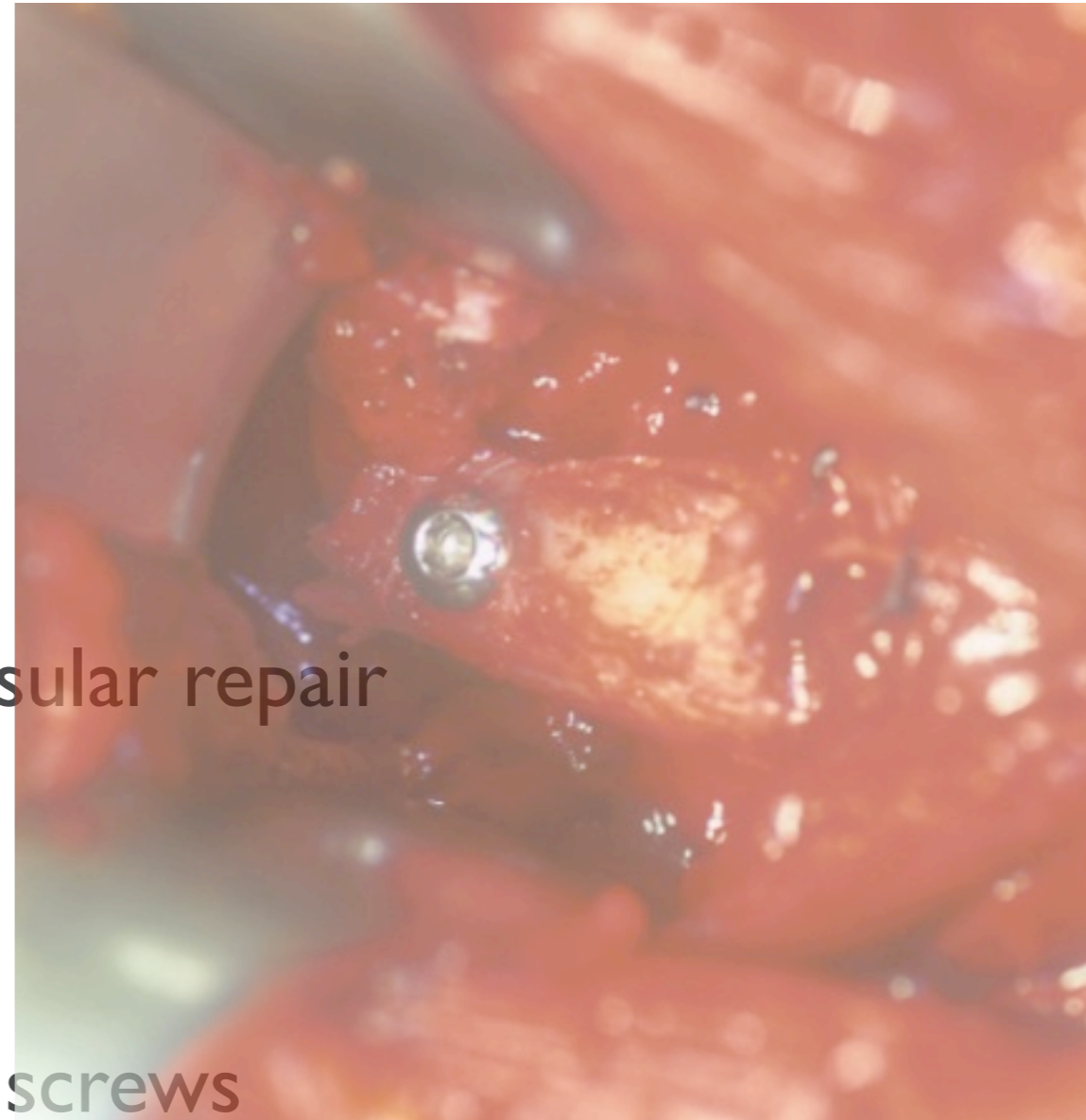
Gazielly 1991 Surgical disorders of the shoulder

intraarticular iliac bone graft before capsular repair

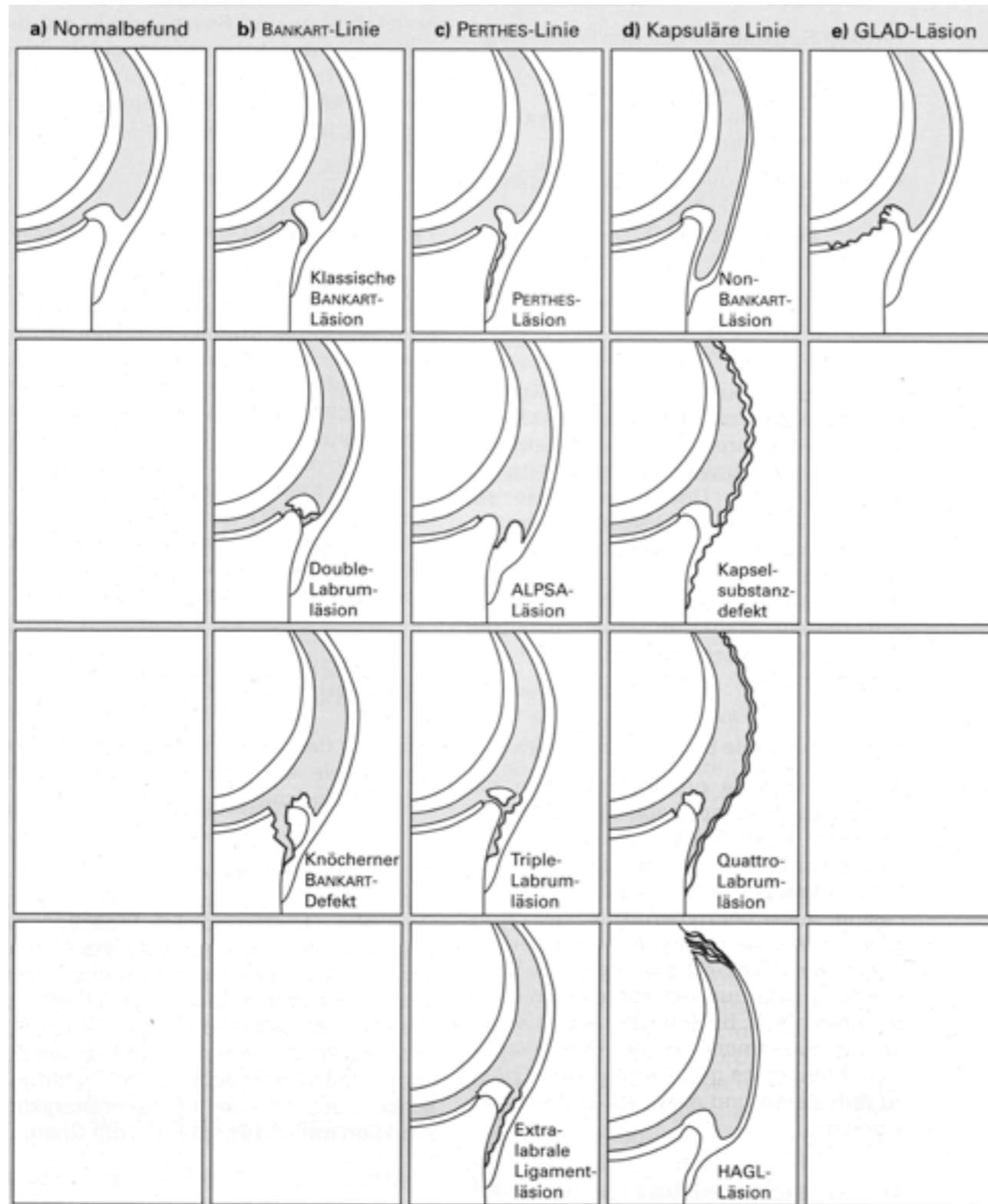
Gerber 1997, Iannotti 2000

Arthroscopic stabilization - Cannulated screws

Cameron 1998 Arthroscopy

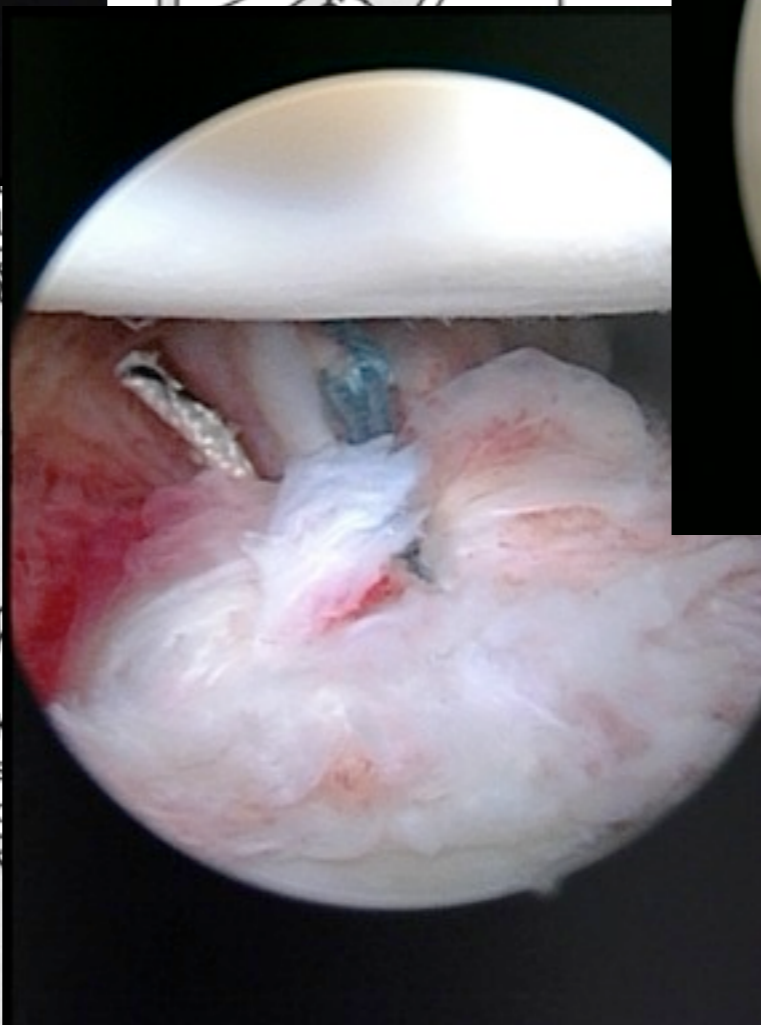
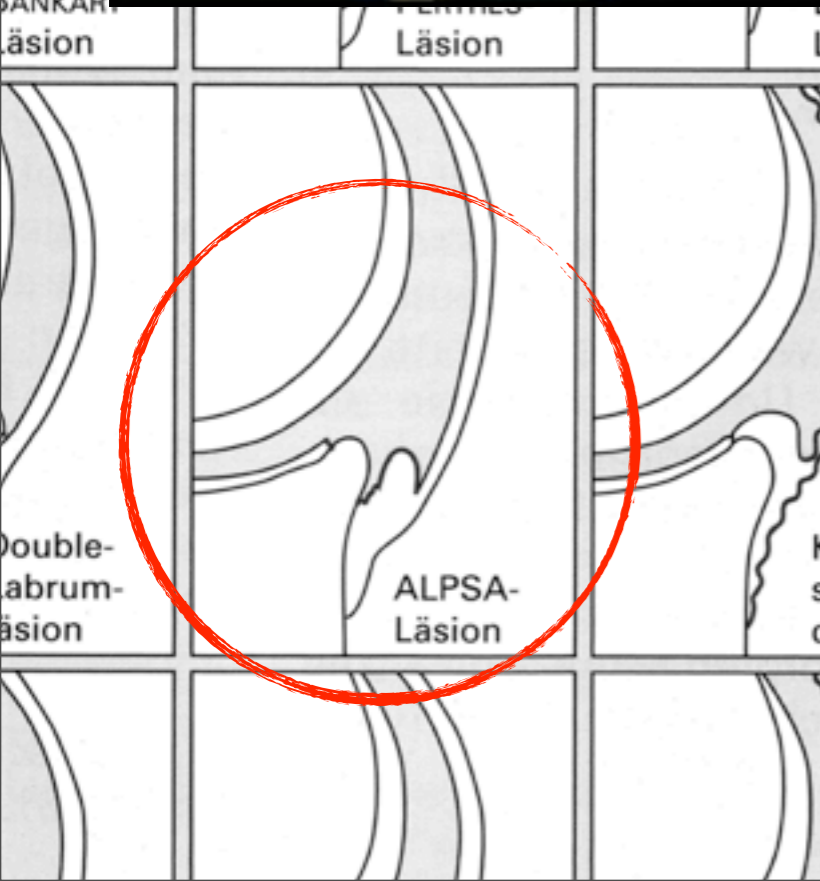
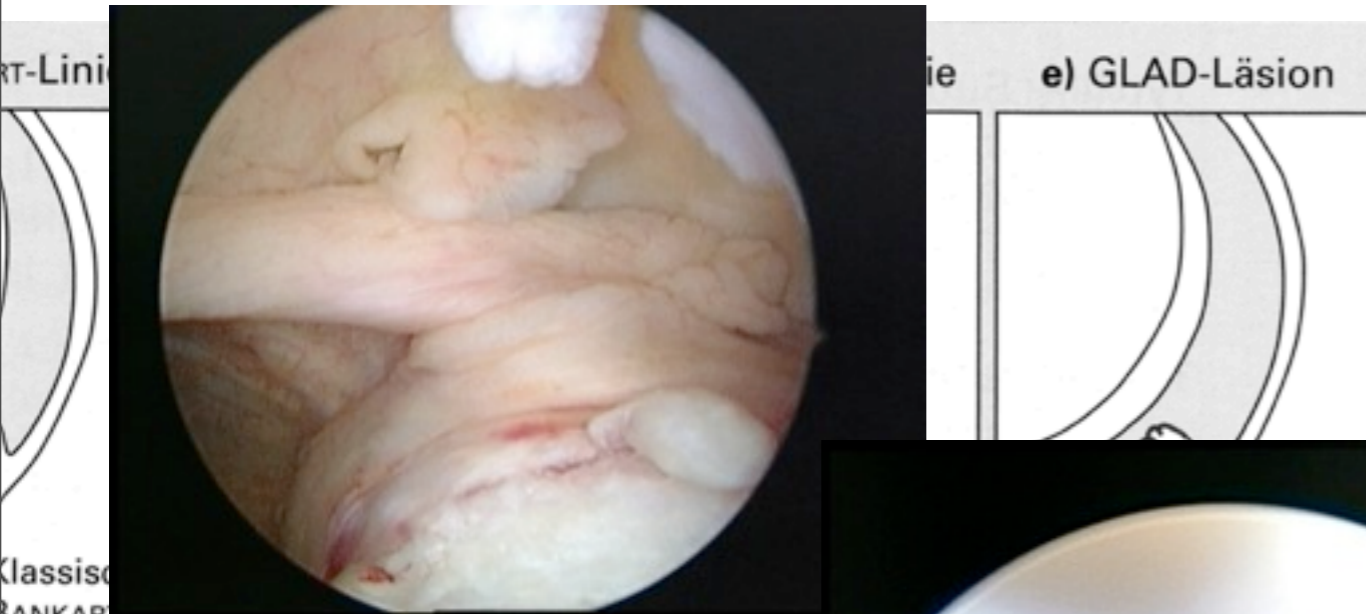


Klassifikation: antero-inferiore Instabilität

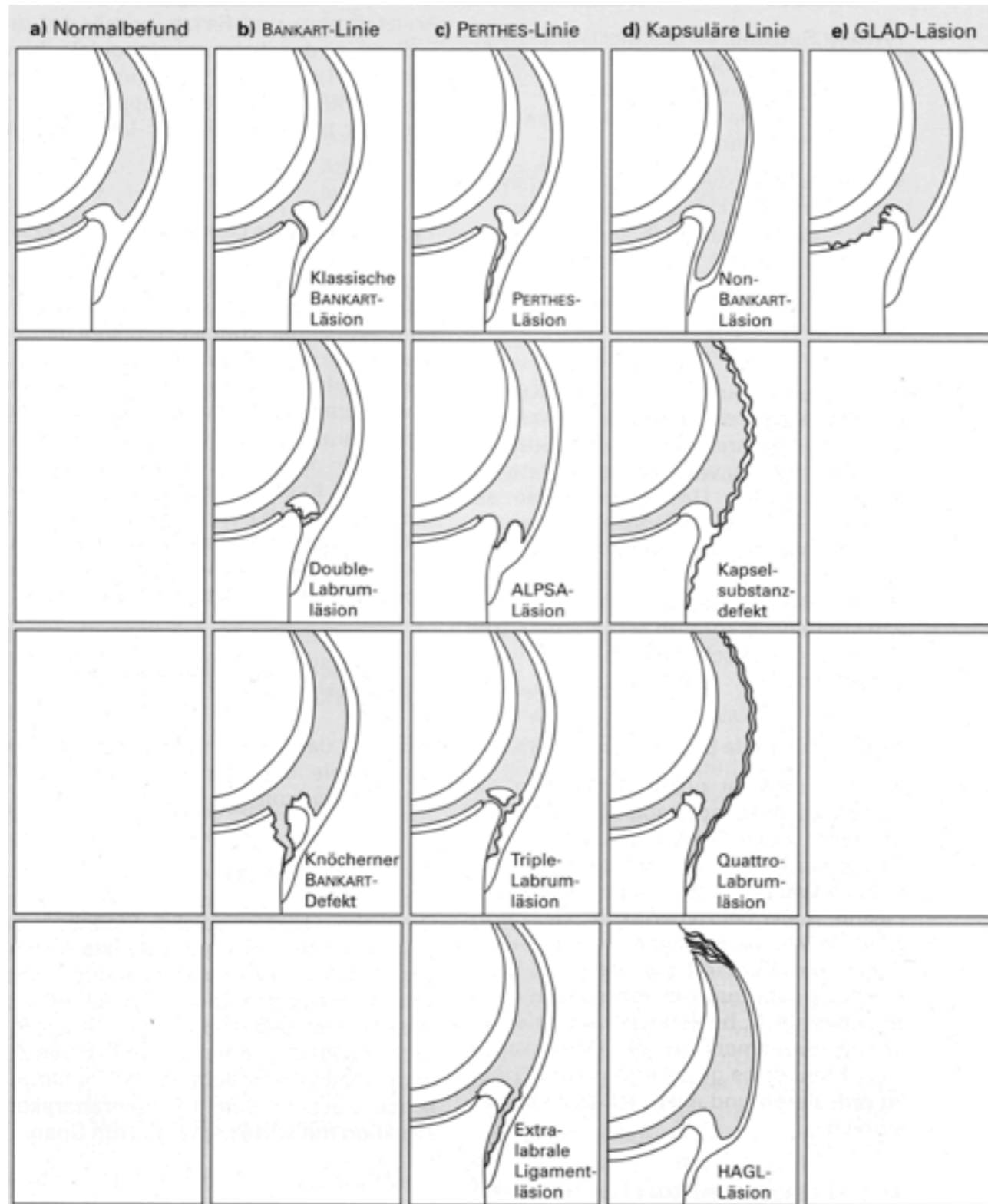


ALPSA-Läsion

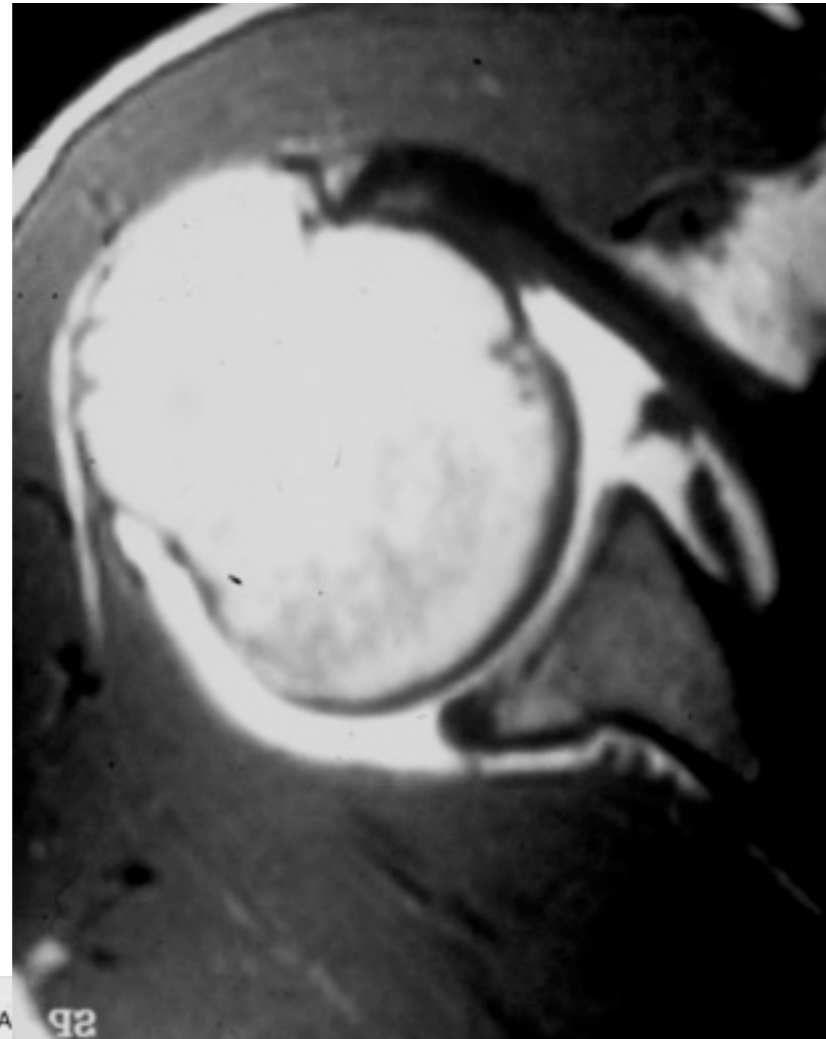
anterior labroligamentous periosteal sleeve avulsion



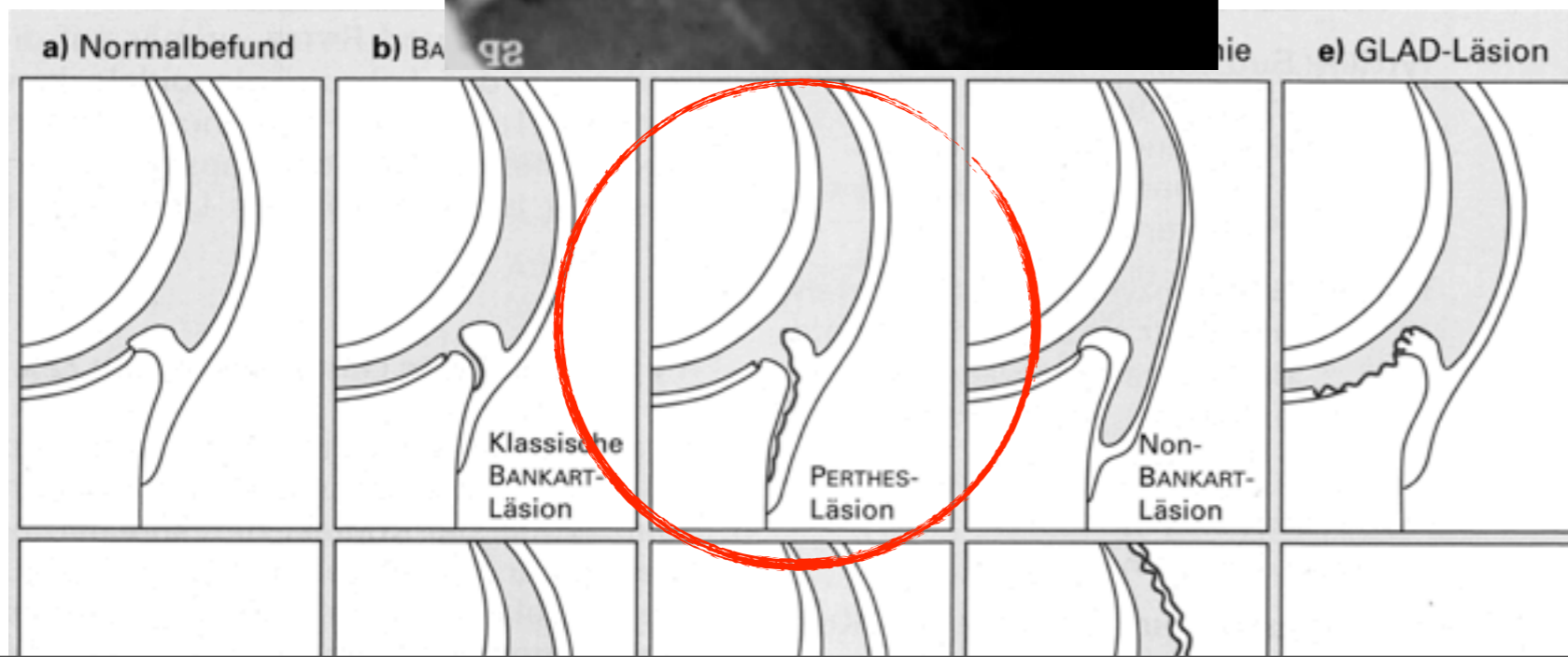
Klassifikation: antero-inferiore Instabilität



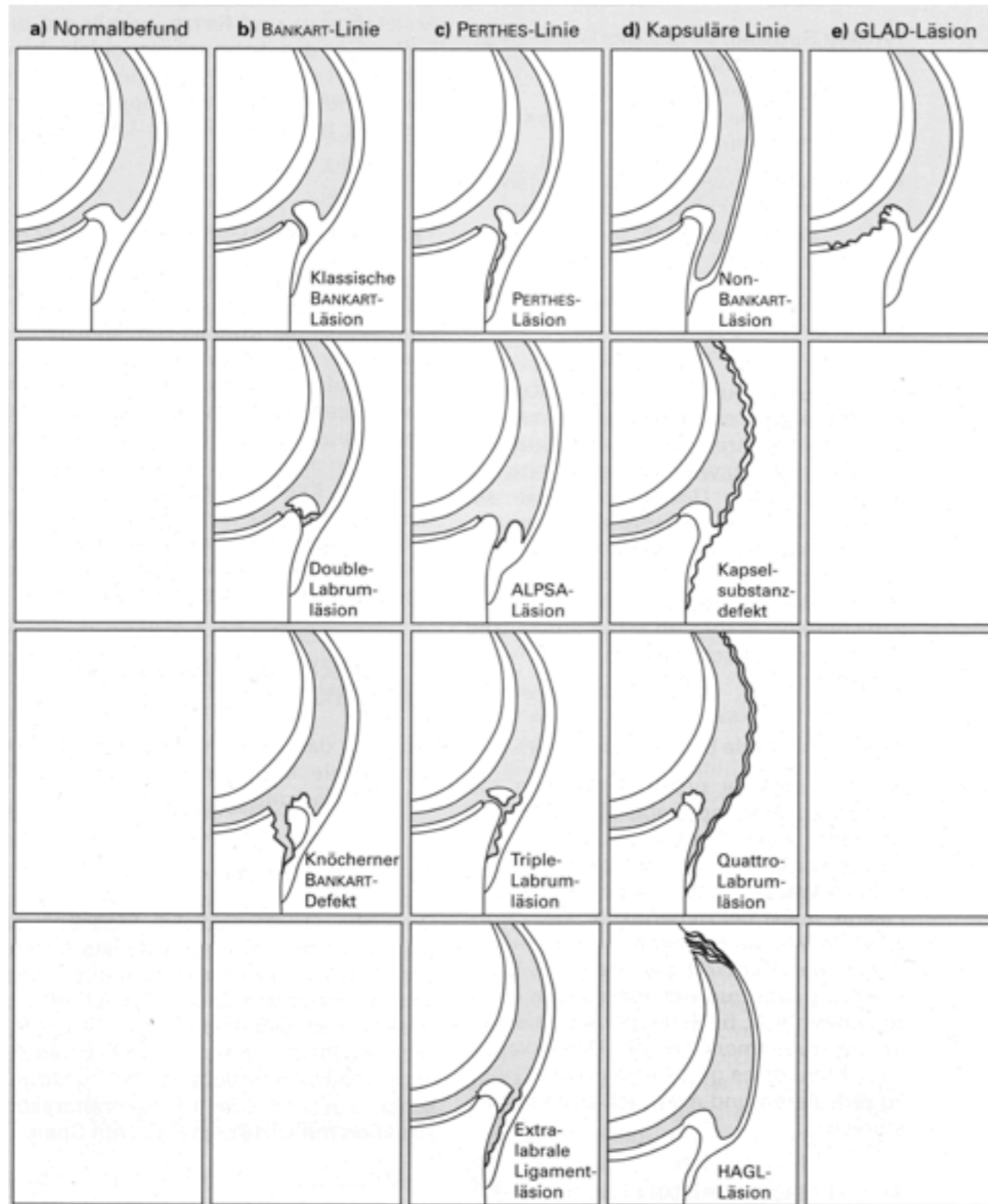
Perthes - Läsion



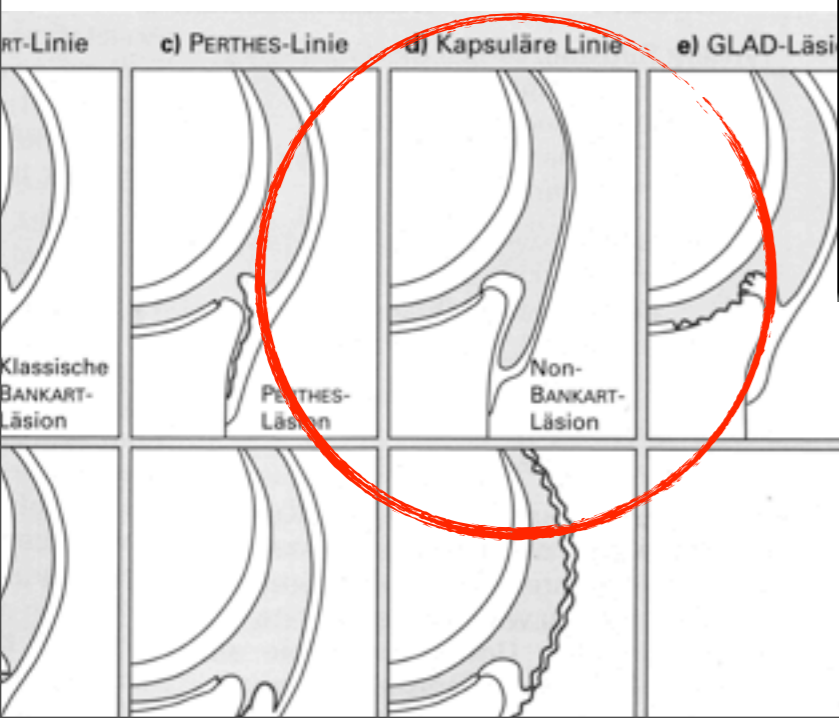
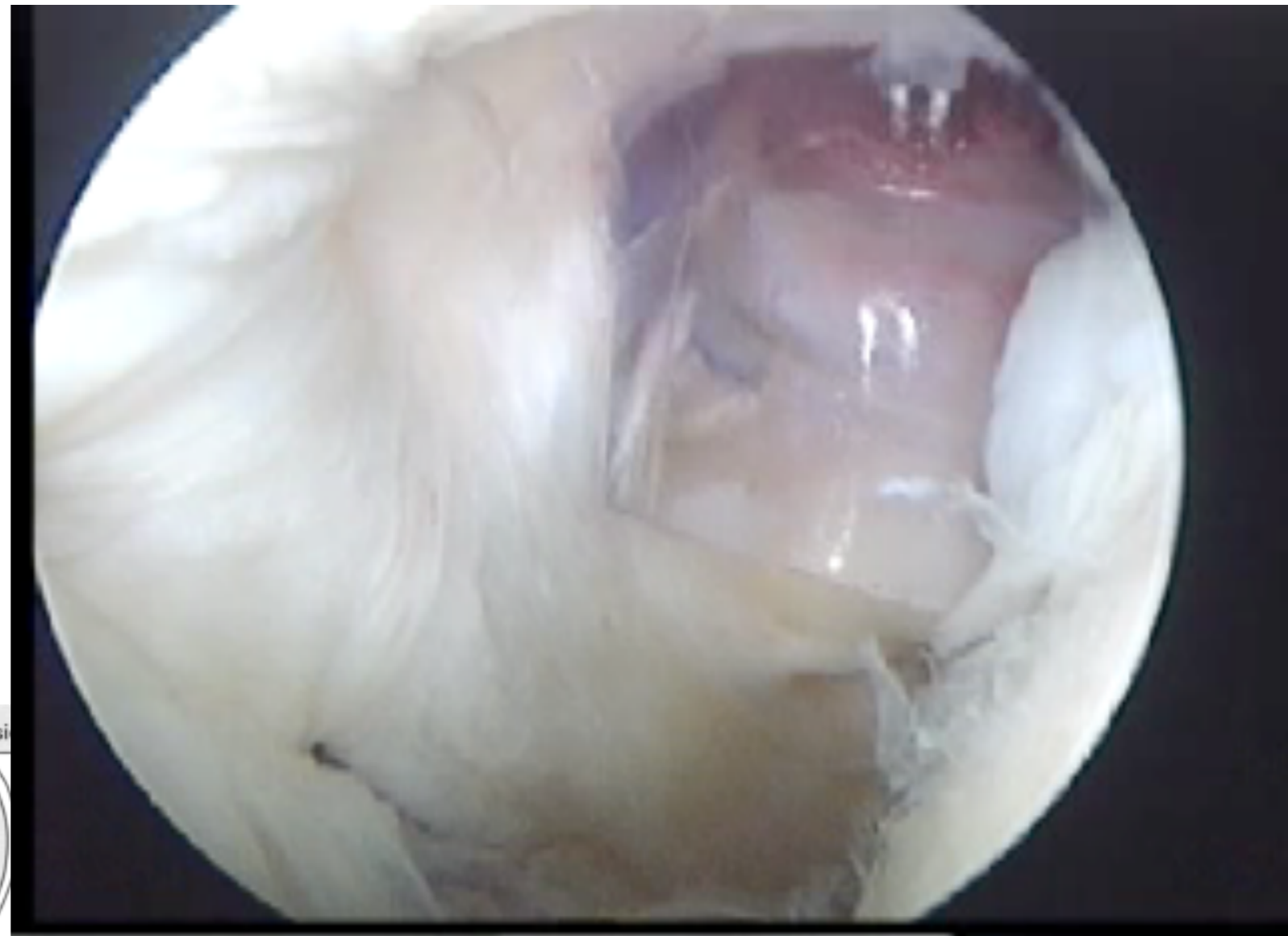
gemeinsamer Abriss des
IGHL + Labrum



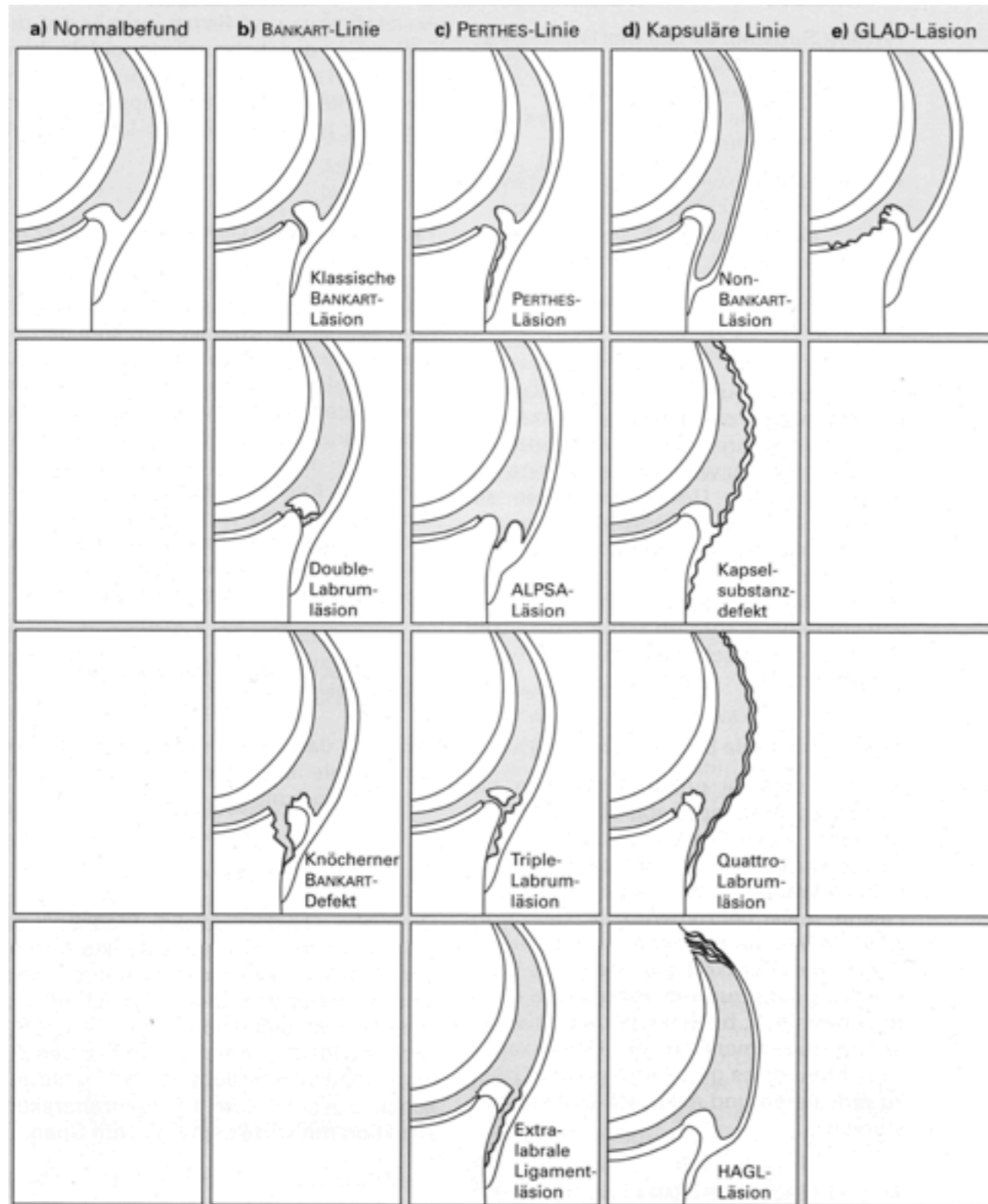
Klassifikation: antero-inferiore Instabilität



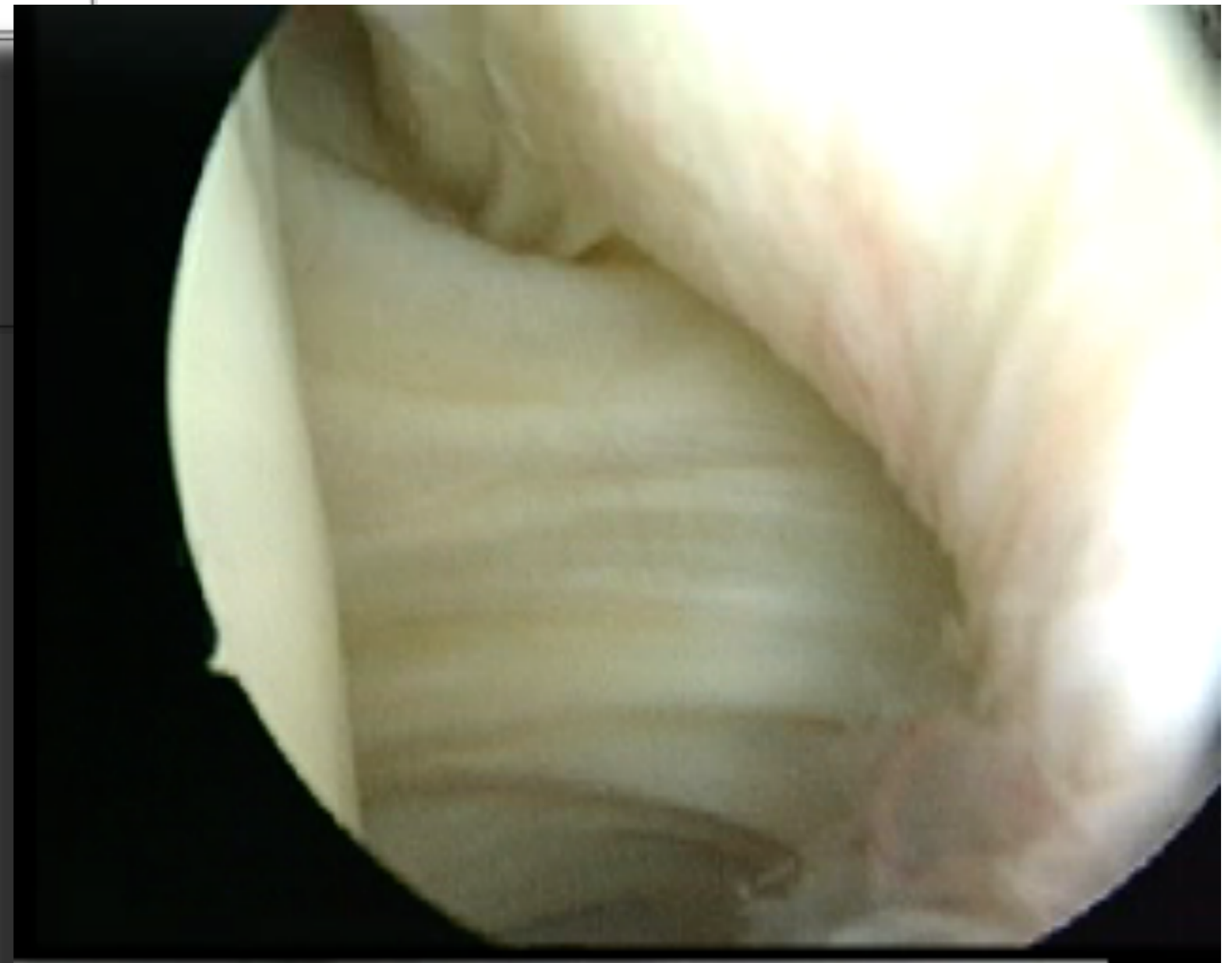
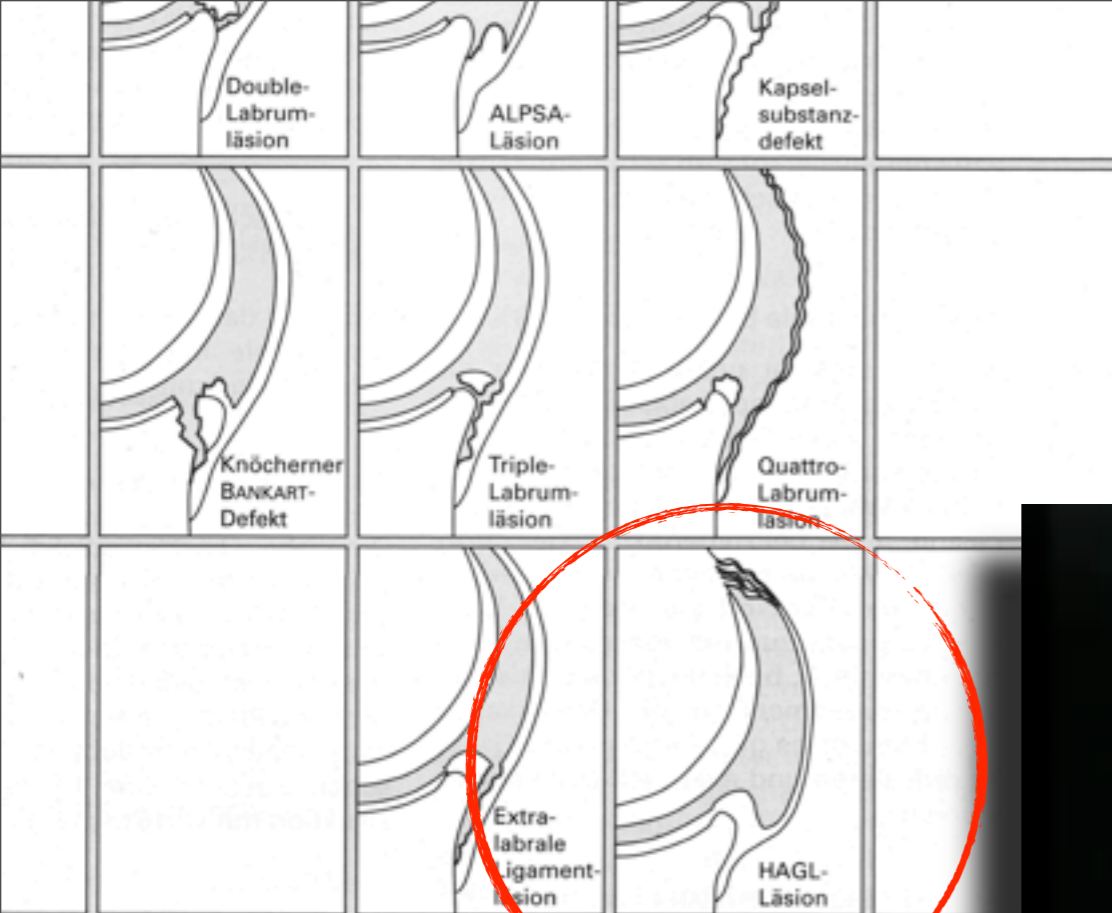
Non-Bankart Läsion



Klassifikation: antero-inferiore Instabilität



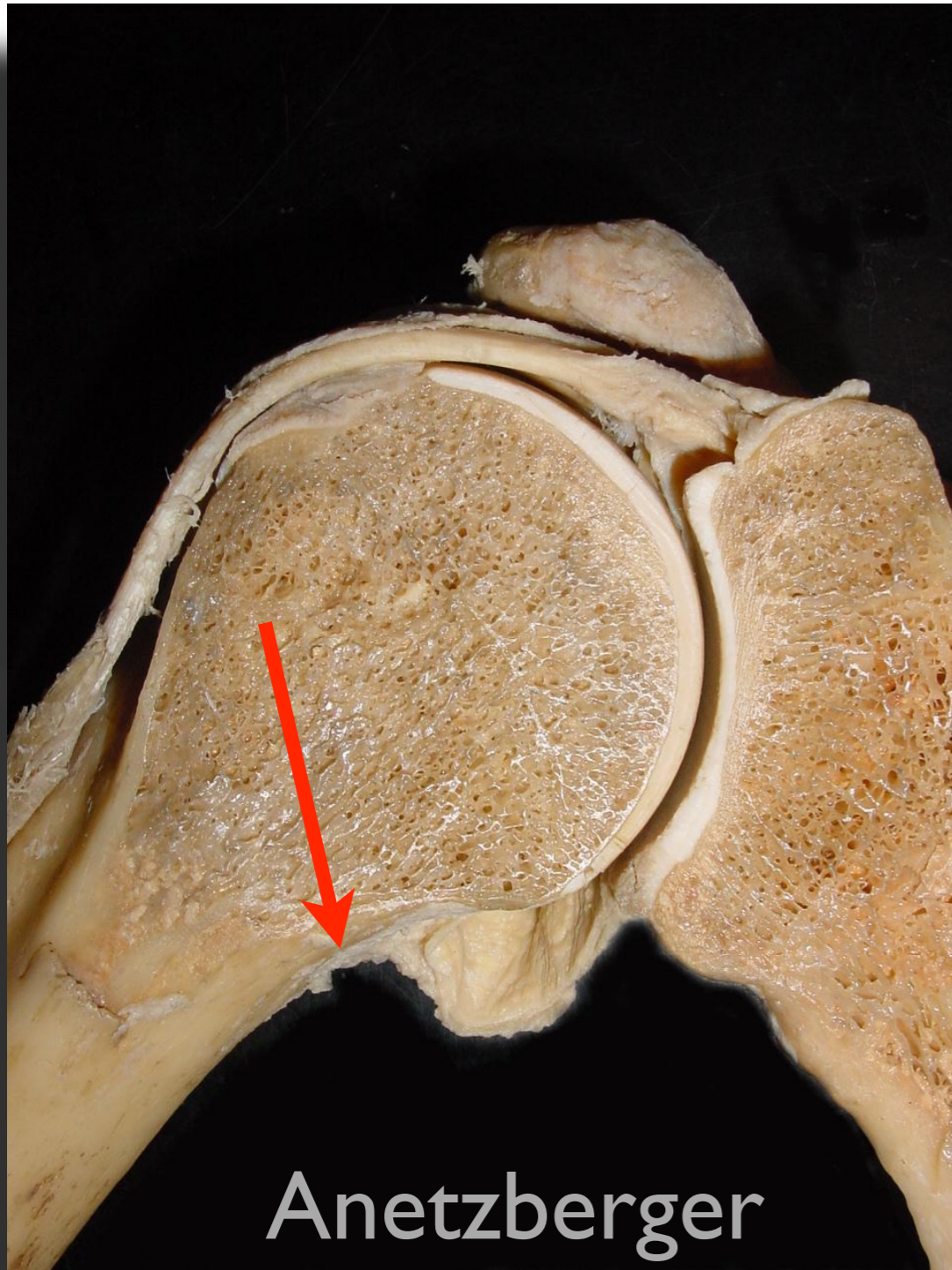
HAGL- Läsion



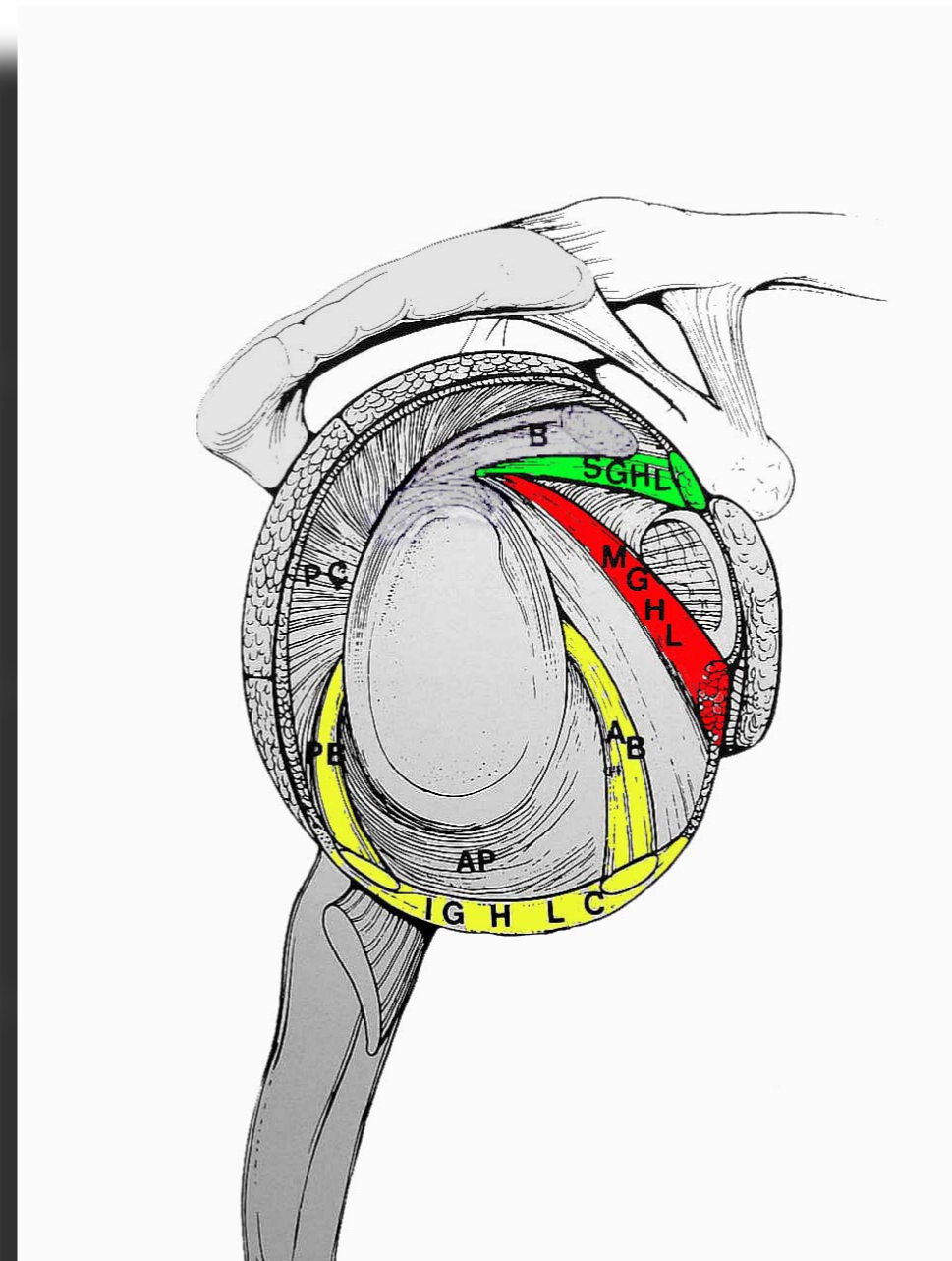
- H umeral
- A vulsion of the
- G lenohumeral
- L igament

Nicola 1942 JBS-A
Wolf E 1995 Arthroscopy

Anatomie

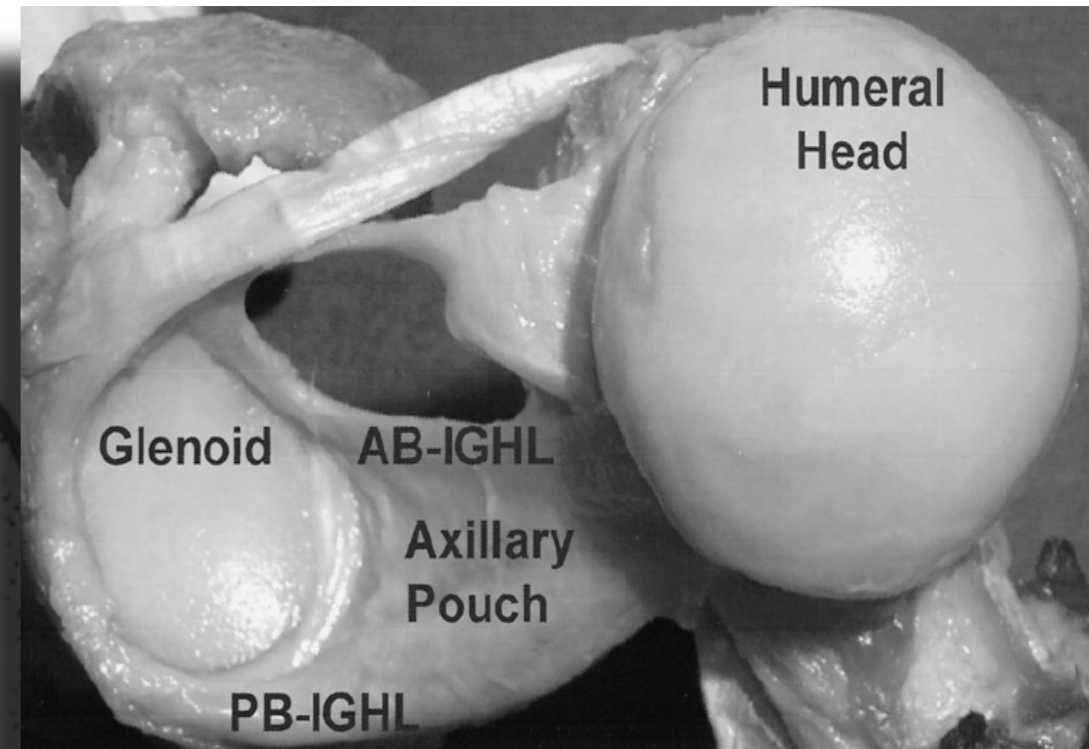
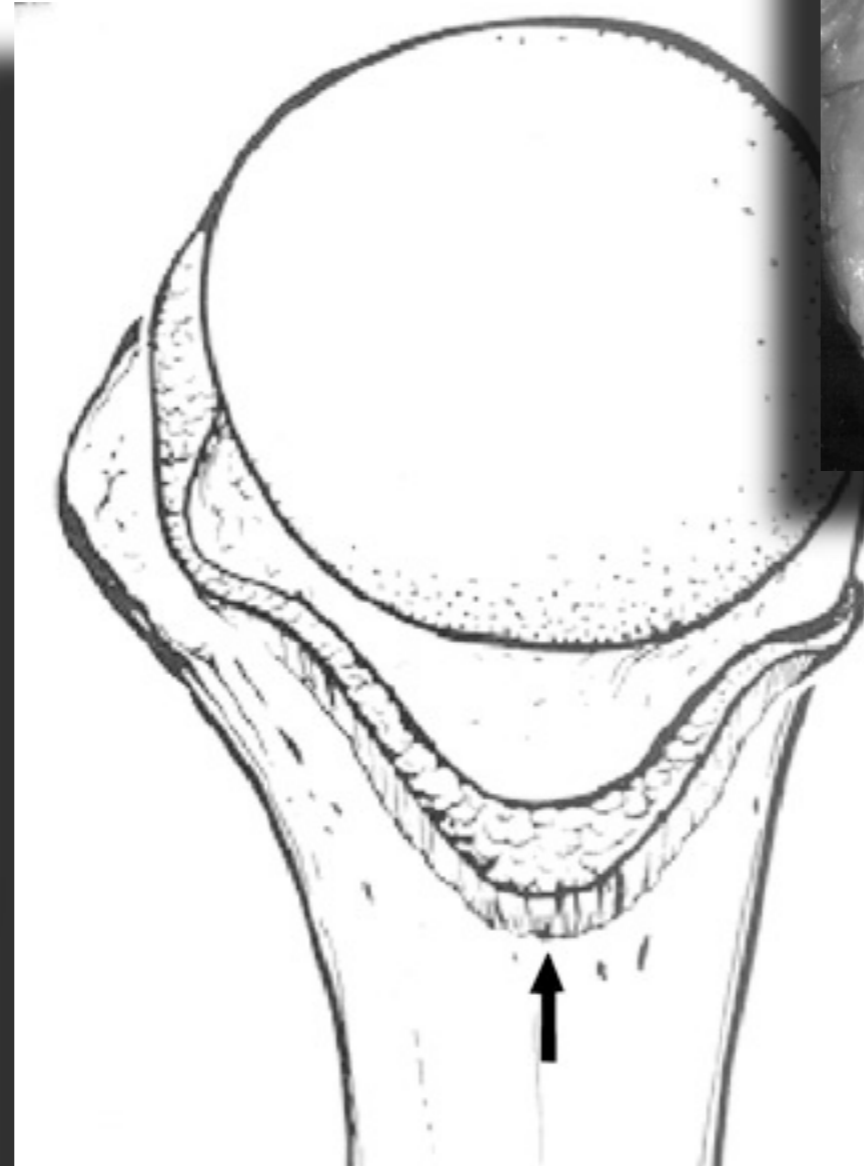
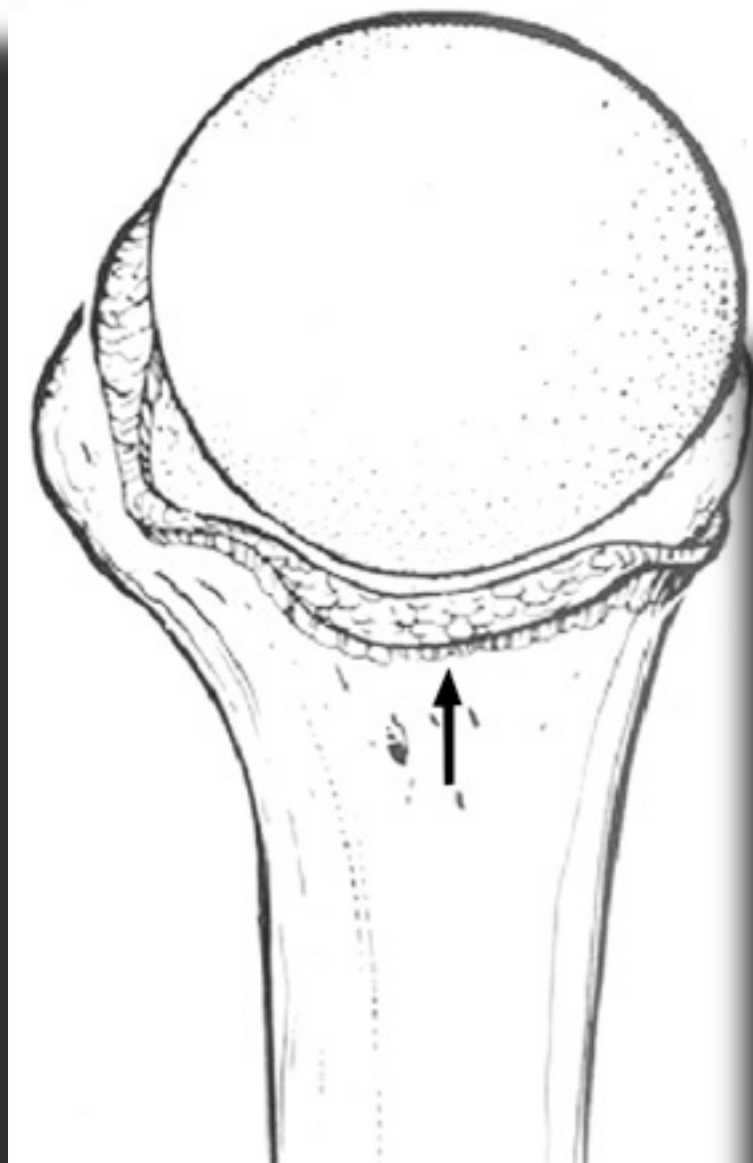


Anetzberger



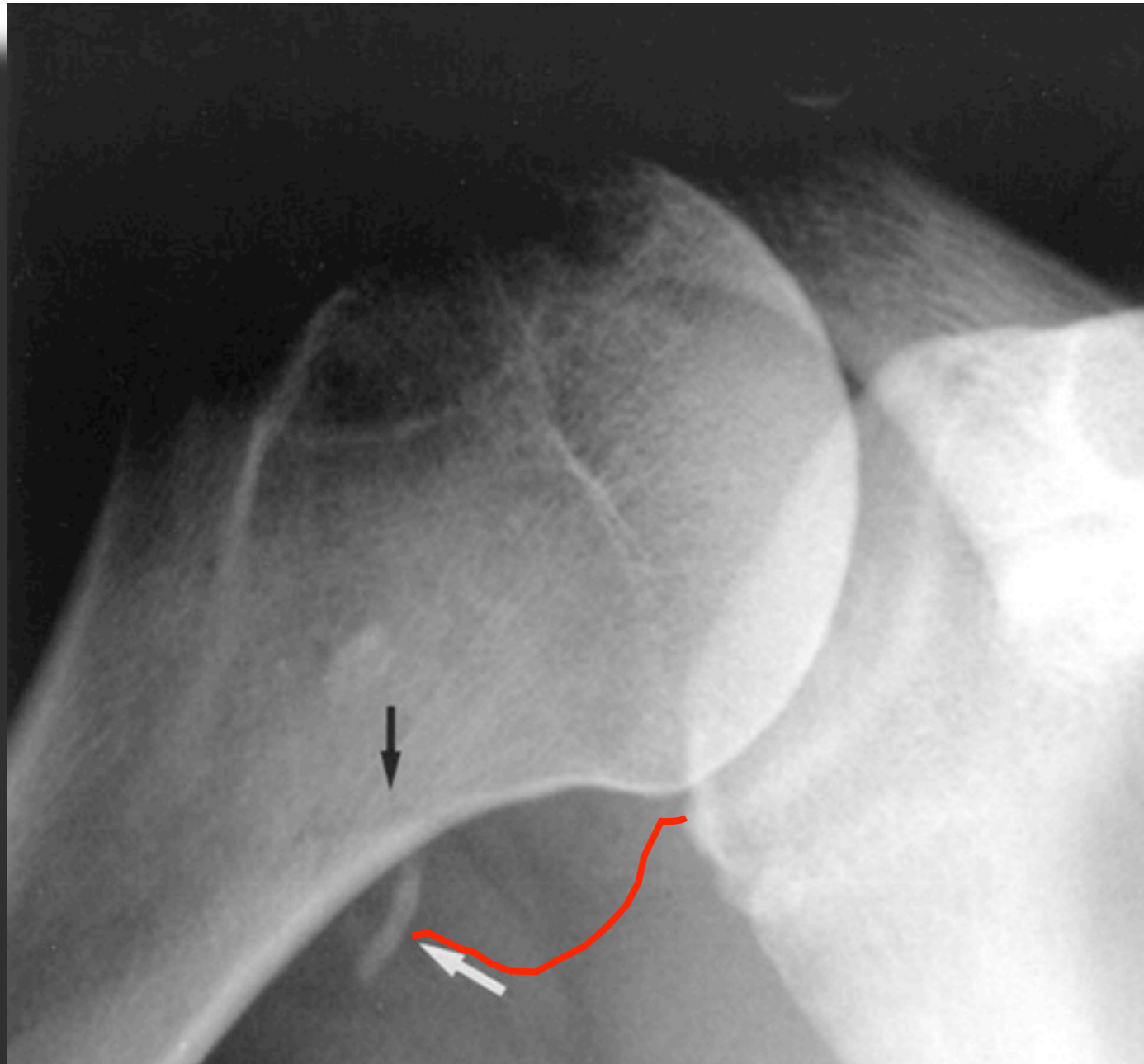
O'Brien 1990 AJSM

Humerales Insertion



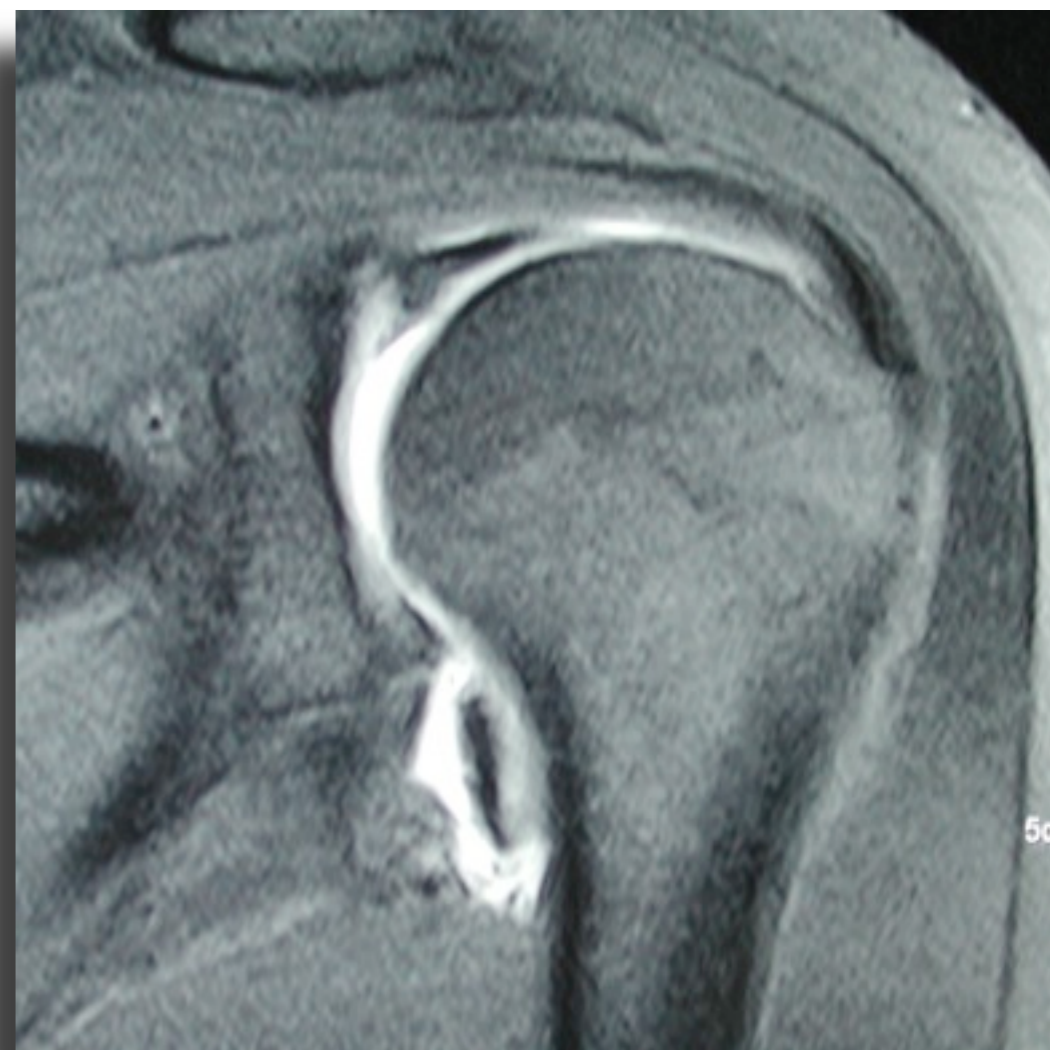
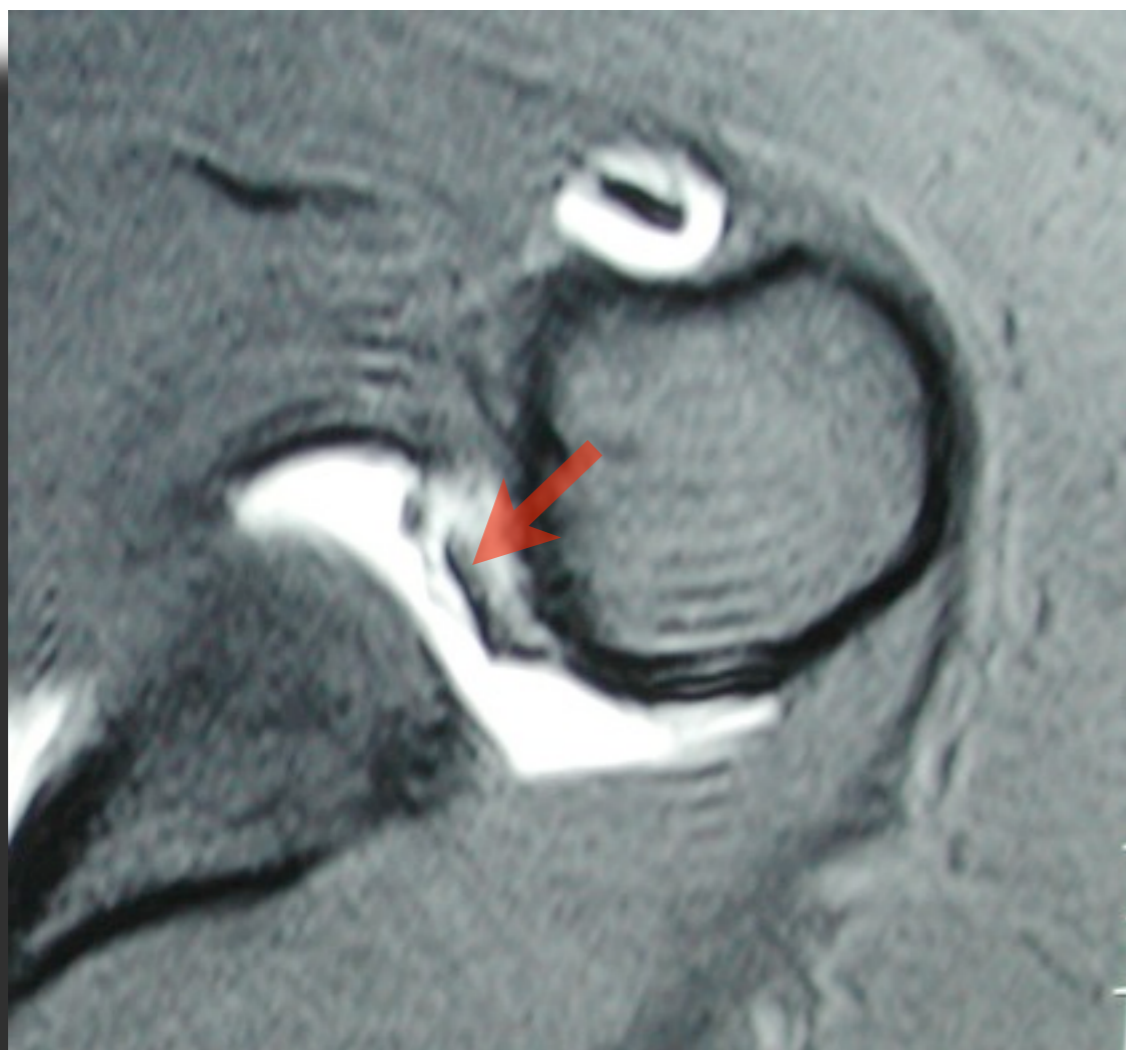
O'Brien 1990 AJSM

Röntgen - knöchernes Fragment

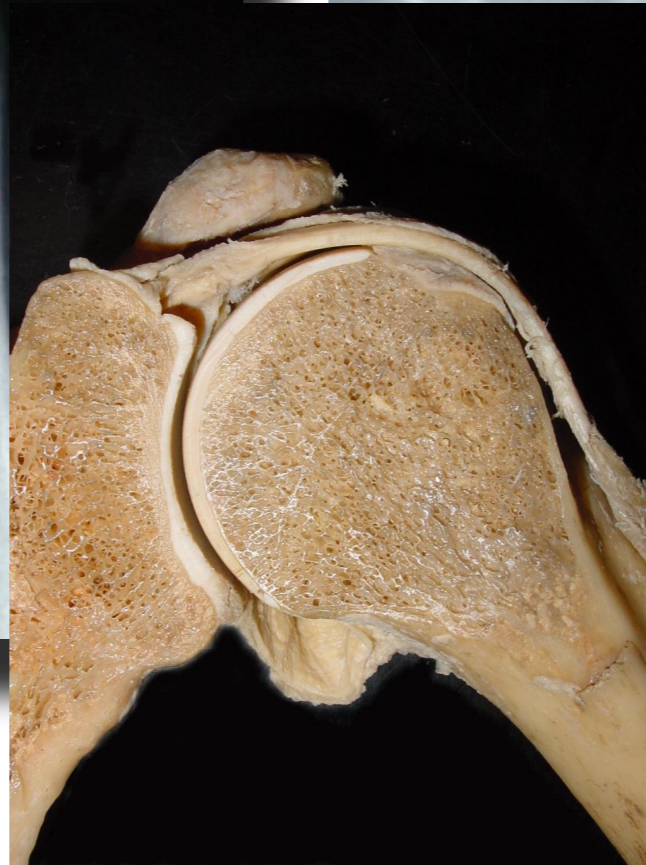
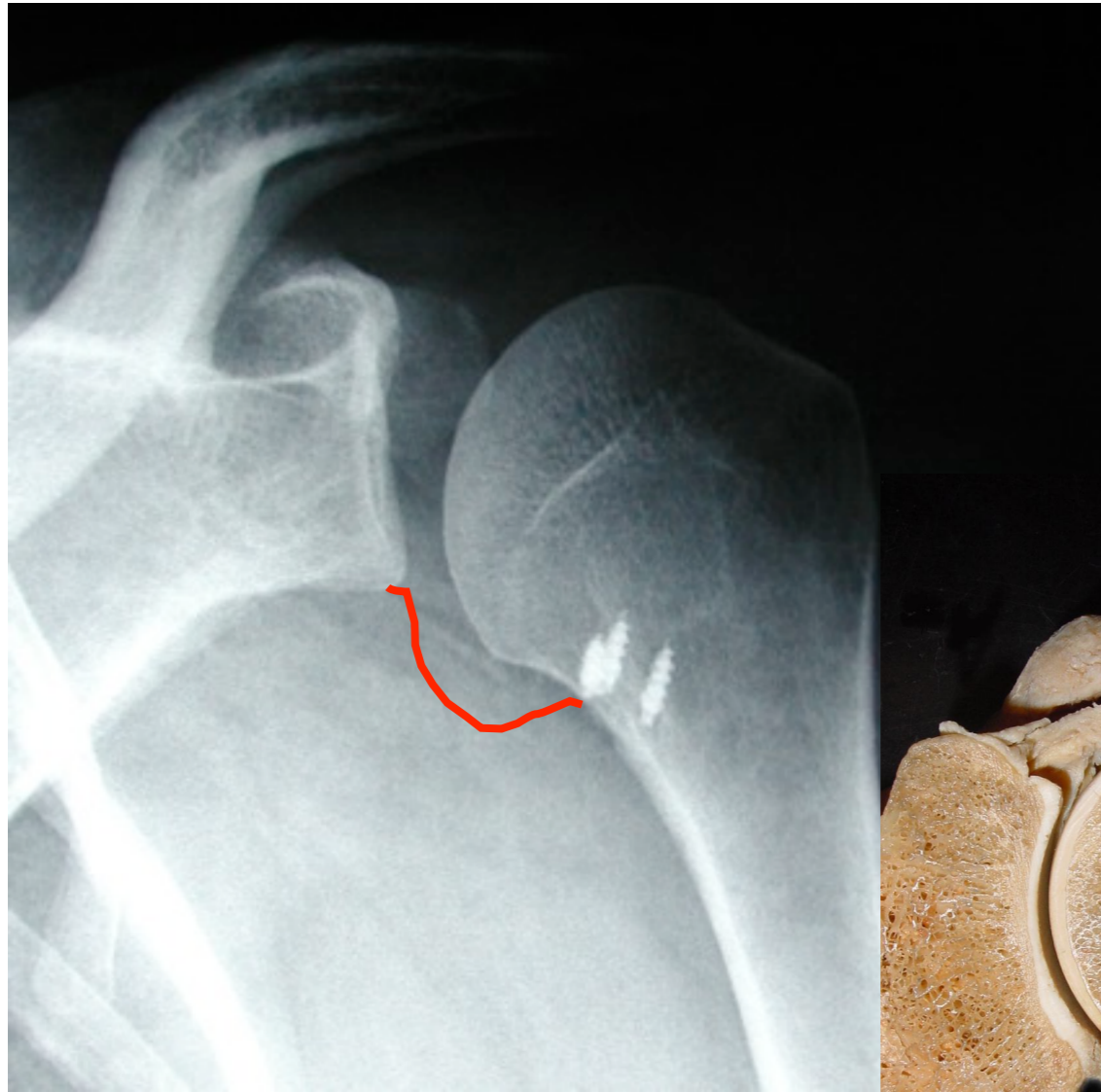


- 20 % der Fälle

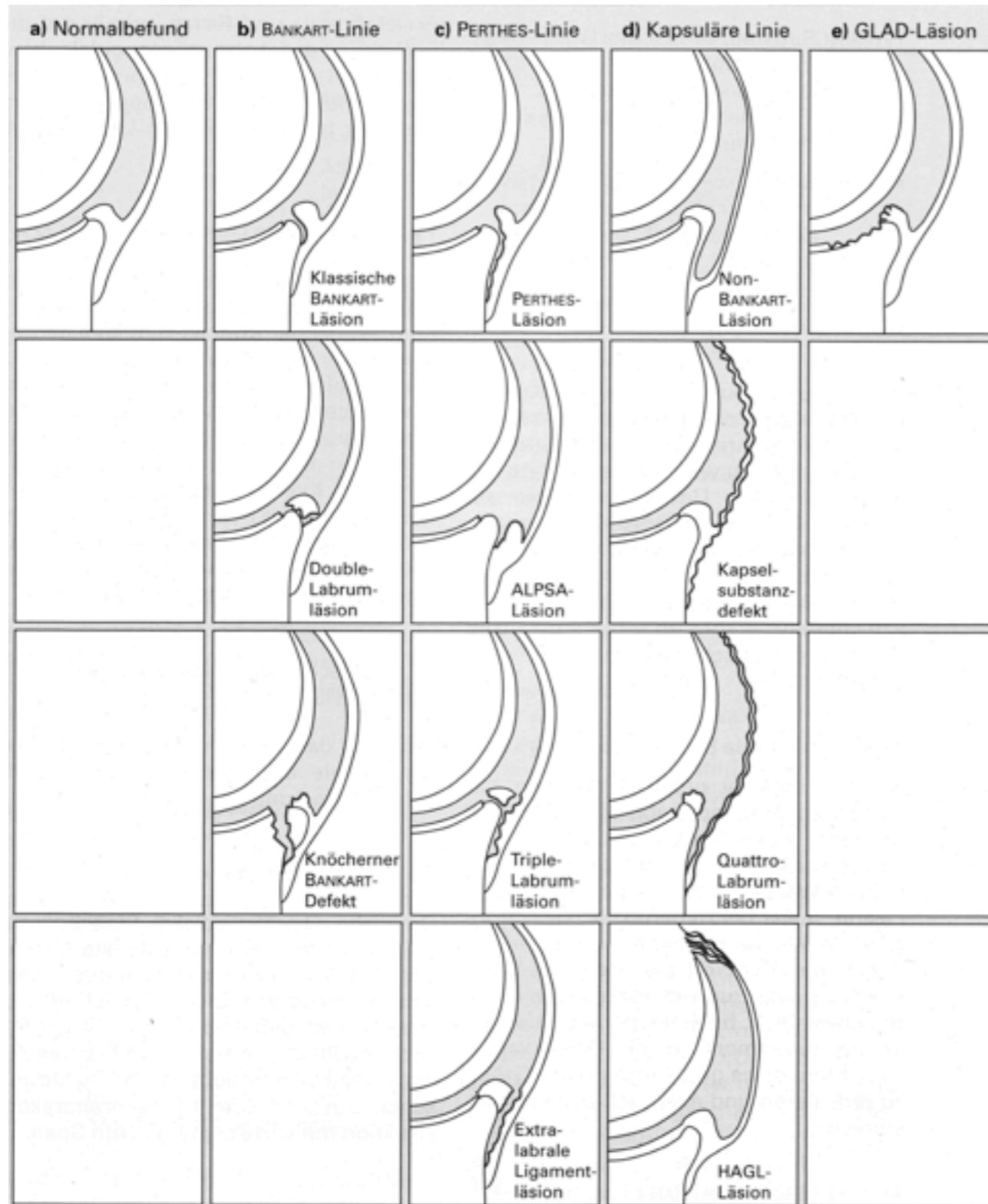
MRT



Postoperatives Röntgen

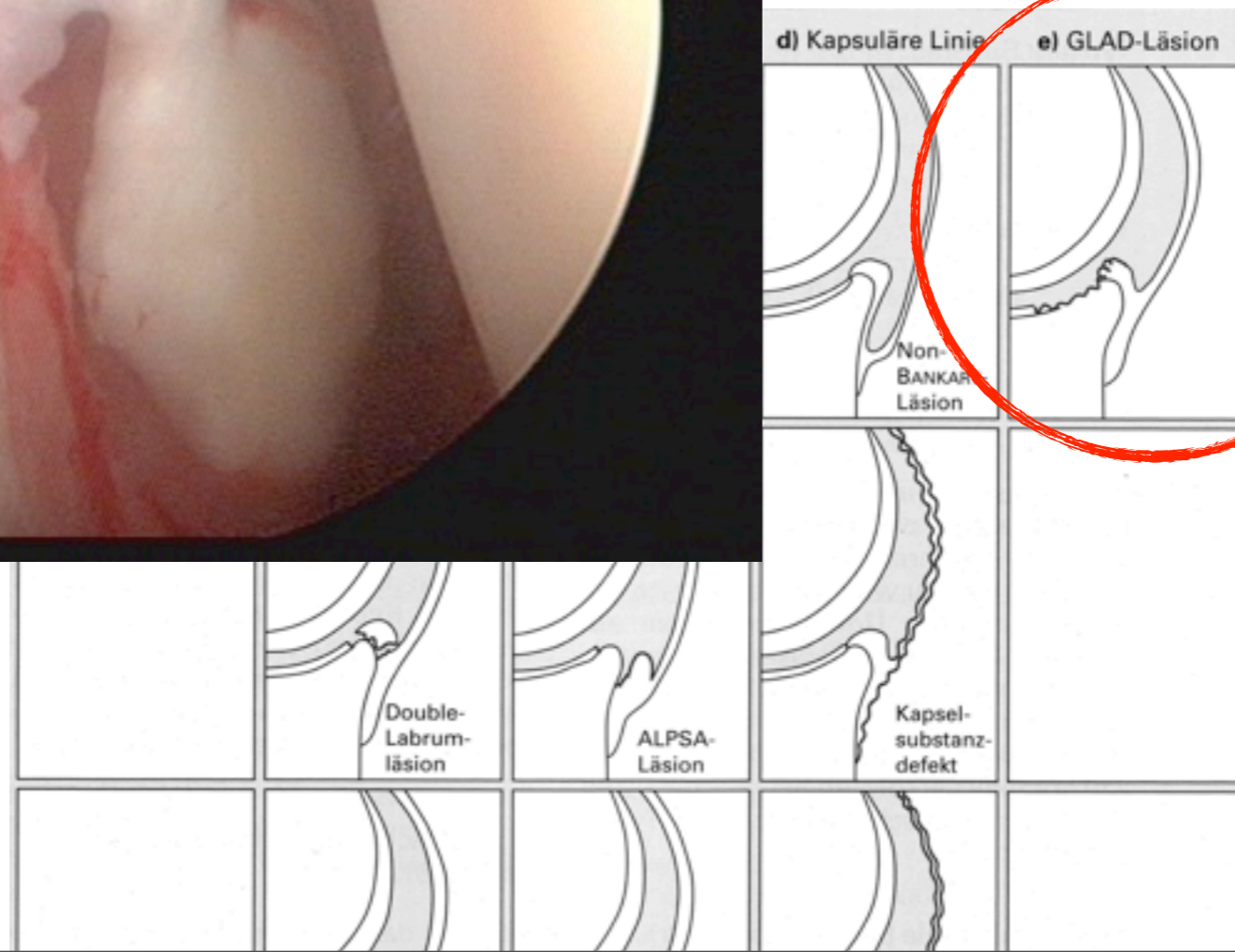
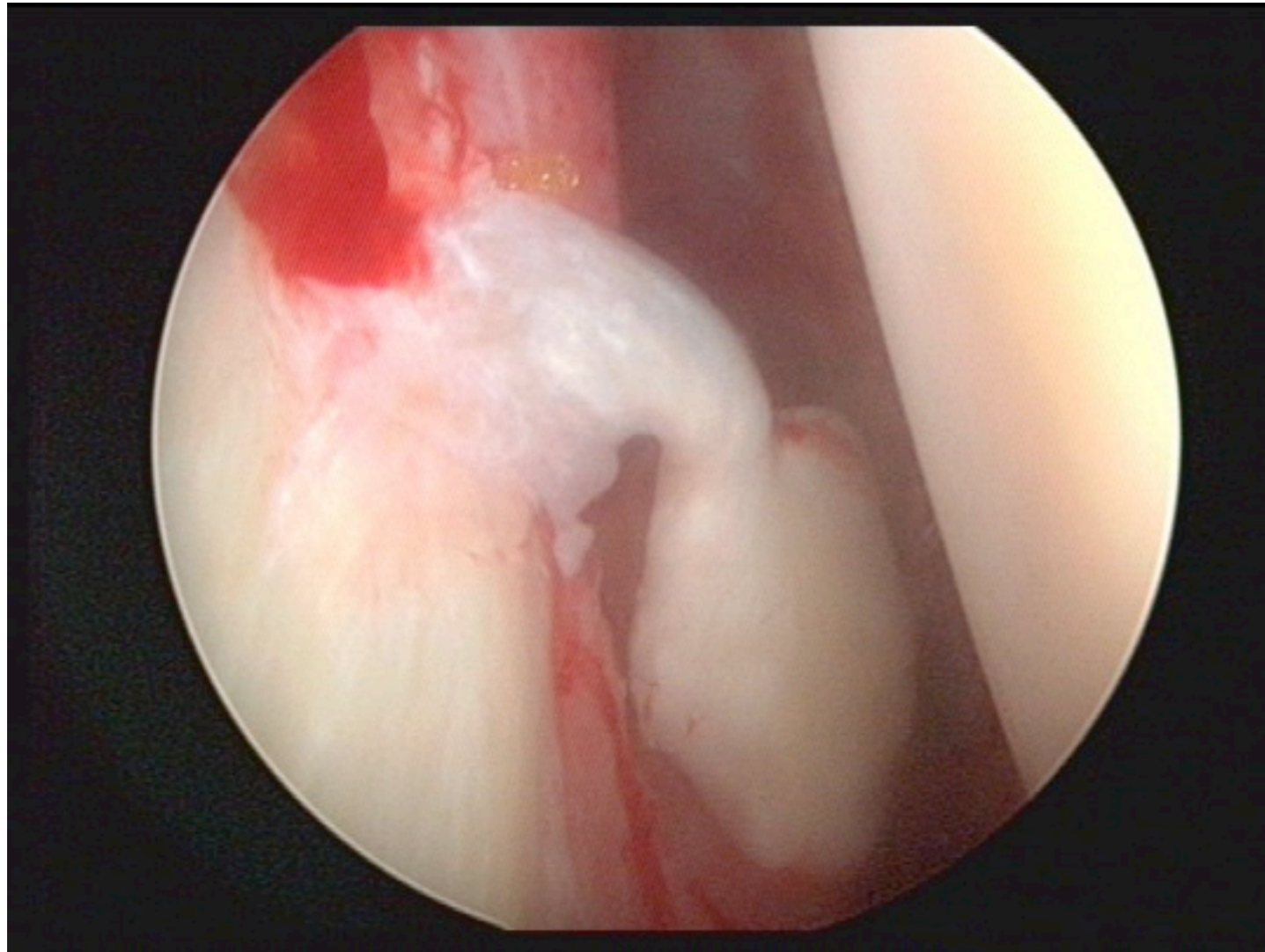


Klassifikation: antero-inferiore Instabilität



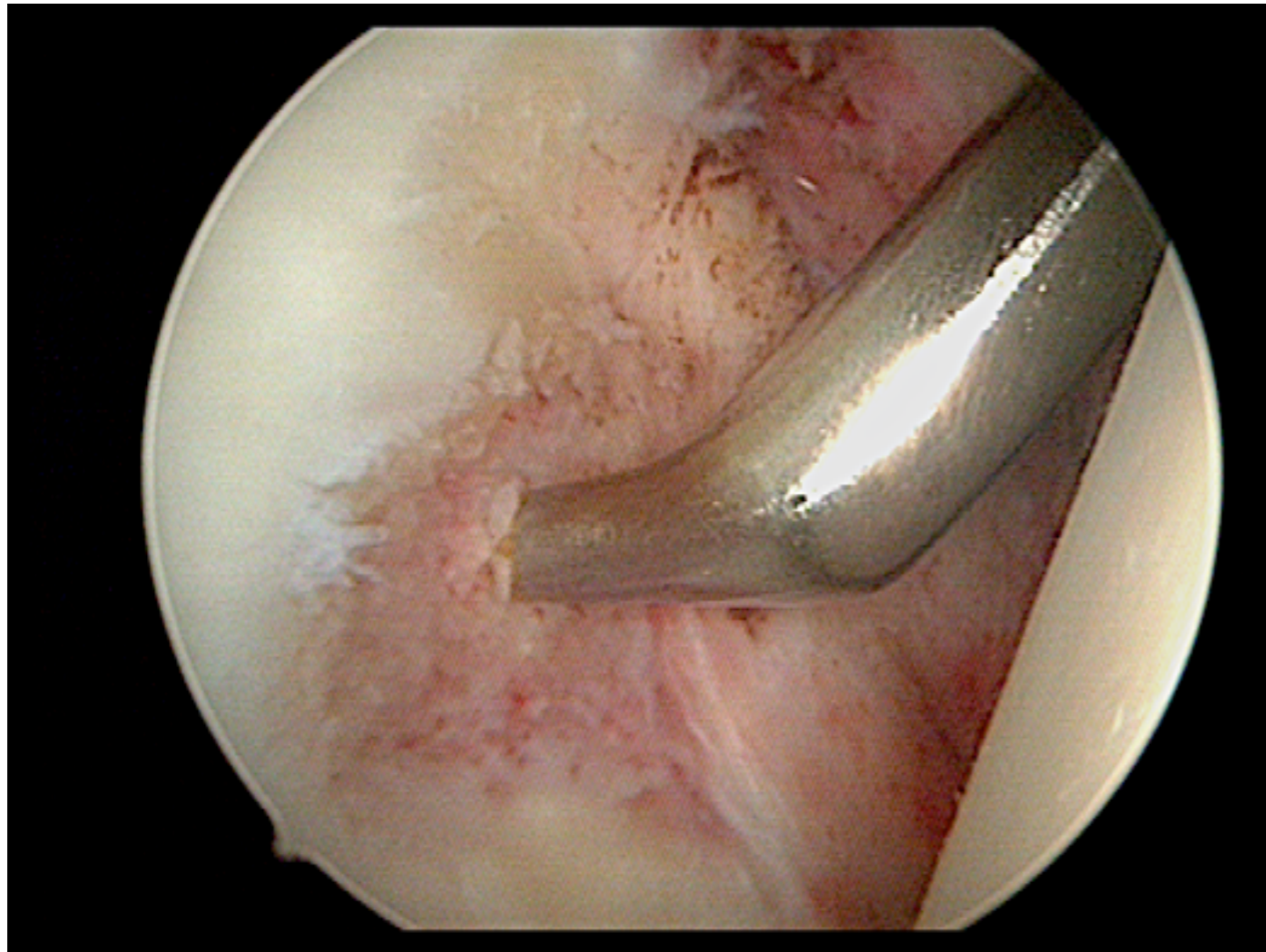
GLAD - Läsion

glenoid labral articular disruption

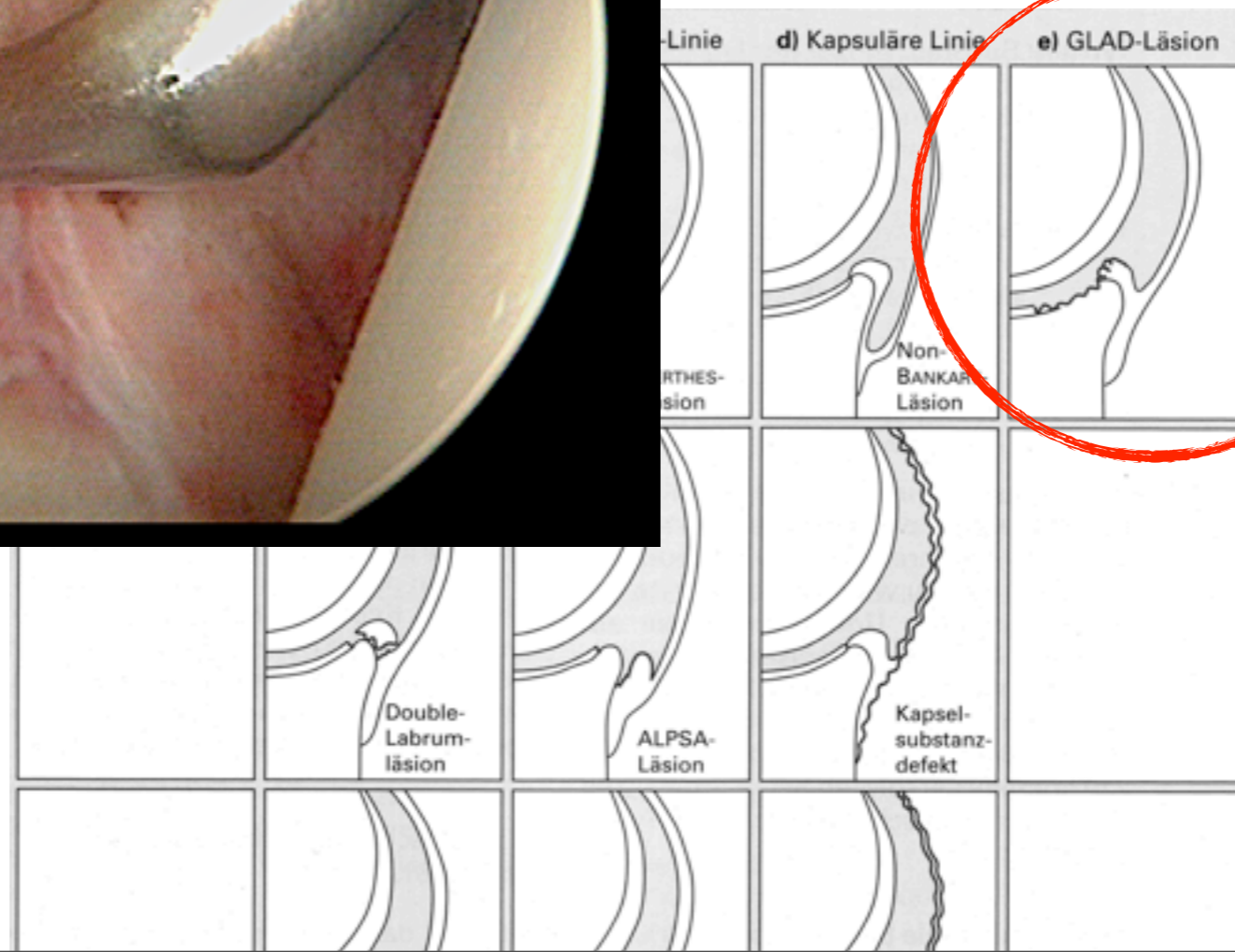


GLAD - Läsion

glenoid labral articular disruption

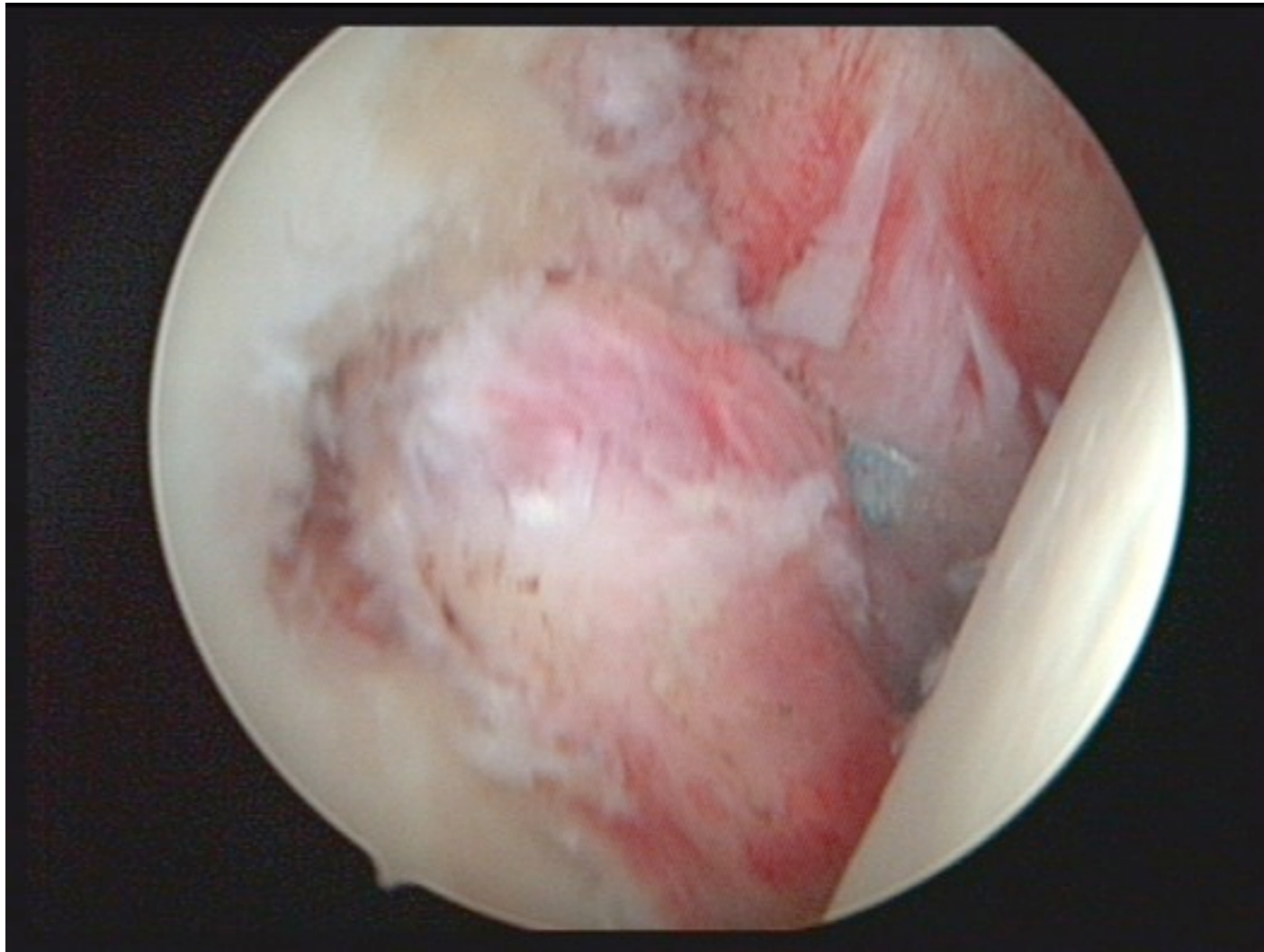


Mikrofrakturierung

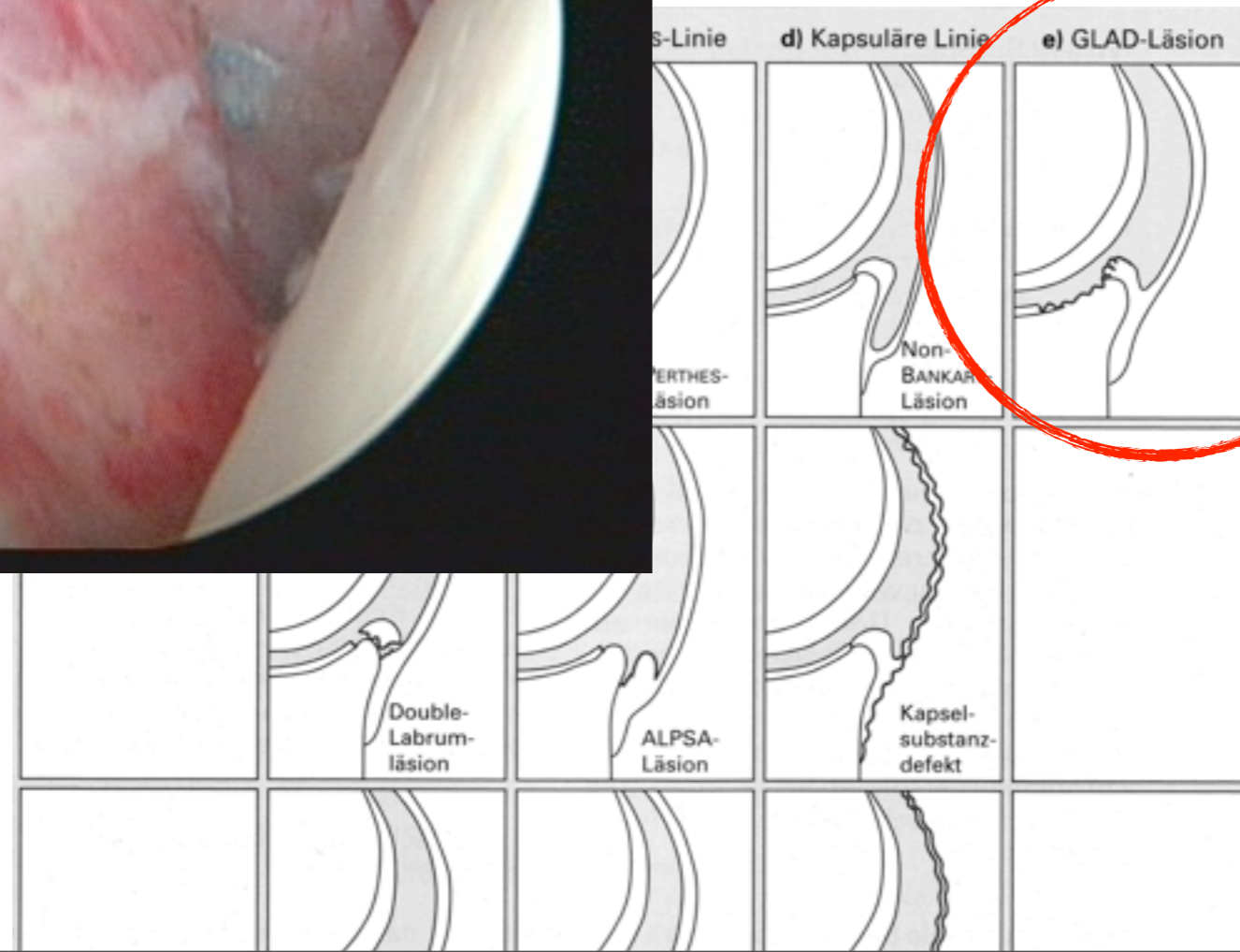


GLAD - Läsion

glenoid labral articular disruption

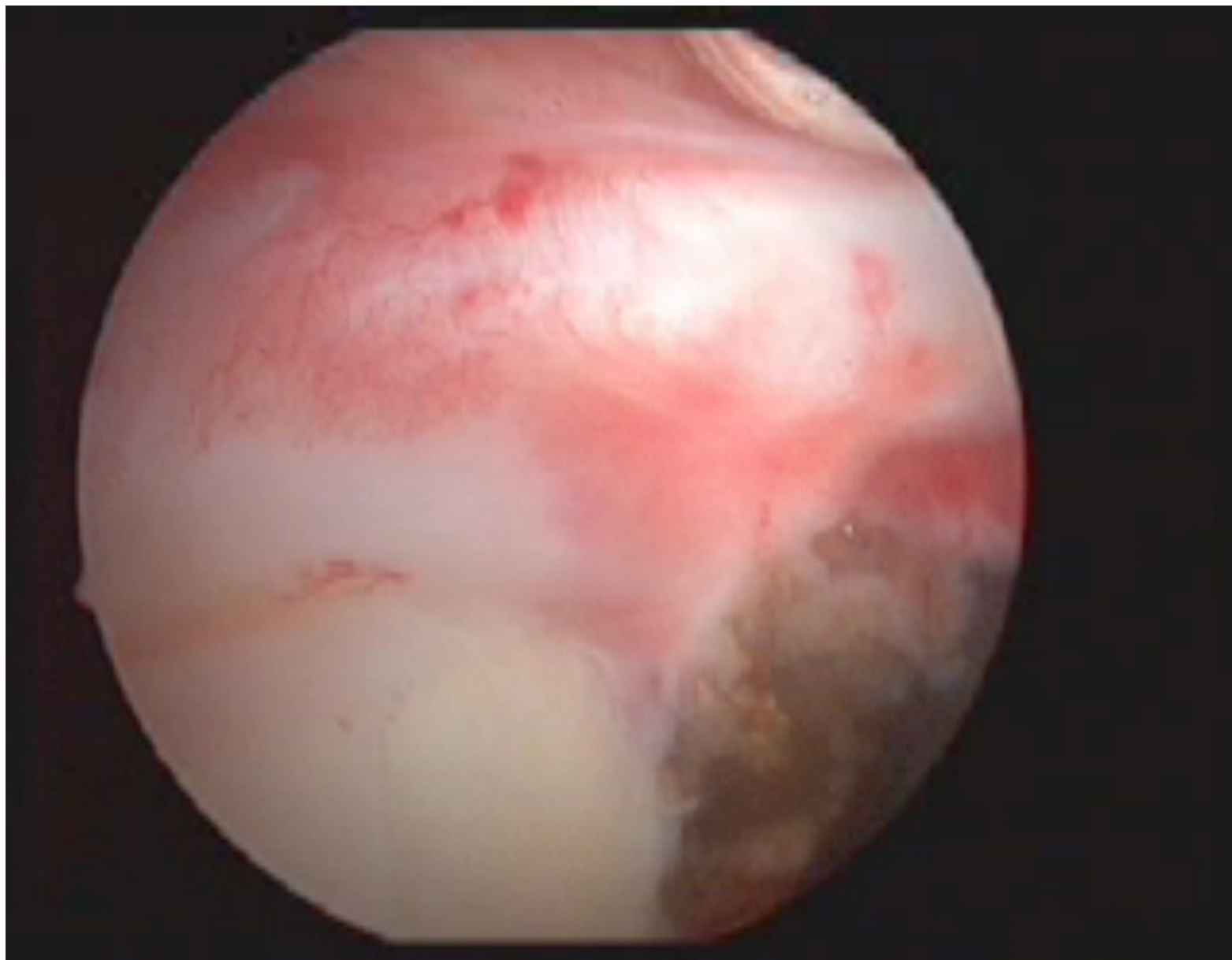


Labrum-Patch

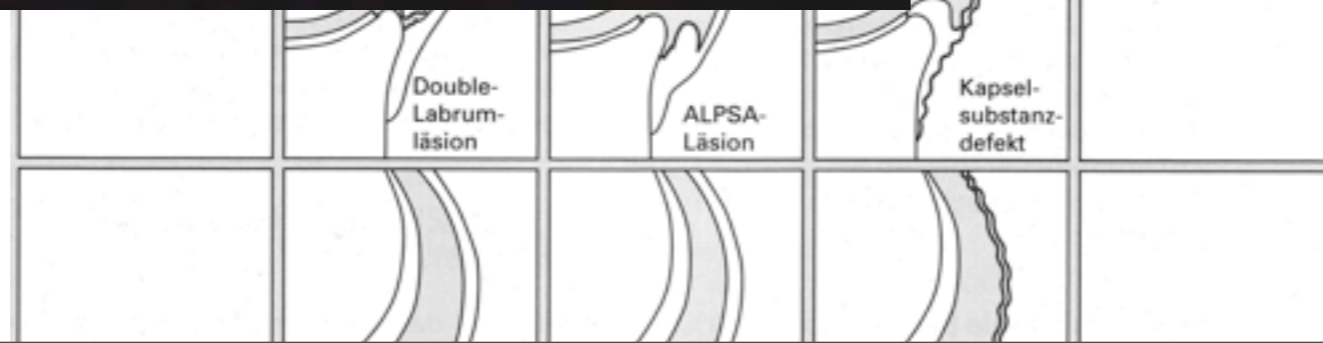
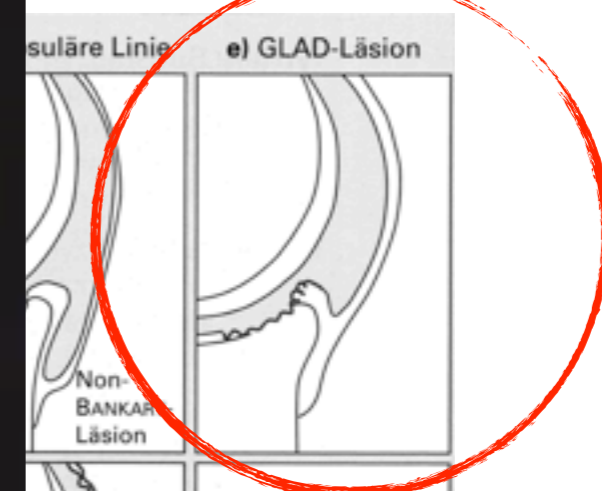


GLAD - Läsion

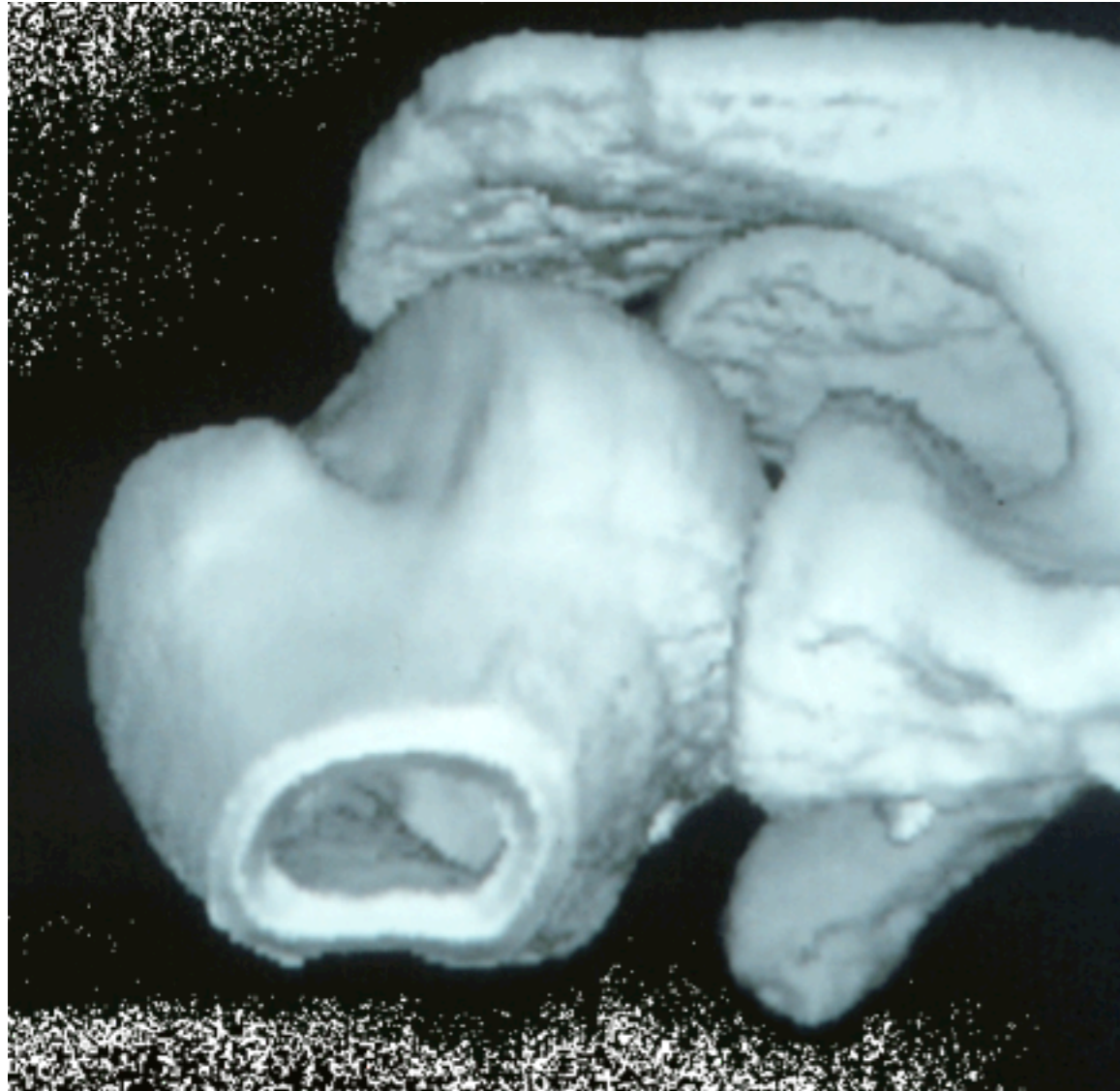
glenoid labral articular disruption



Arthrolyse
5 Monate FU



Hill-Sachs Läsion



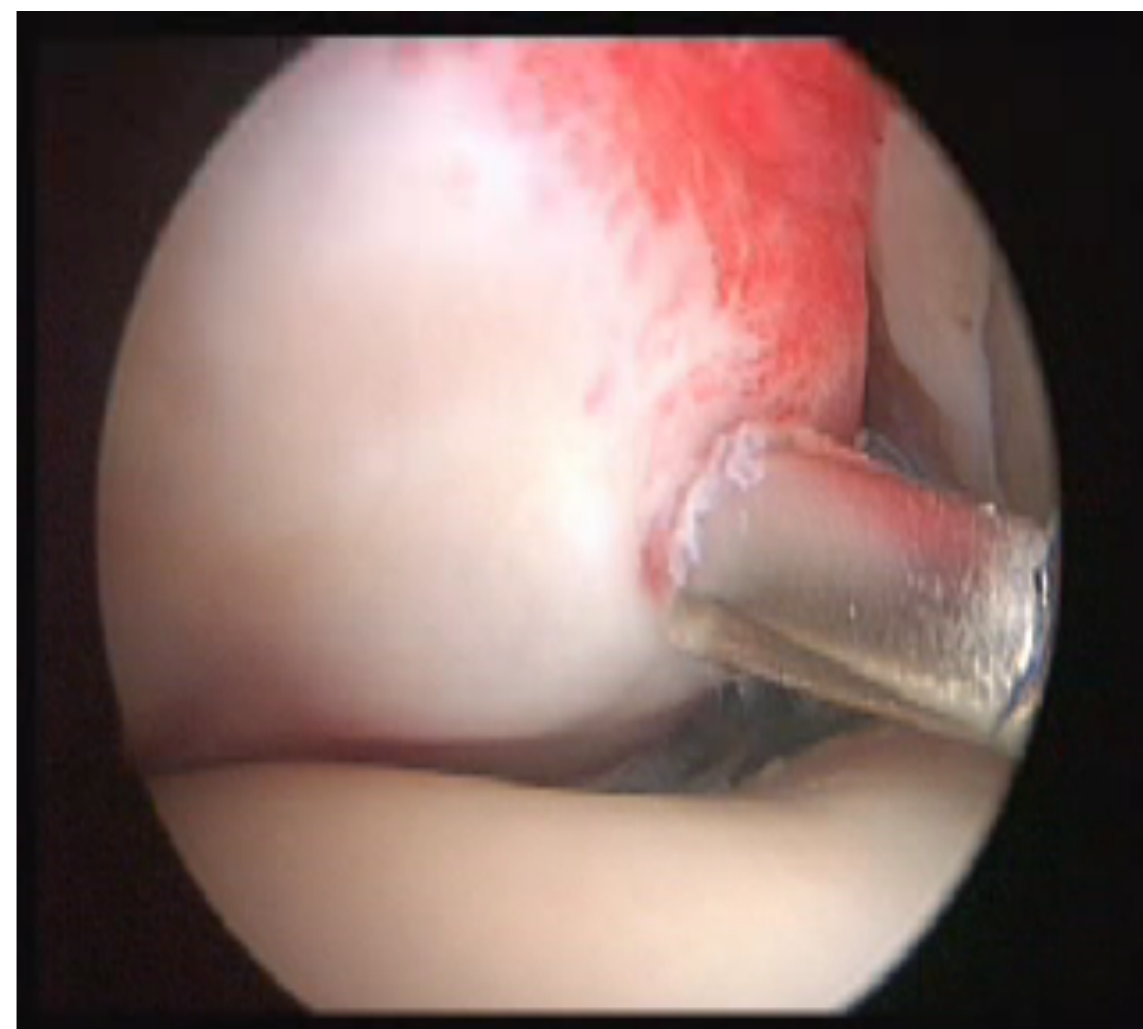
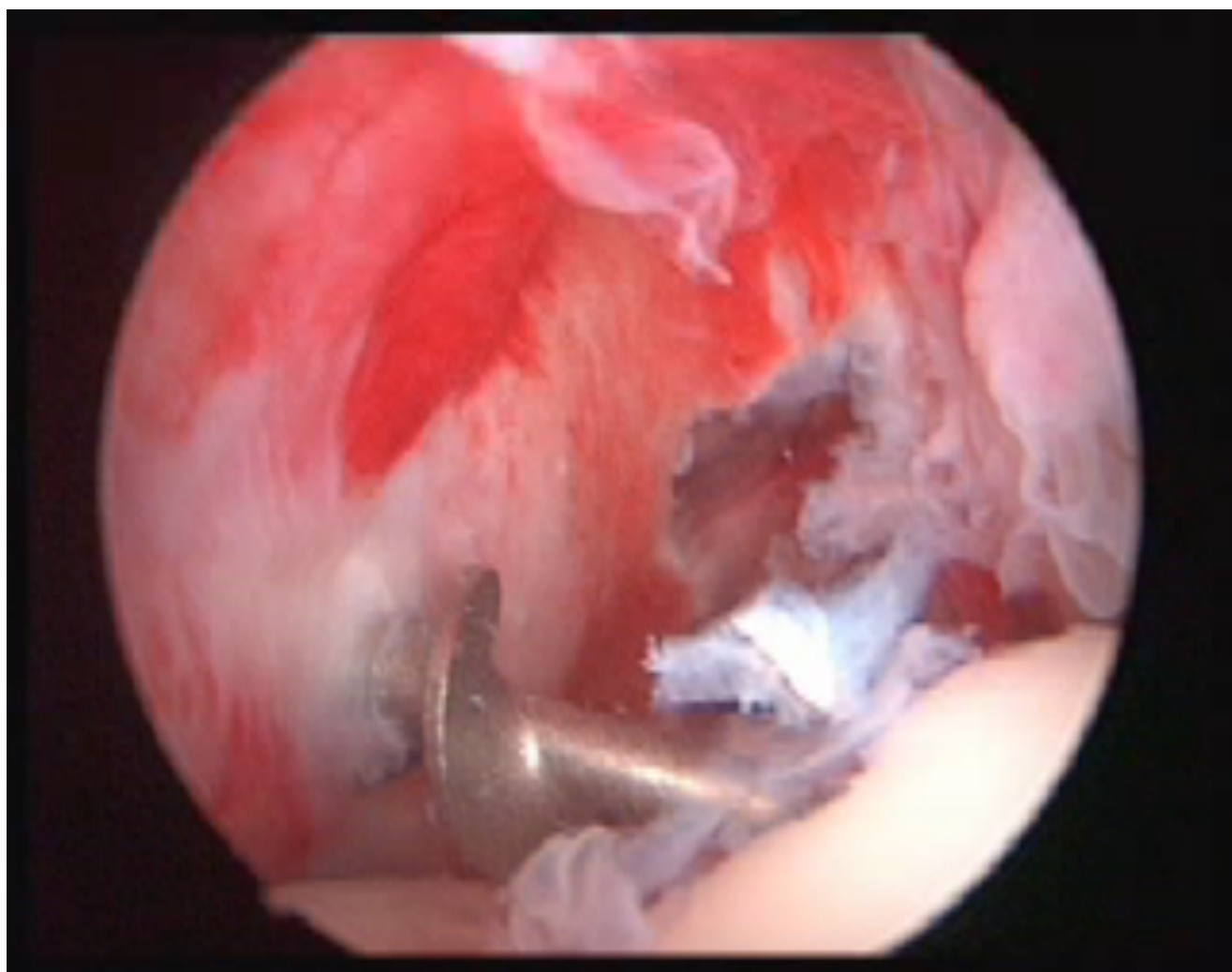
S.D - weiblich
44 Jahre

rezidivierende Luxationen
nach traumatischer Erstluxation

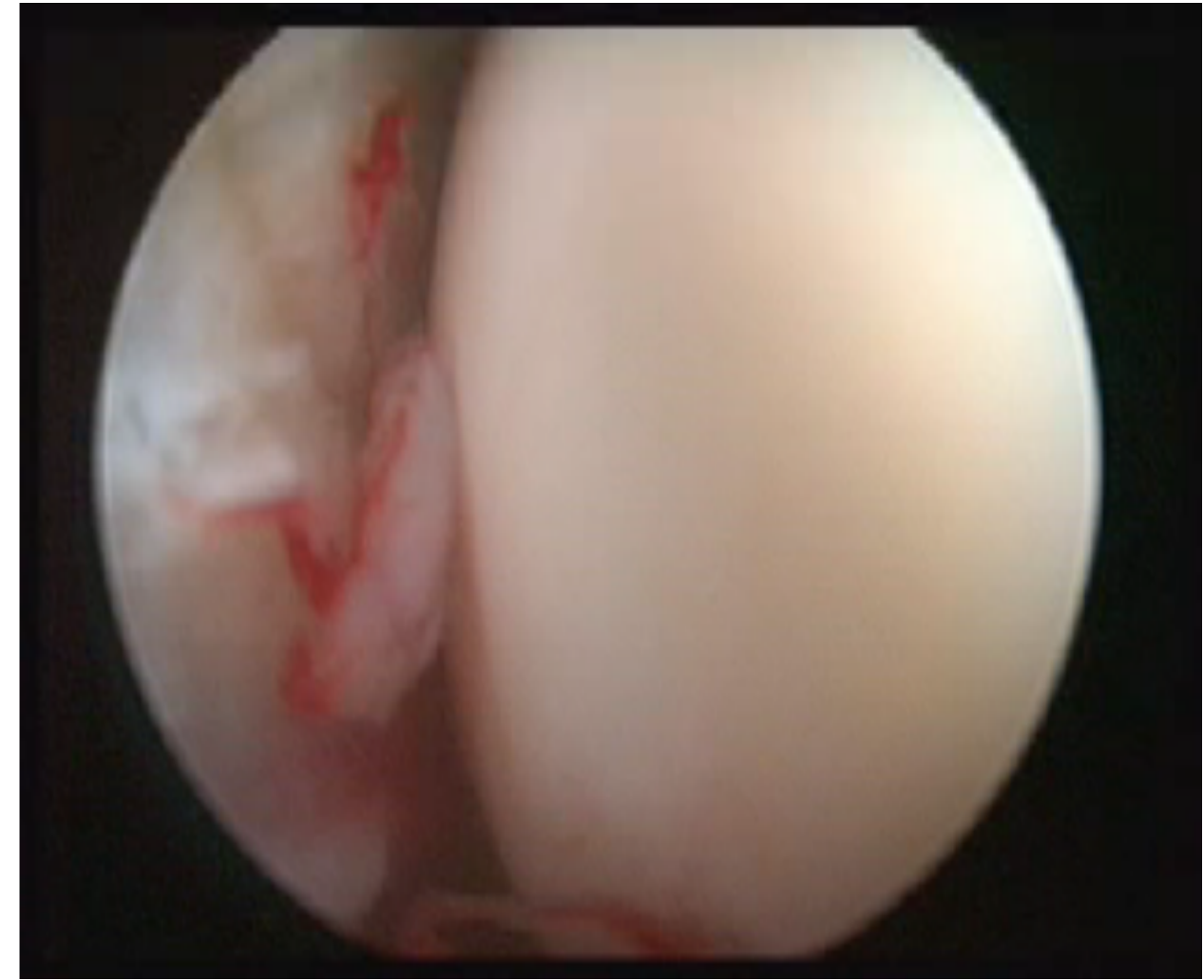
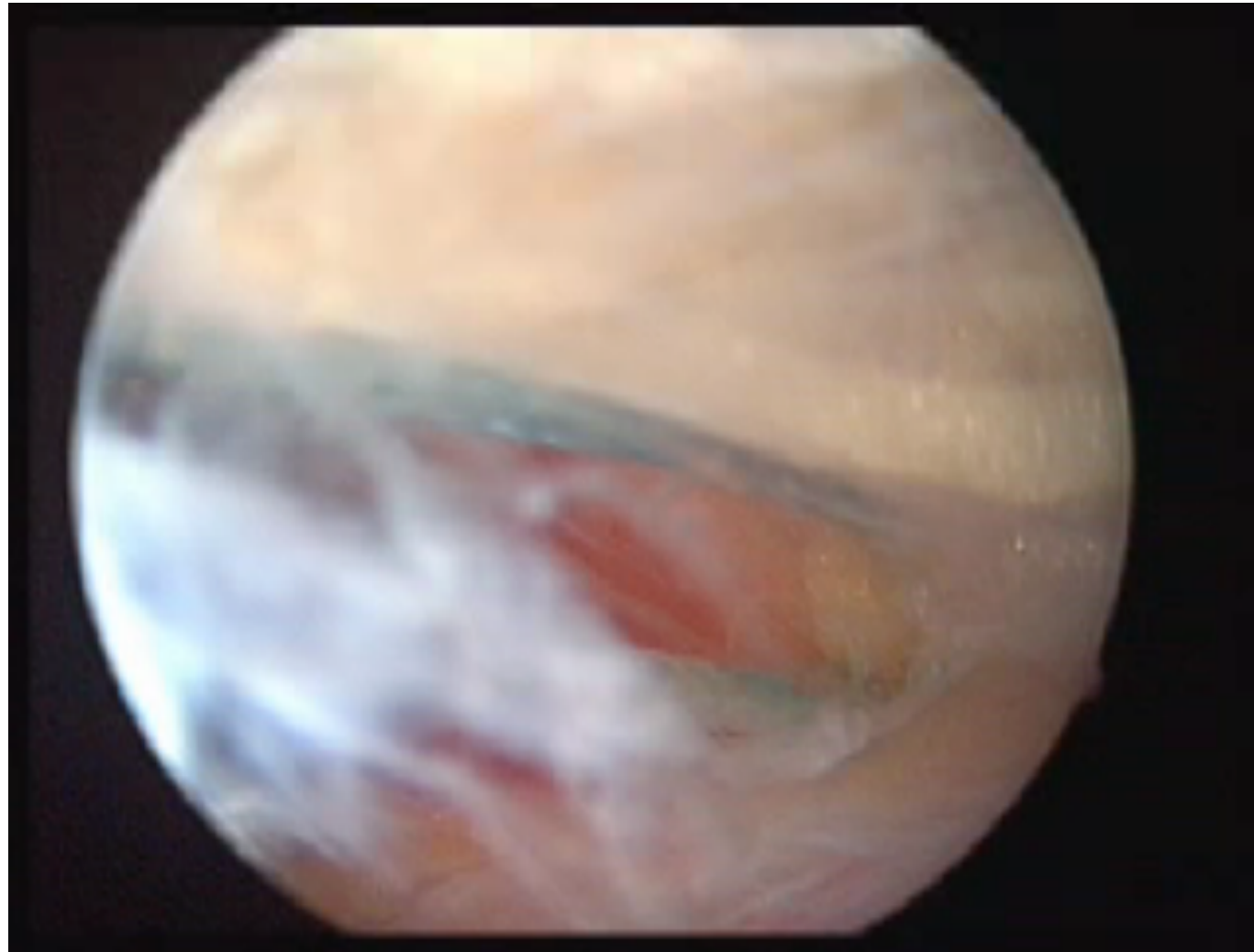
engaging Hill Sachs



ISP-Tenodese

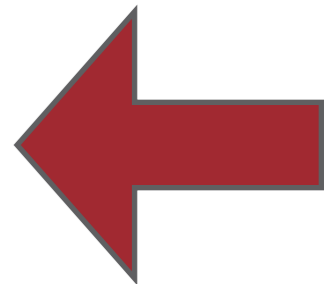


Kontrolle

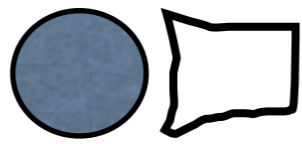
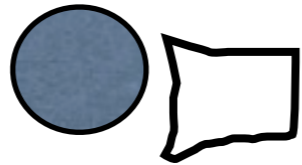
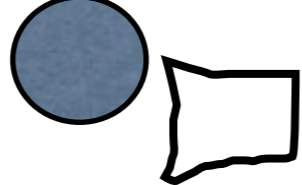



Klassifikation

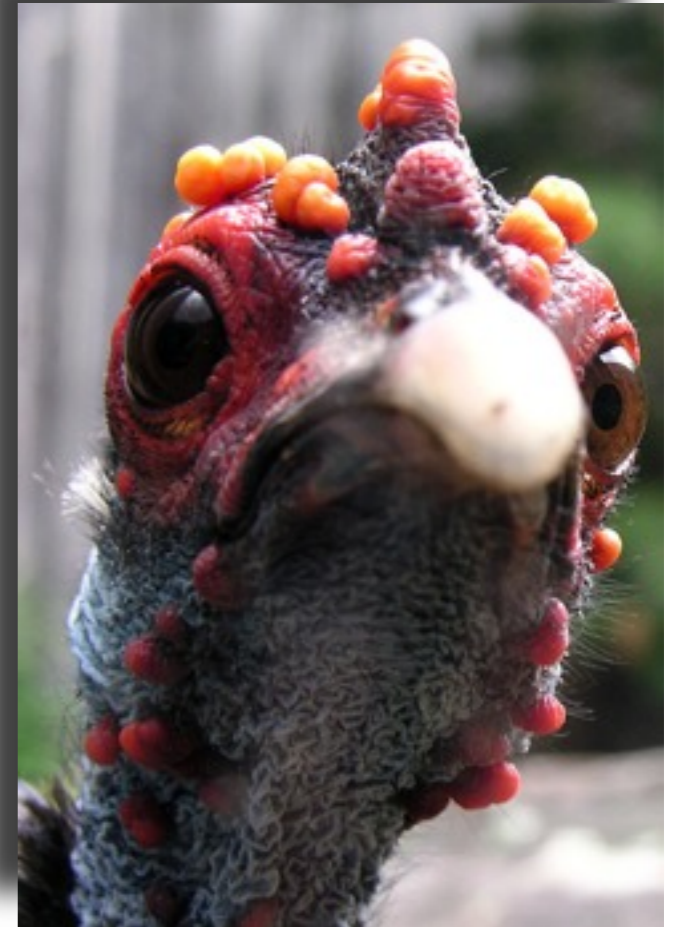
1. chronische Luxation
2. unidirektionale Instabilität ohne Hyperlaxität
3. unidirektionale Instabilität mit multidirektionaler Hyperlaxität
4. multidirektionale Instabilität ohne Hyperlaxität
5. multidirektionale Instabilität mit multidirektionaler Hyperlaxität
6. willkürliche Luxation



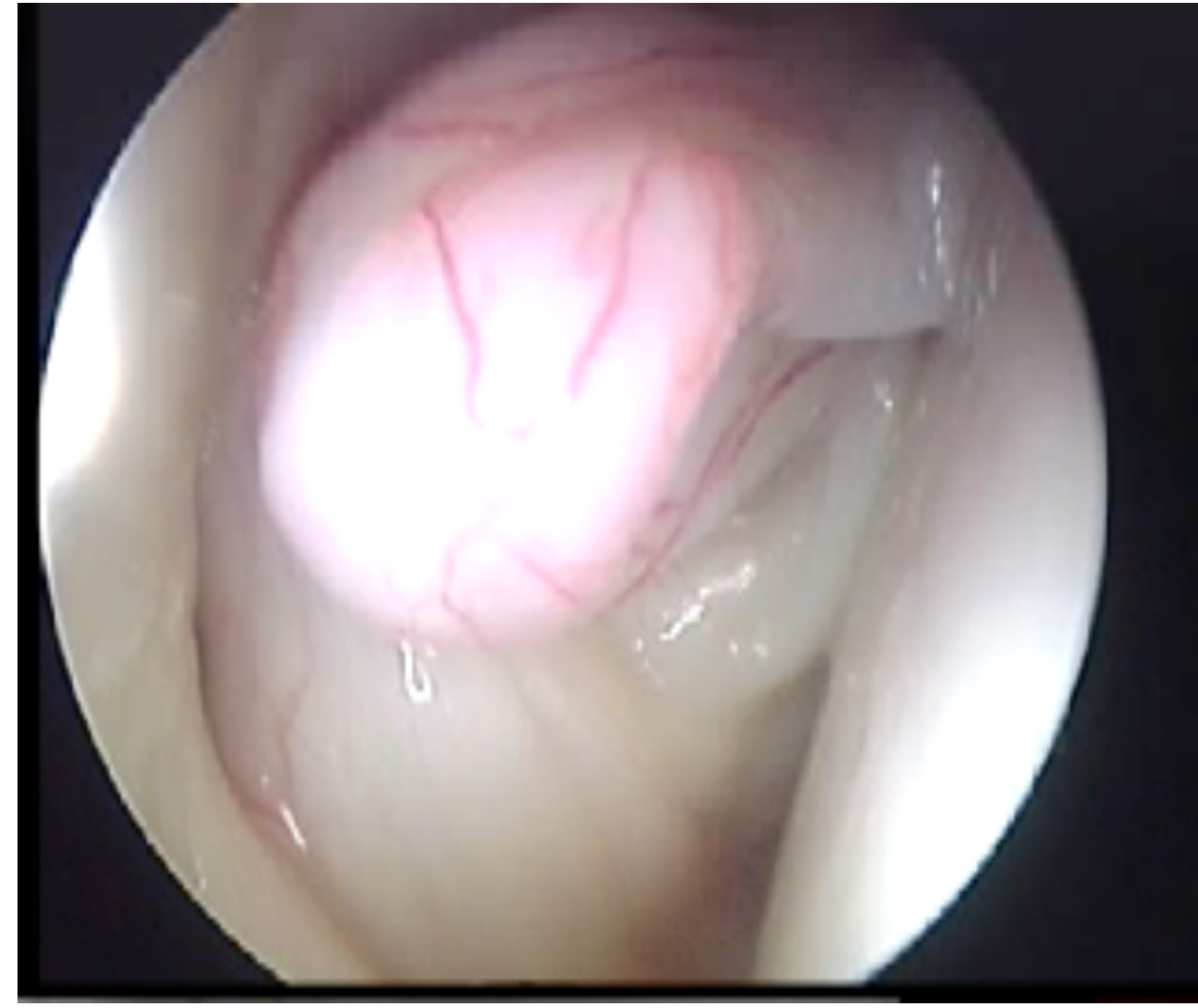
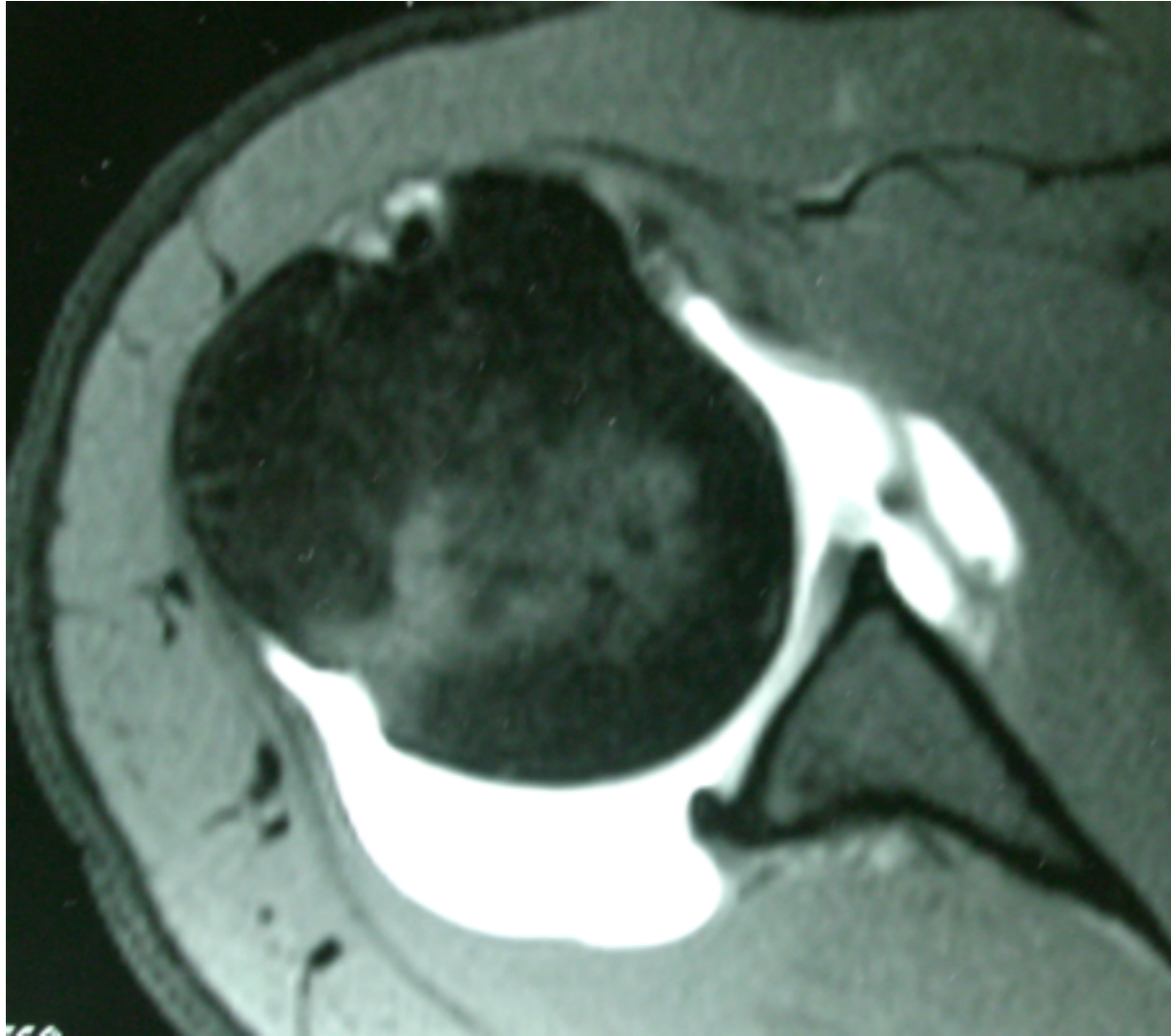
Klassifikation Laxität

Grad der Translation	Illustration	Befund
0 (keine)		
1 (leicht)		leichte Dezentrierung (0-1 cm)
2 (mäßig)		Reiten HK auf Glenoidrand (1-2 cm)
3 (schwer)		Luxation HK (> 2 cm)

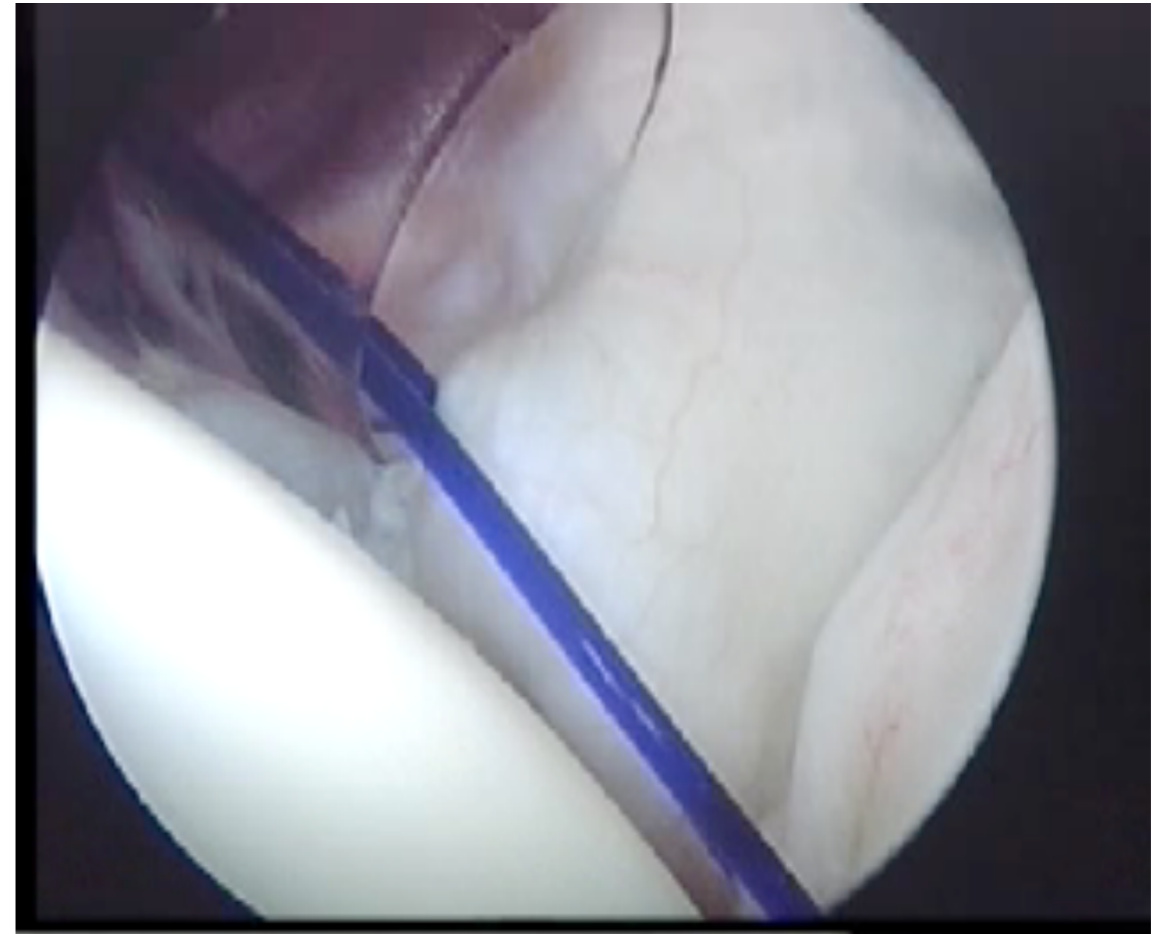
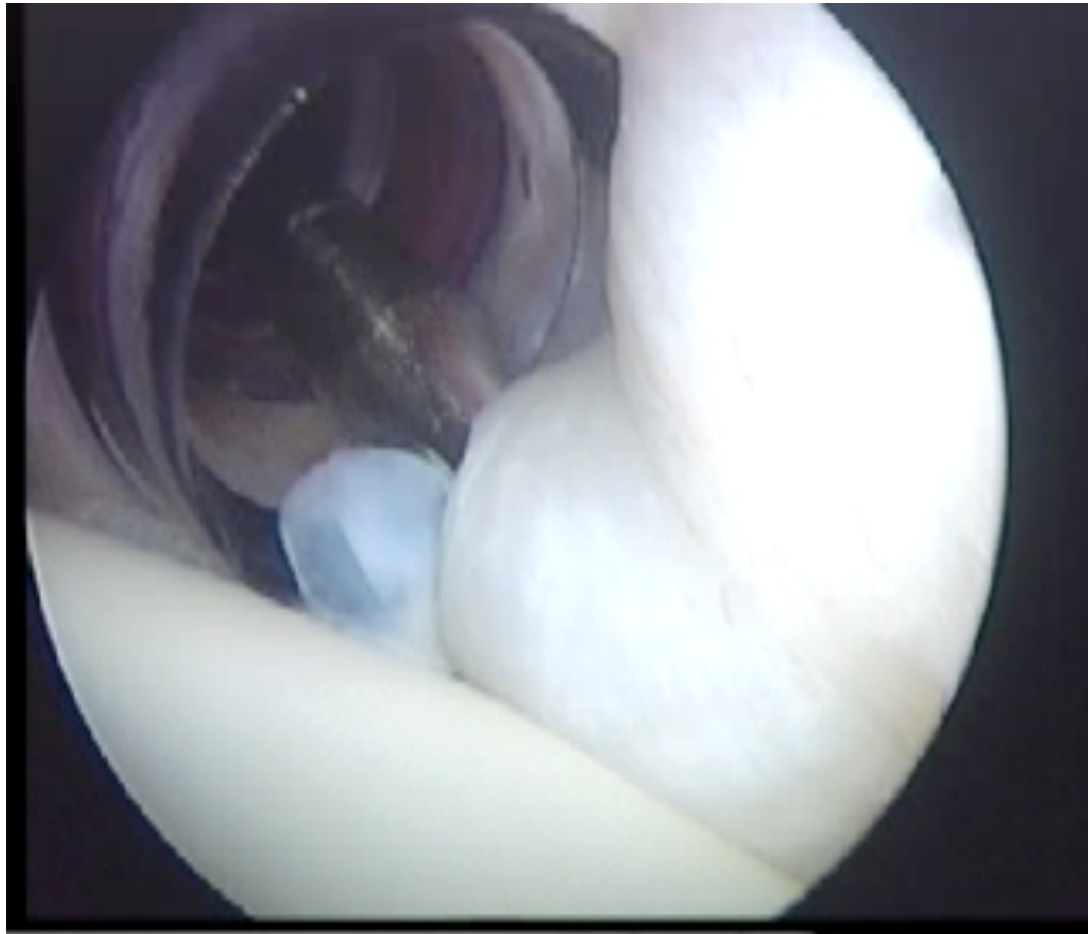
vermehrte Laxität



Laxität

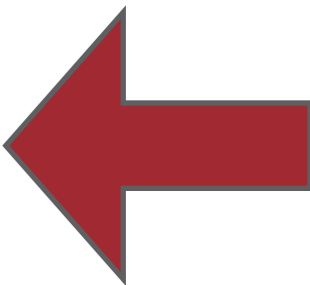


Laxität

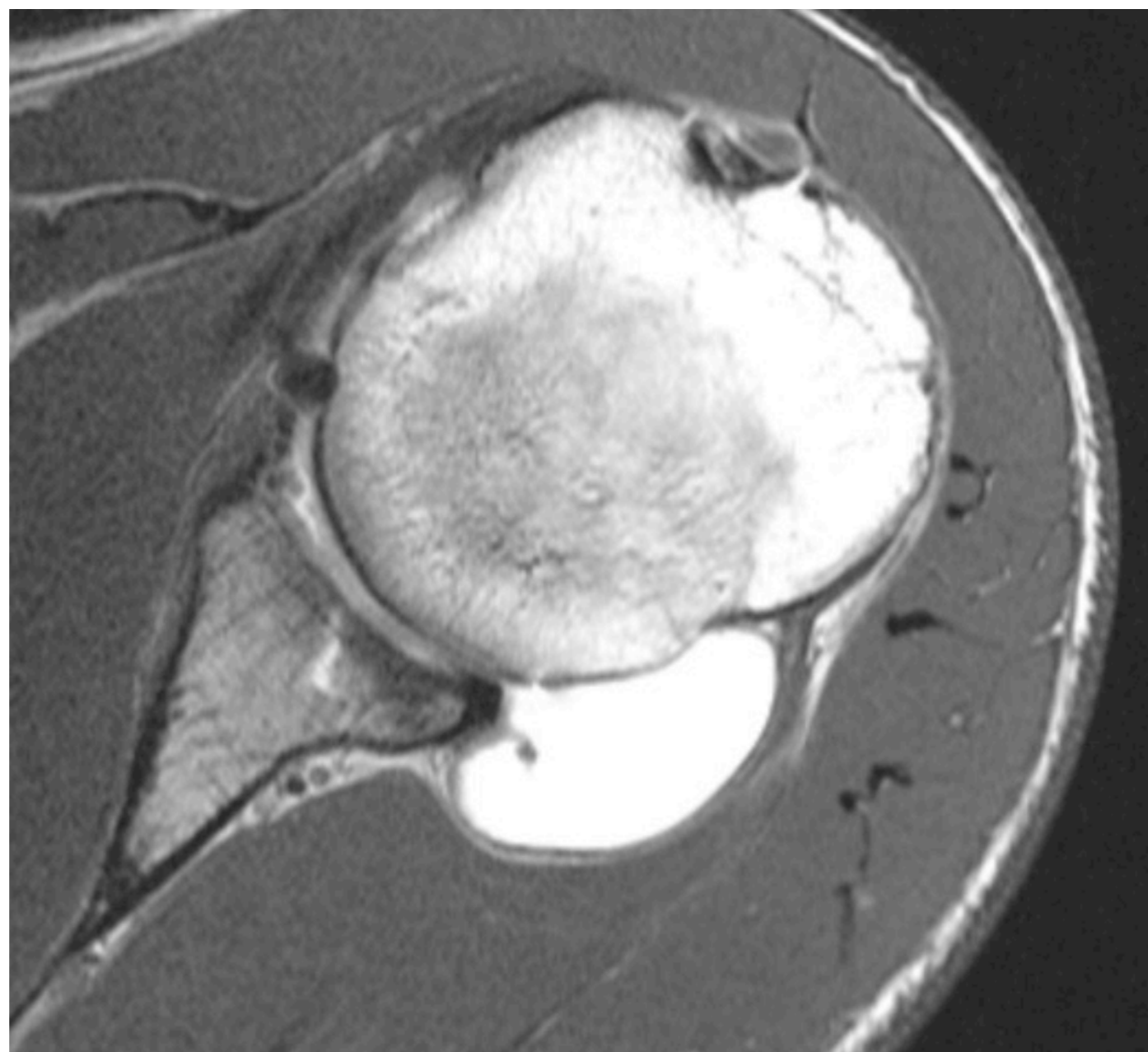


Klassifikation

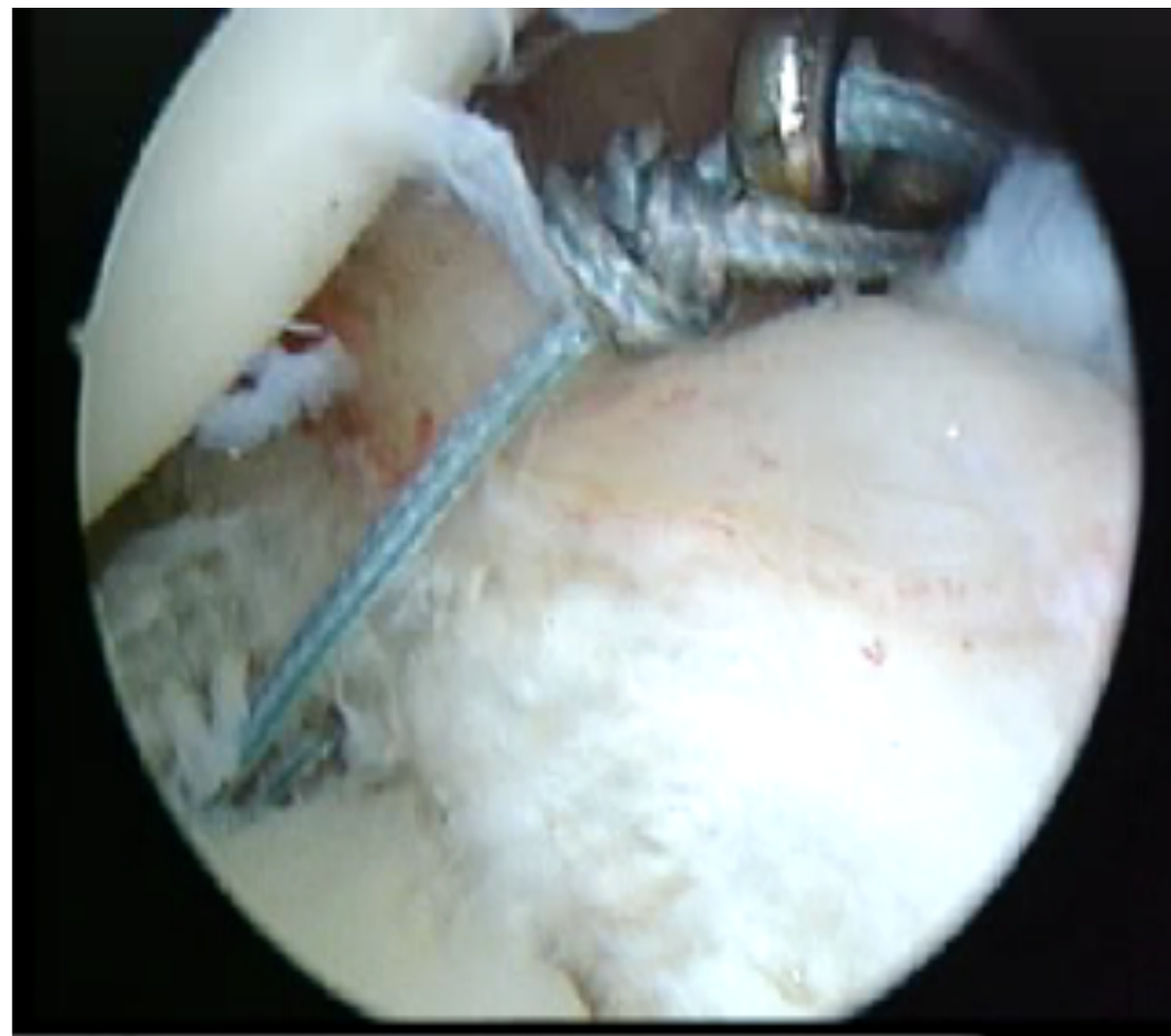
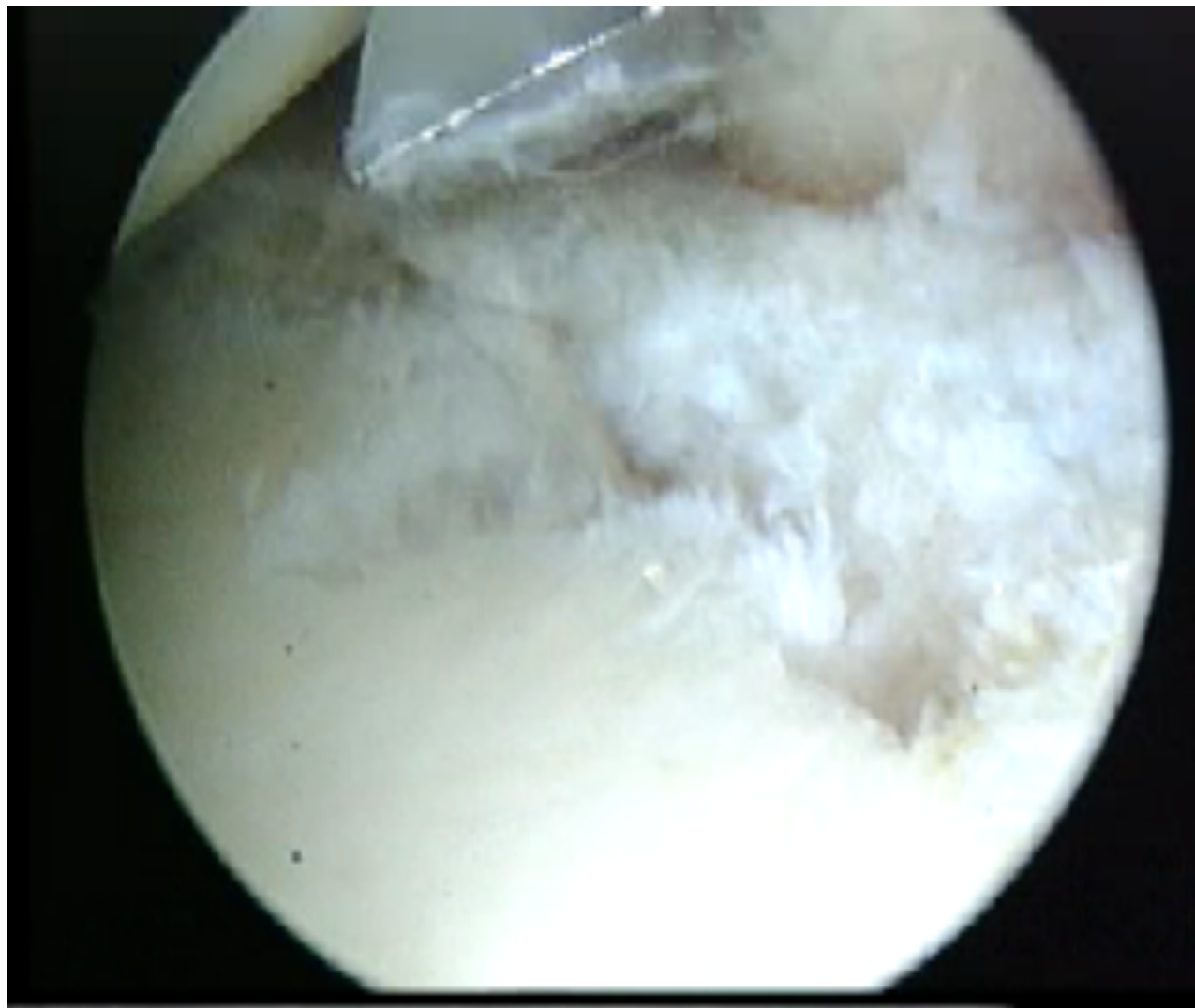
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4. multidirektionale Instabilität ohne Hyperlaxität
5. multidirektionale Instabilität mit multidirektionaler Hyperlaxität
6. willkürliche Luxation



Hintere Instabilität

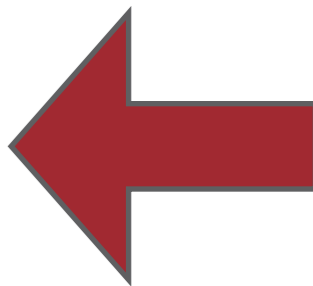


Dorsales Labrum

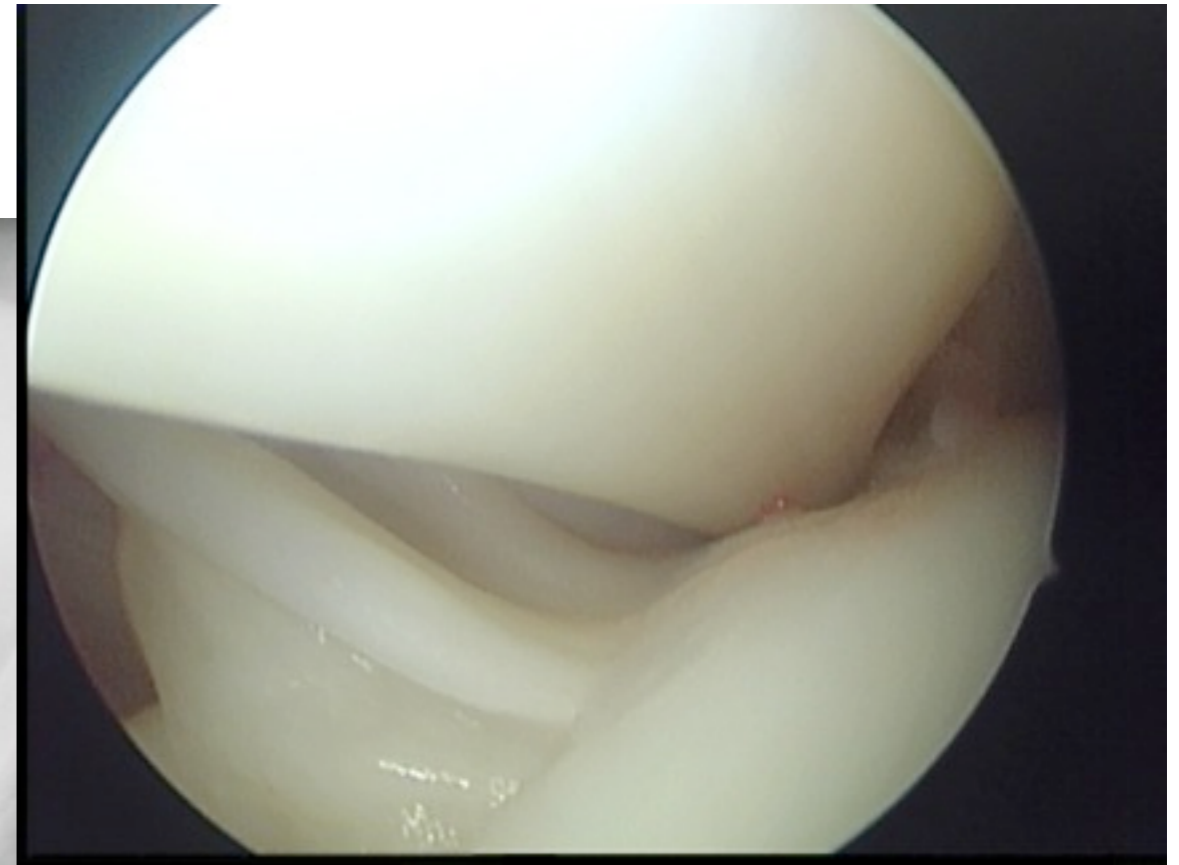


Klassifikation

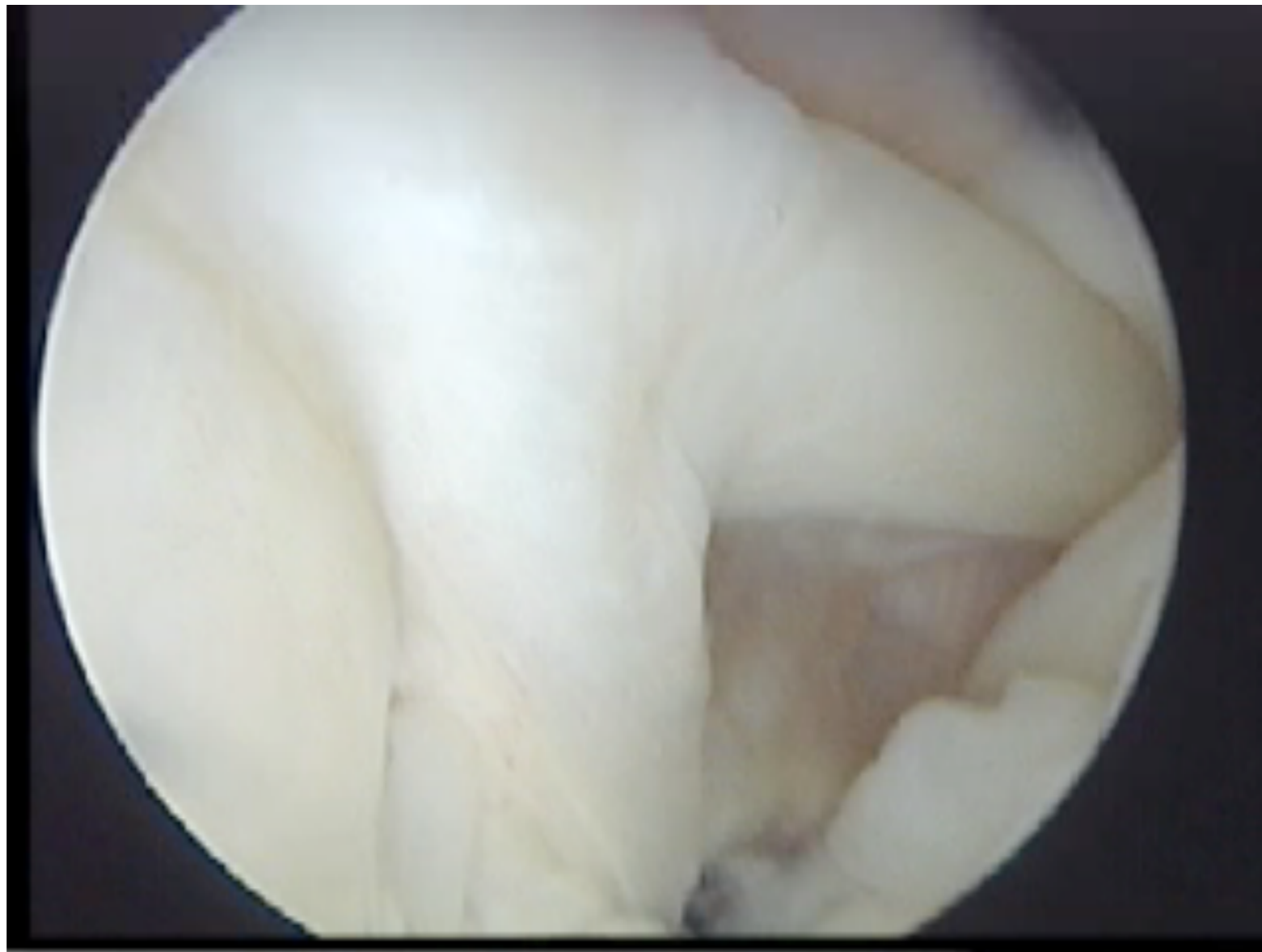
1. chronische Luxation
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3. unidirektionale Instabilität mit multidirektionaler Hyperlaxität
4. multidirektionale Instabilität ohne Hyperlaxität
5. multidirektionale Instabilität mit multidirektionaler Hyperlaxität
6. willkürliche Luxation



multidirektionale Hyperlaxität



multidirektionale Hyperlaxität



vielen Dank

