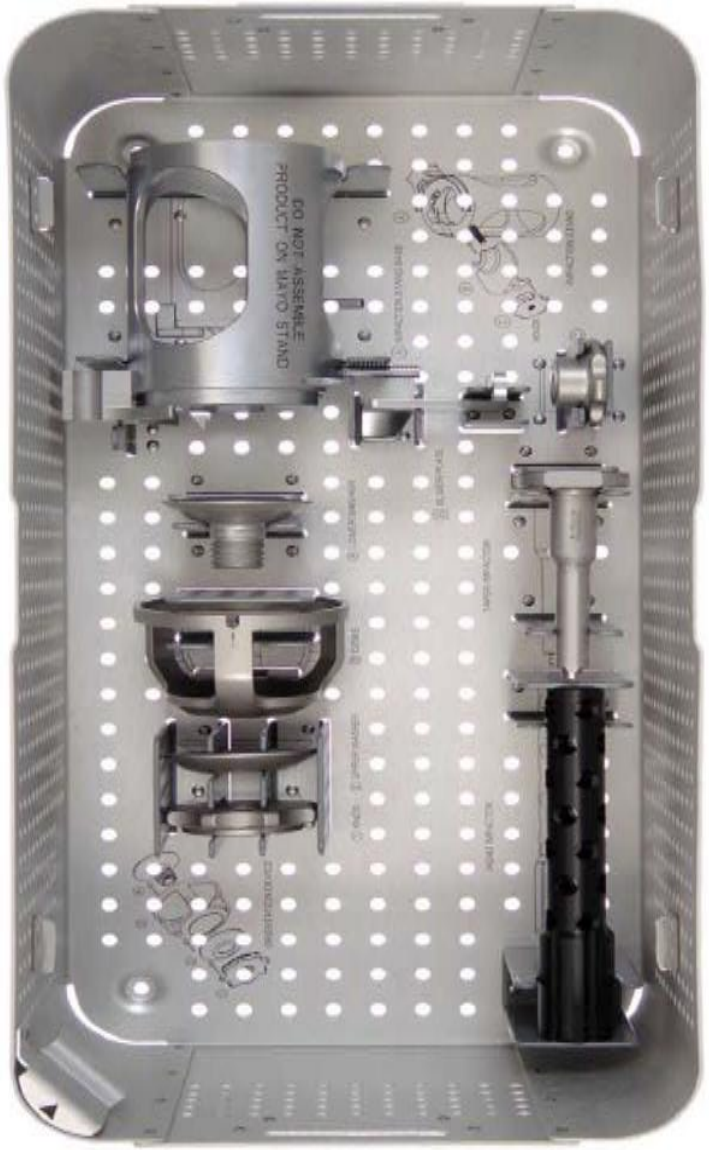


Endoprothese Schulter

Ausbildungsseminar Salzburg 2011

Rainer Kluger

Hemi / Totalendoprothese (TSA) der Schulter

50.000
Schulterprothesenoperationen
pro Jahr weltweit

Signifikanter Anstieg in den
letzten 10 Jahren

Das Patientenalter ist das
niedrigste aller großen
Gelenksprothesenoperationen



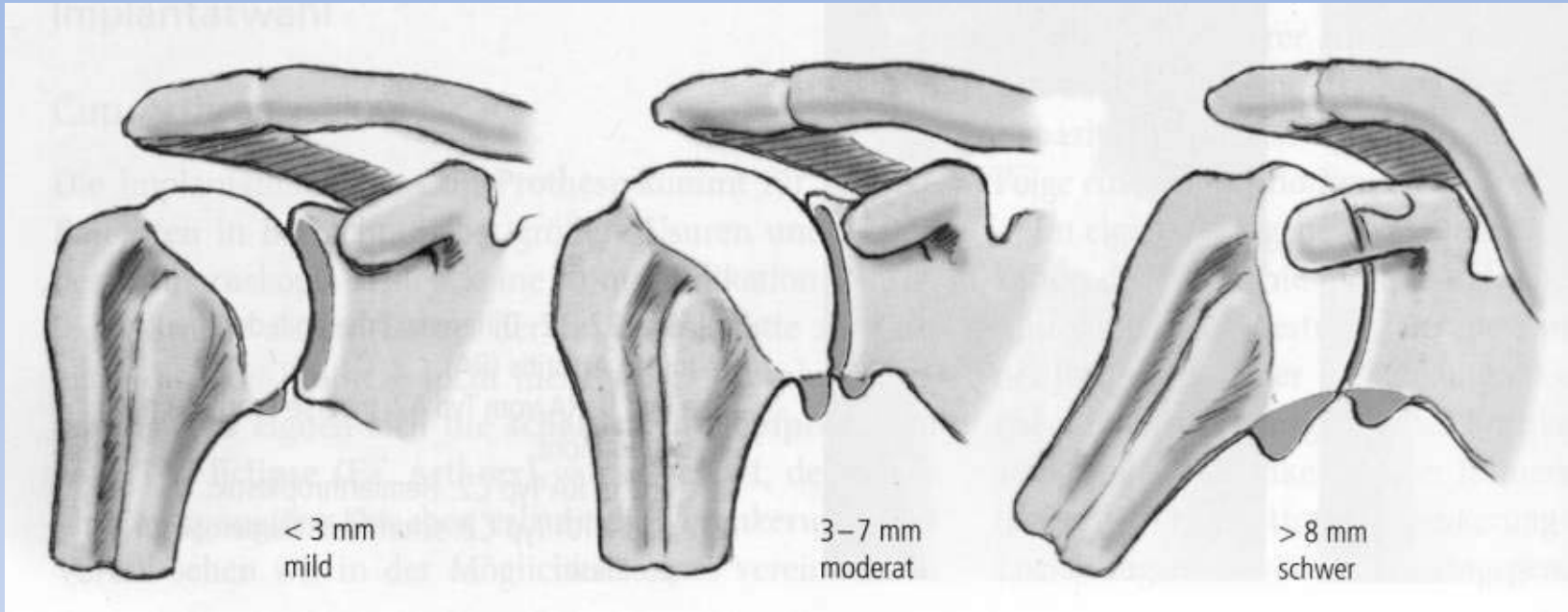








Samilson und Prieto Klassifikation JBJS Am 1983



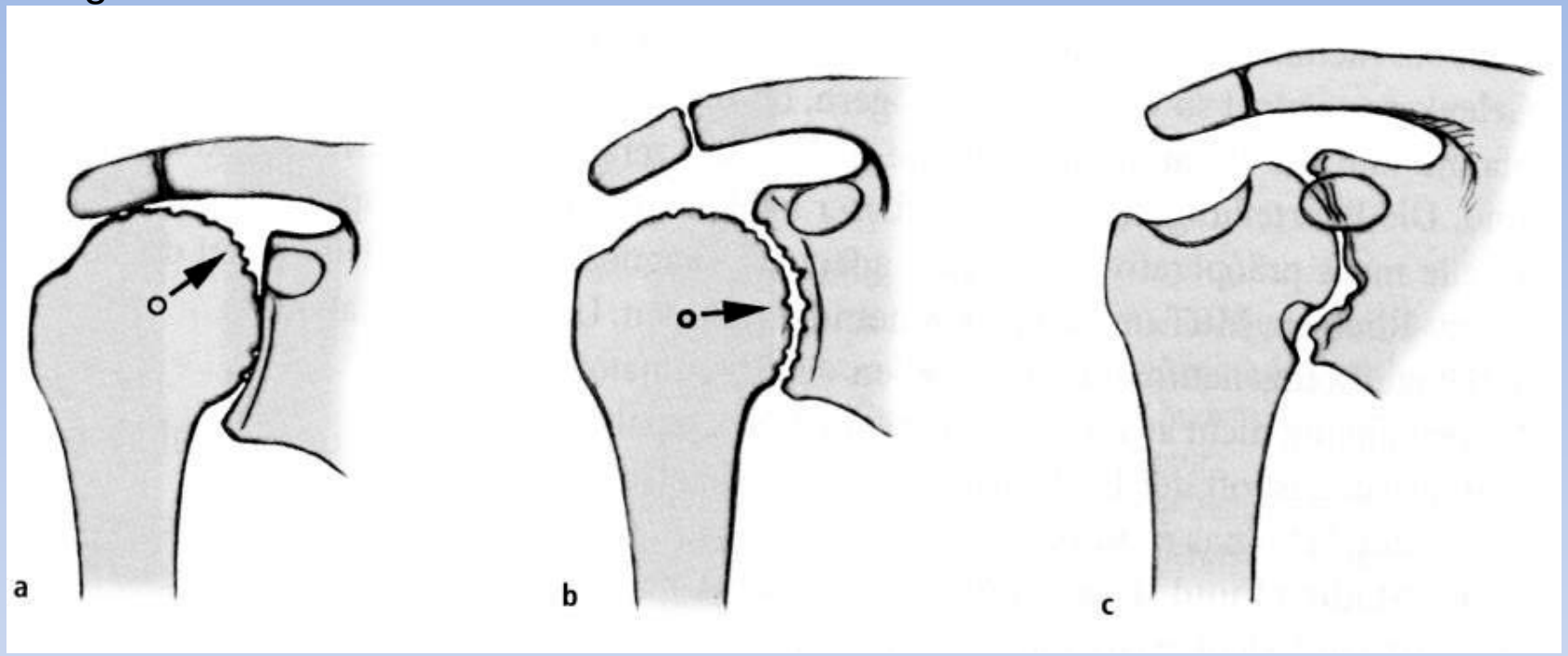
Schmerz als die Hauptindikation für eine Operation korreliert nicht mit dem radiologischen Score

Kircher et al Int Orthop 2010

Durch Rotation des Humeruskopfes kann derselbe Osteophyt zwischen 0 und 8 mm groß erscheinen.
Derselbe Osteophyt konnte in 46% der Fälle zwei verschiedenen Samilson Graden zugeordnet werden.

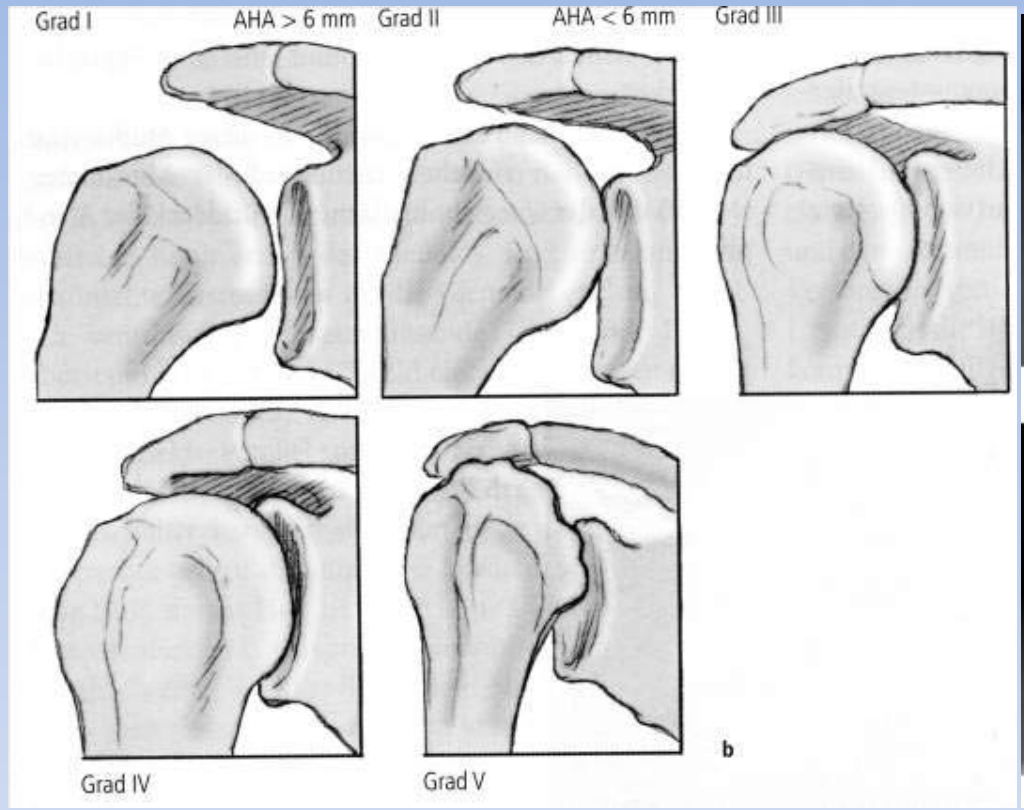
Ilg et al Knee surg Sports traumatol 2001

Lèvigne Klassifikation



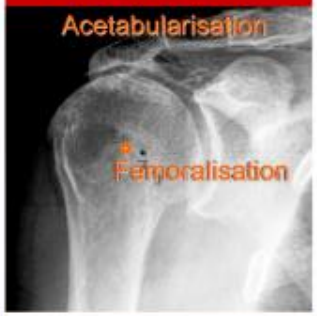
a) Ascendierende Form
b) Zentrierte Form
c) Destruktive Form

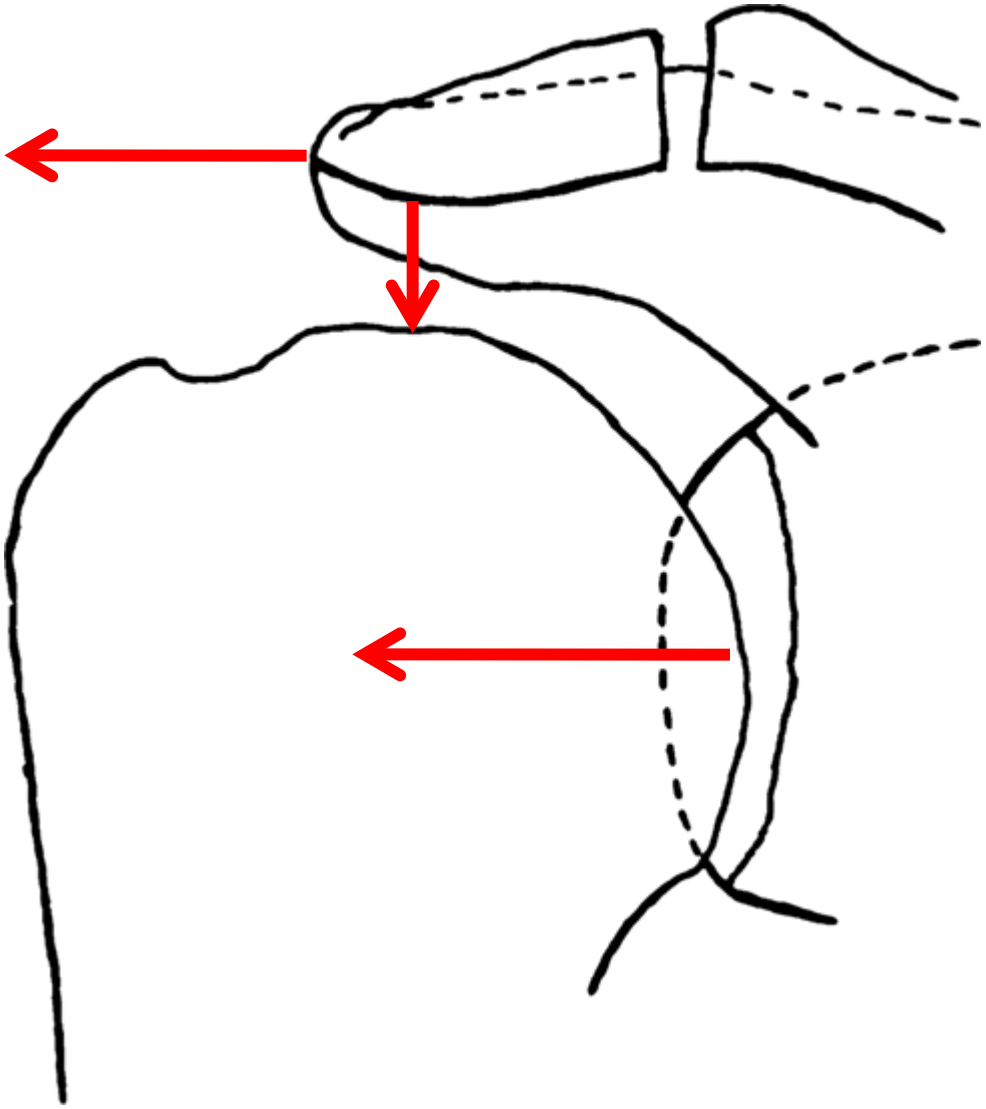
Hamada Klassifikation CORR 1990



Massenrupturen der Rotatorenmanschette werden radiologische nach der Hamada Klassifikation eingeteilt : Stadium 1 bis 5 (5= anterosuperior escape)

Seebauer Klassifikation

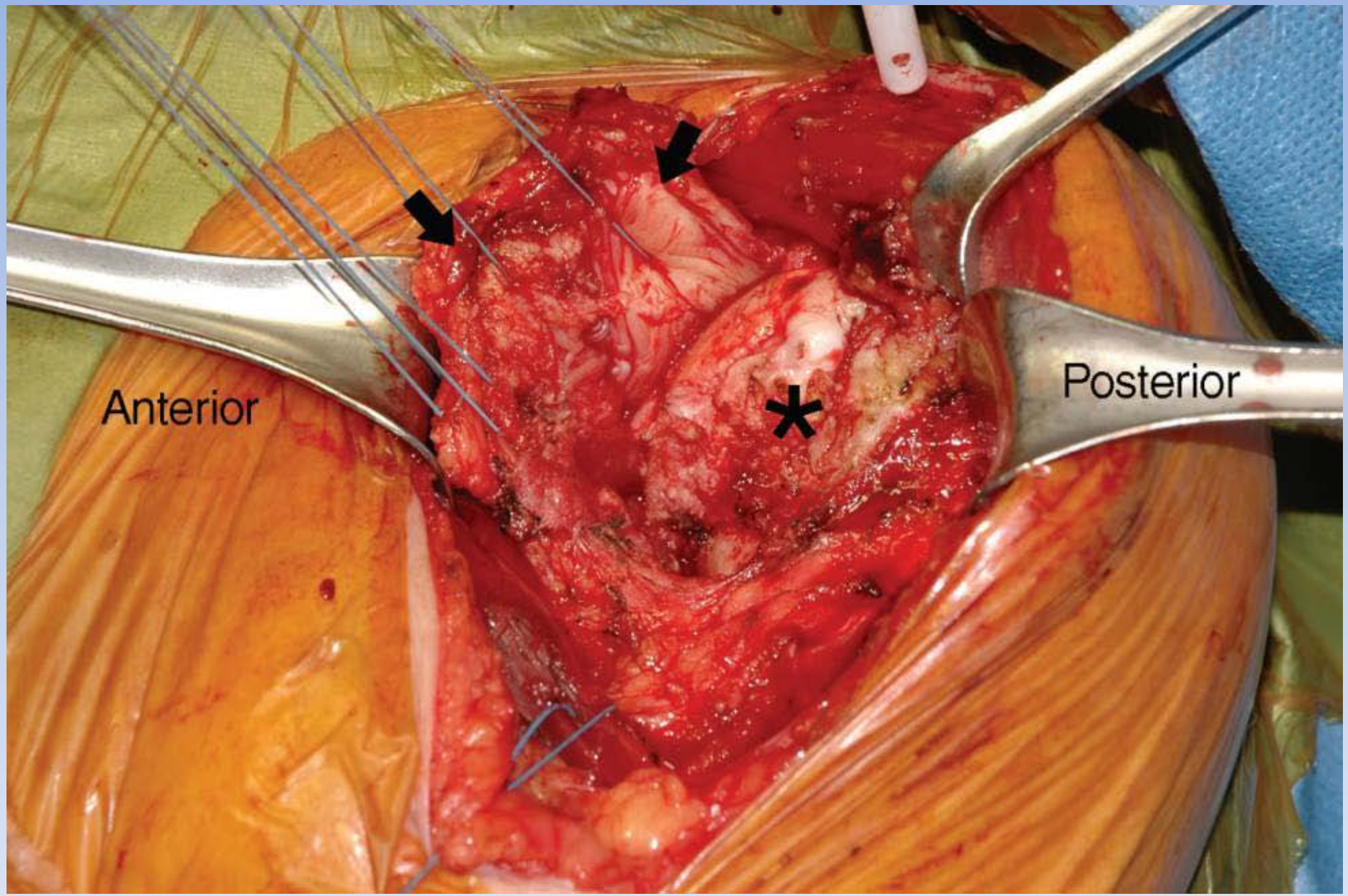
TYPE IA-CENTERED STABLE	TYPE IB-CENTERED MEDIALIZED	TYPE IIA-DECENTERED LIMITED STABLE	TYPE IIB-DECENTERED UNSTABLE
			
• INTACT ANTERIOR RESTRAINTS	• INTACT ANTERIOR RESTRAINTS - FORCE COUPLE INTACT/COMPENSATED	• COMPROMISED ANTERIOR RESTRAINTS—COMPROMISED FORCE COUPLE.	• INCOMPETENT ANTERIOR STRUCTURES
• MINIMAL SUPERIOR MIGRATION	• MINIMAL SUPERIOR MIGRATION	• SUPERIOR TRANSLATION	• ANTERIOR SUPERIOR ESCAPE
• DYNAMIC JOINT STABILIZATION	• COMPROMISED DYNAMIC JOINT STABILIZATION	• INSUFFICIENT DYNAMIC JOINT STABILIZATION	• ABSENT DYNAMIC JOINT STABILIZATION
• ACETABULARIZATION OF CA ARCH AND FEMORALIZATION OF HUMERAL HEAD	• MEDIAL EROSION OF THE GLENOID, ACETABULARIZATION OF CA ARCH, AND FEMORALIZATION OF HUMERAL HEAD	• MINIMUM STABILIZATION BY CA ARCH, SUPERIOR-MEDIAL EROSION AND EXTENSIVE ACETABULARIZATION OF CA ARCH AND FEMORALIZATION OF HUMERAL HEAD.	• NO STABILIZATION BY CA ARCH—DEFICIENT ANTERIOR STRUCTURES.



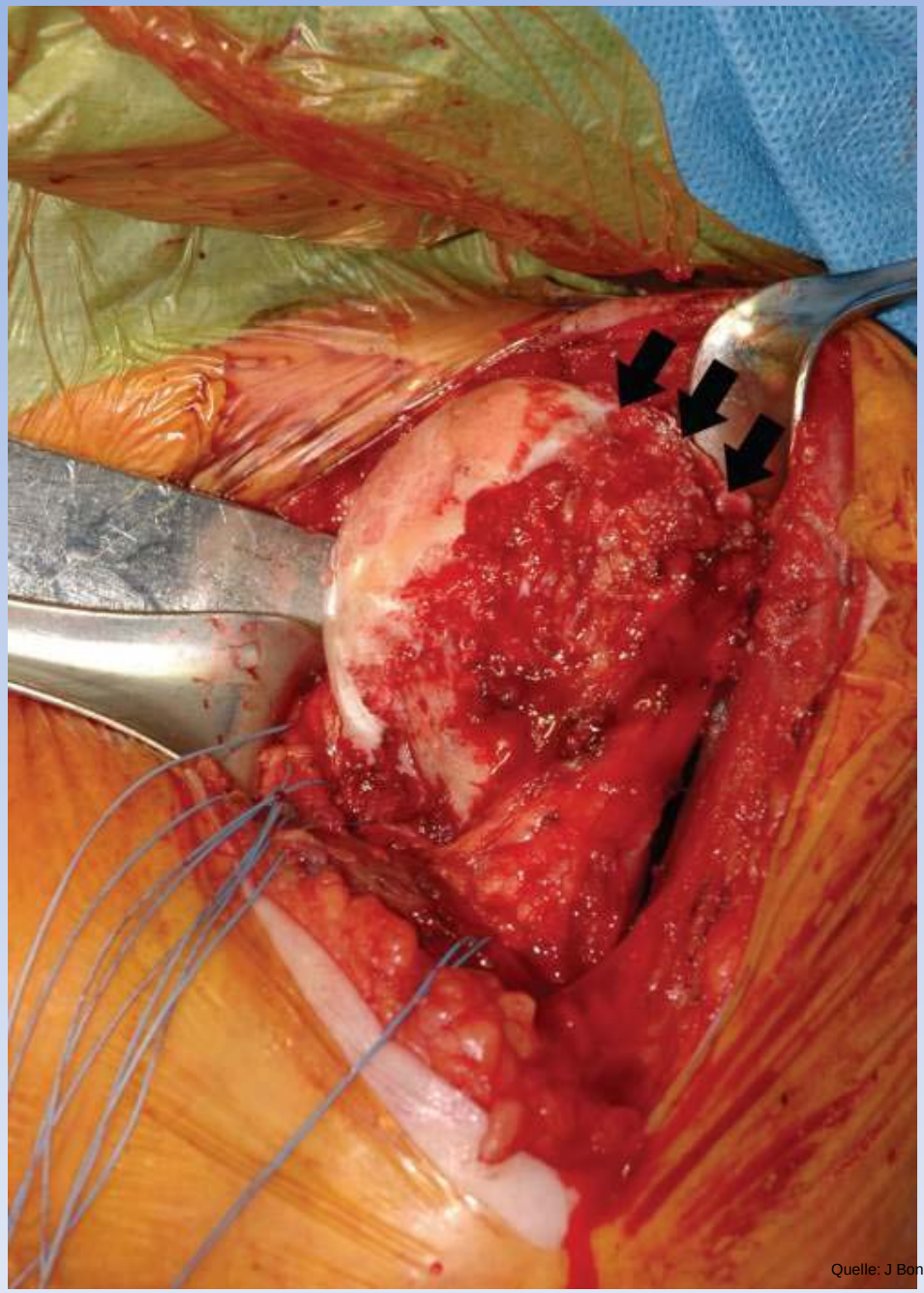
Distanz zwischen
Zentrum Humeruskopf / Zentrum
des Glenoids

Acromiohumeraler Abstand

Distanz zwischen
seitlichem Ende des Tub Majus /
seitlichem Punkt des Acromions

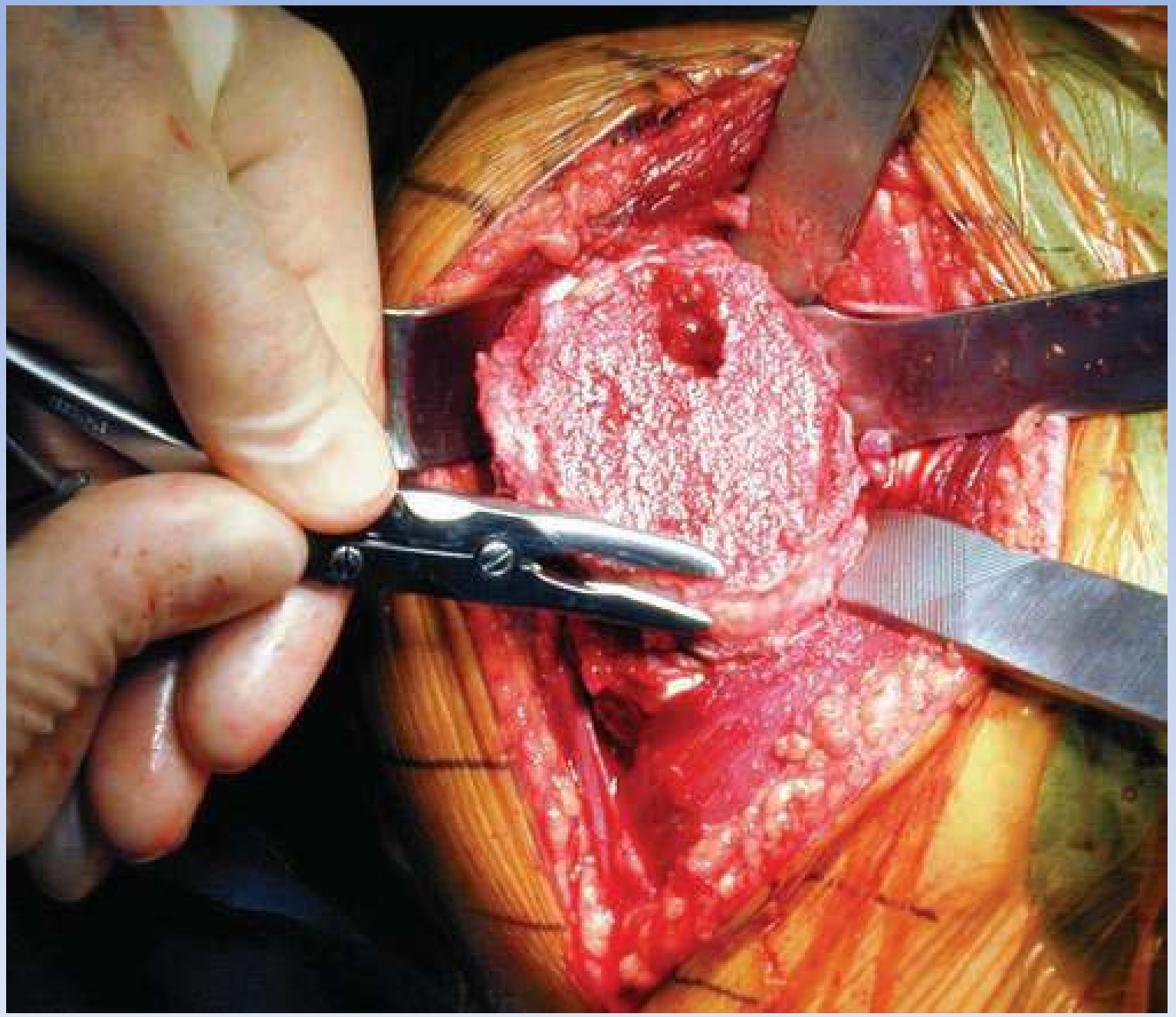


Quelle: J Bone Joint Surg Am. 2009;91(Supplement 2 Part 1):22-29.

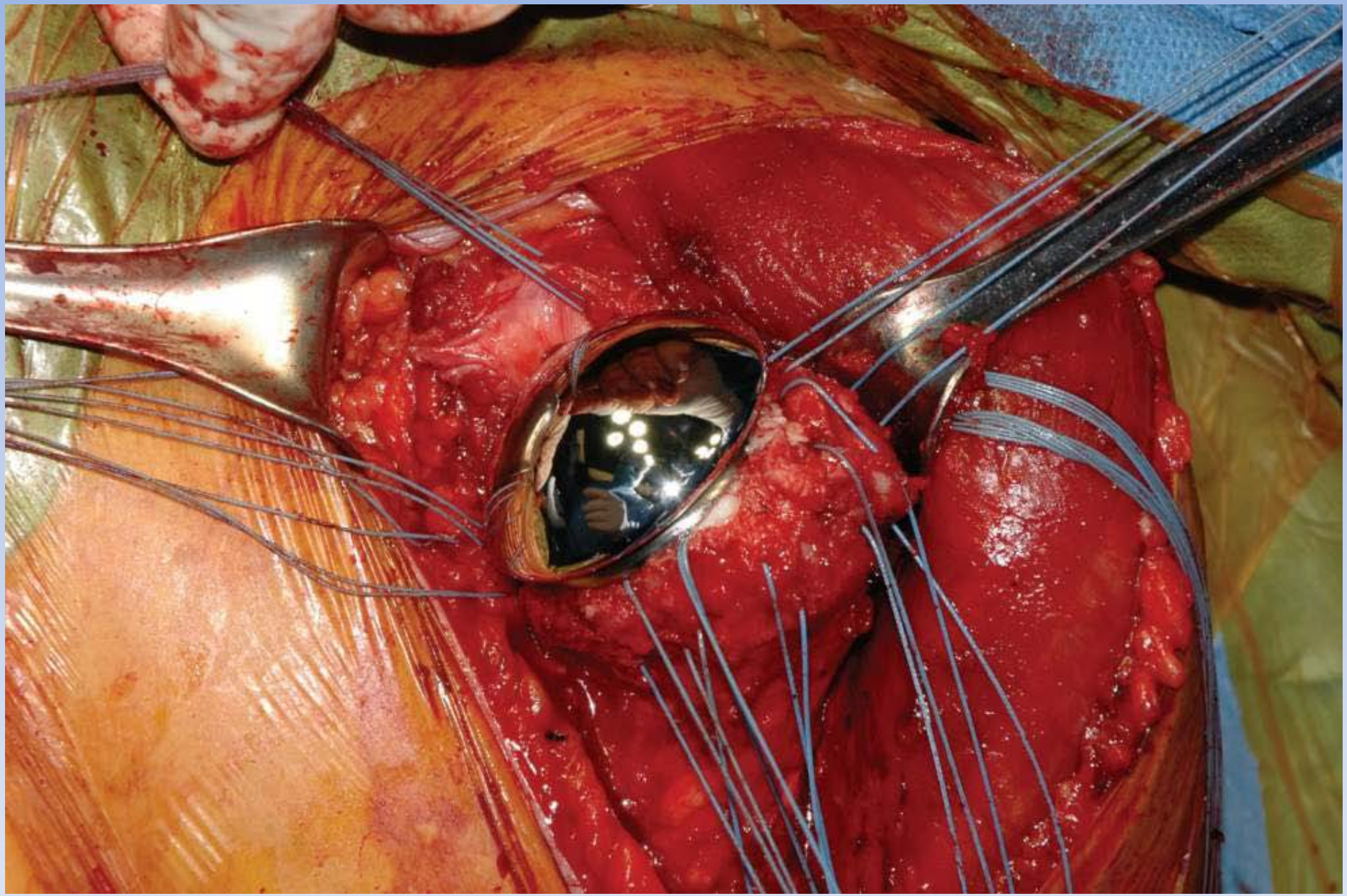


Quelle: J Bone Joint Surg Am. 2009;91(Supplement 2 Part 1):22-29.

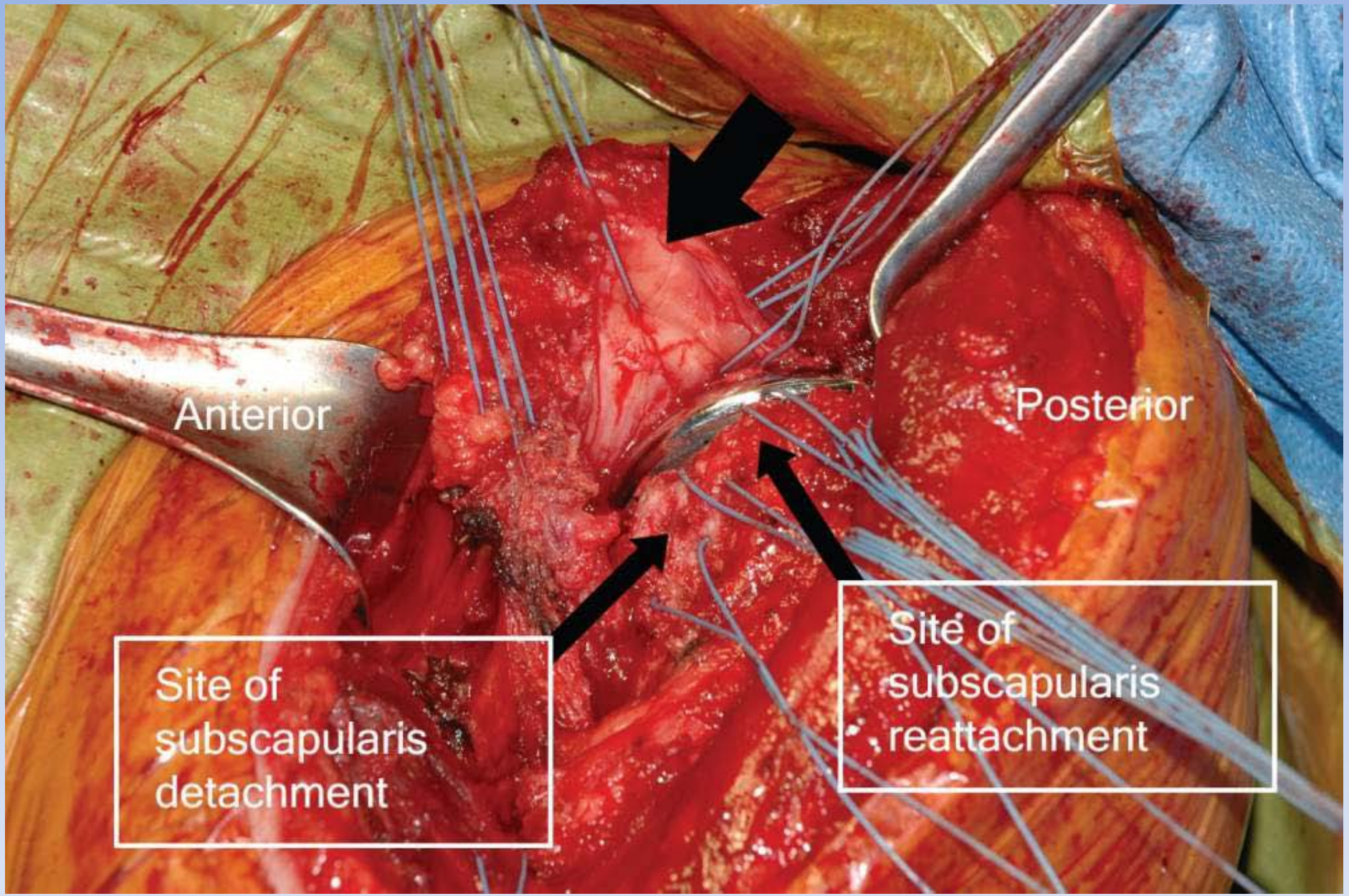
Quelle: J Bone Joint Surg Am. 2009;91(Supplement 2 Part 1):22-29.



Quelle: J Bone Joint Surg Am. 2009;91(Supplement 2 Part 1):22-29.

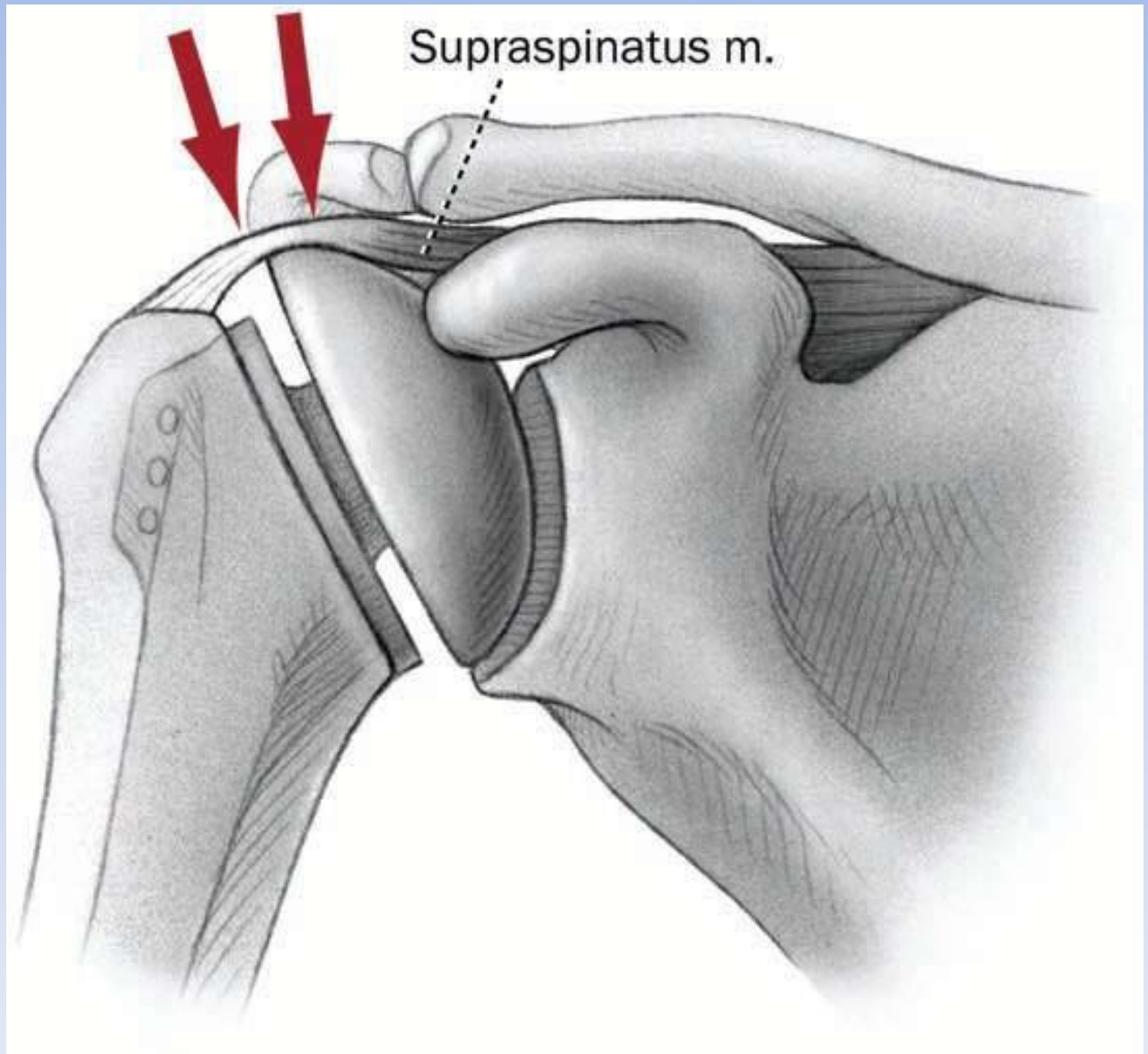


Quelle: J Bone Joint Surg Am. 2009;91(Supplement 2 Part 1):22-29.



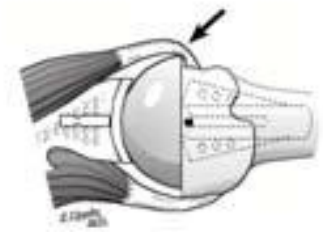
Quelle: J Bone Joint Surg Am. 2009;91(Supplement 2 Part 1):22-29.

Kritische Details



30% der nicht zufriedenstellenden Ergebnisse der Schulterprothetik geht auf Fehlposition der Komponenten zurück

Hassan et al JSES 2002

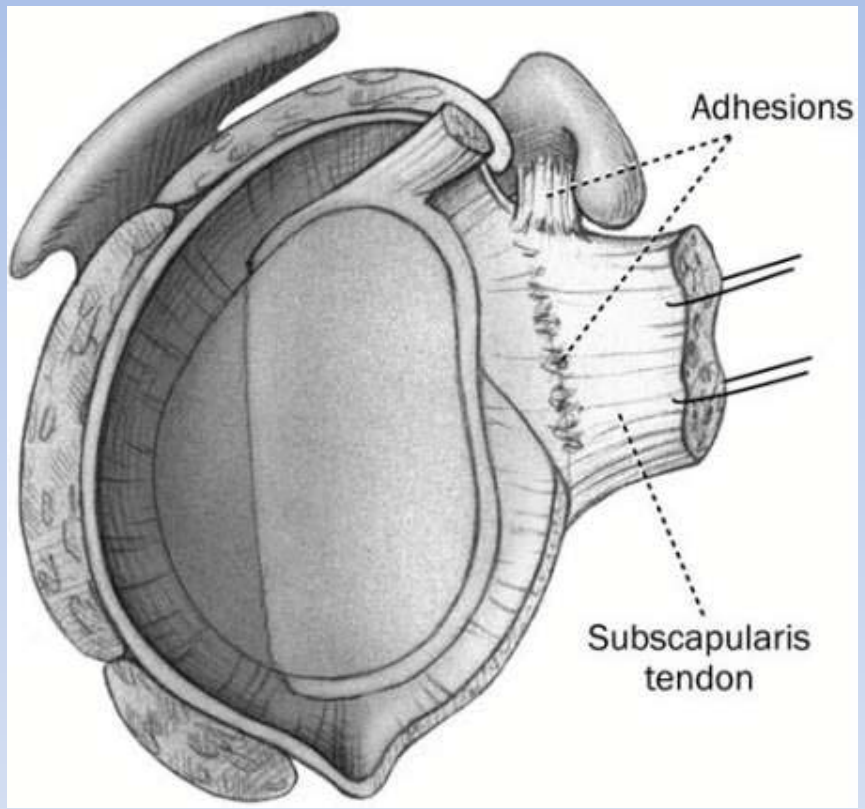


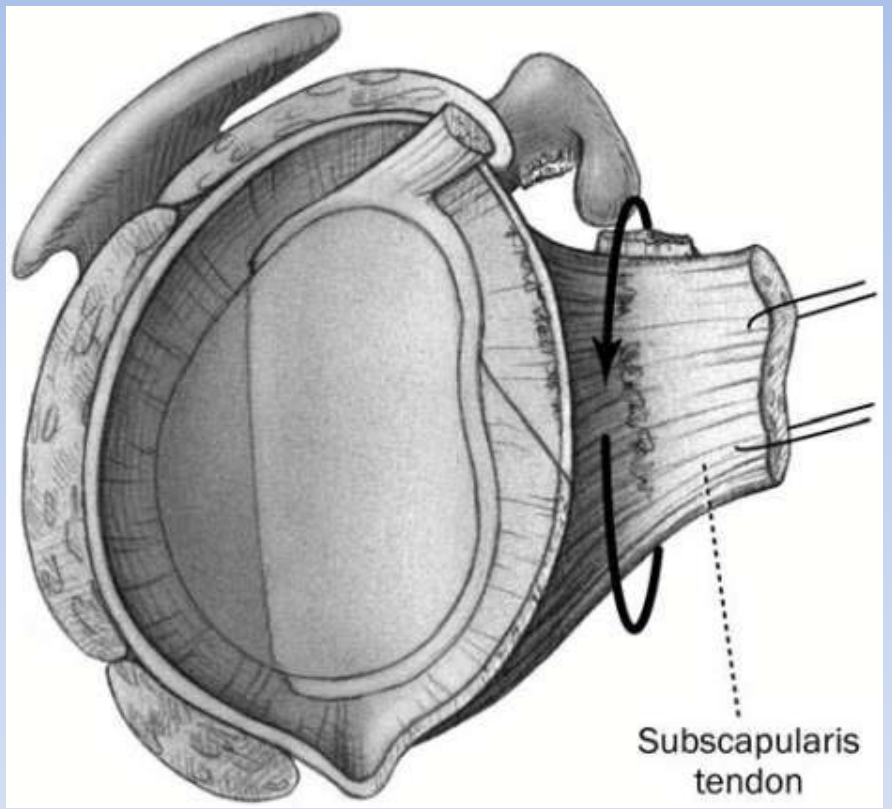
-inkorrekte Neigung
-vorstehende Prothese
-zu tief sitzende Prothese

-posterior Offset
-Humerusretroversion
-mediales Offset
-Kopfgröße

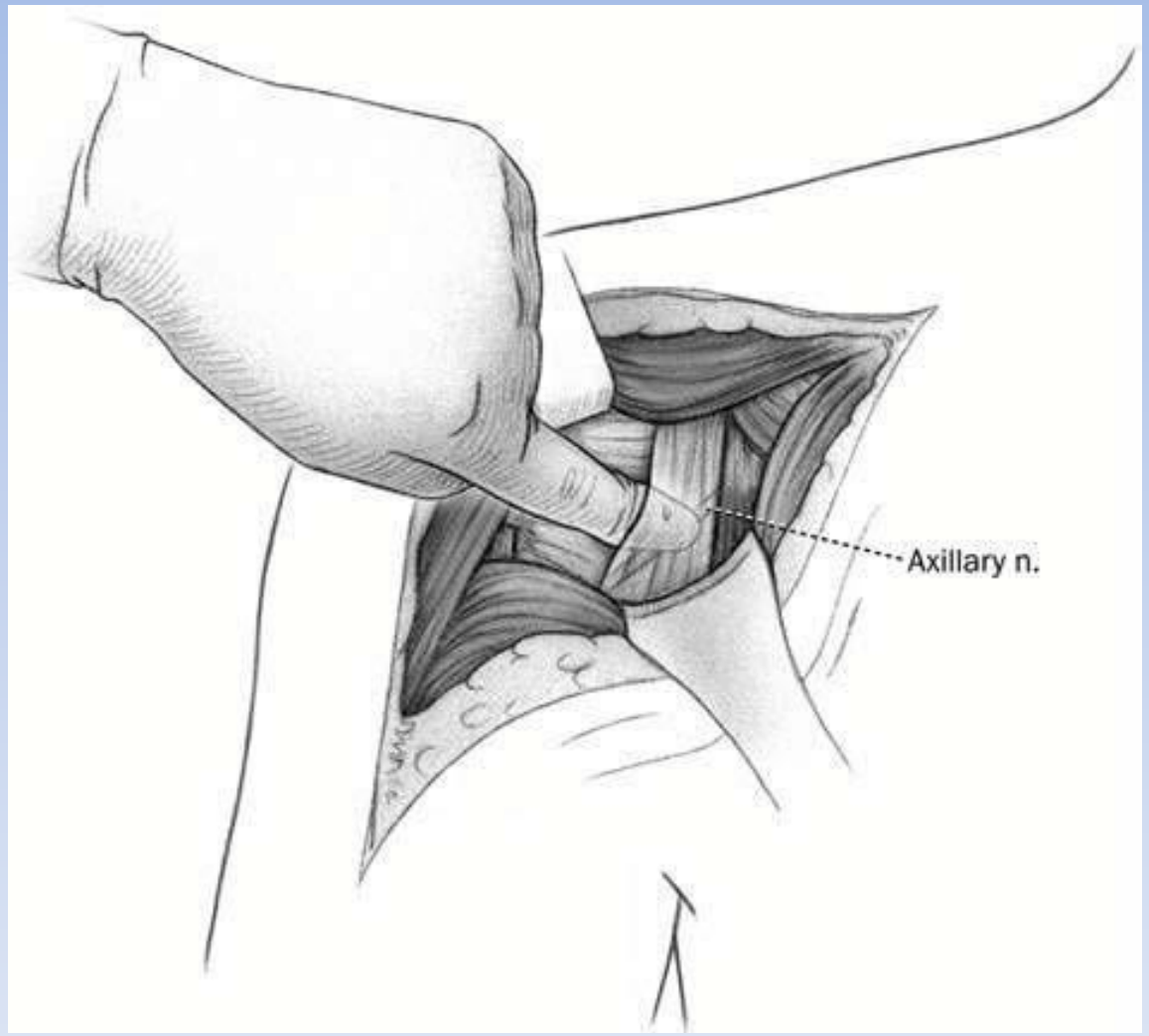
Kritische Details

Wichtig: 360 Kapselrelease auch bei der Hemiprothese

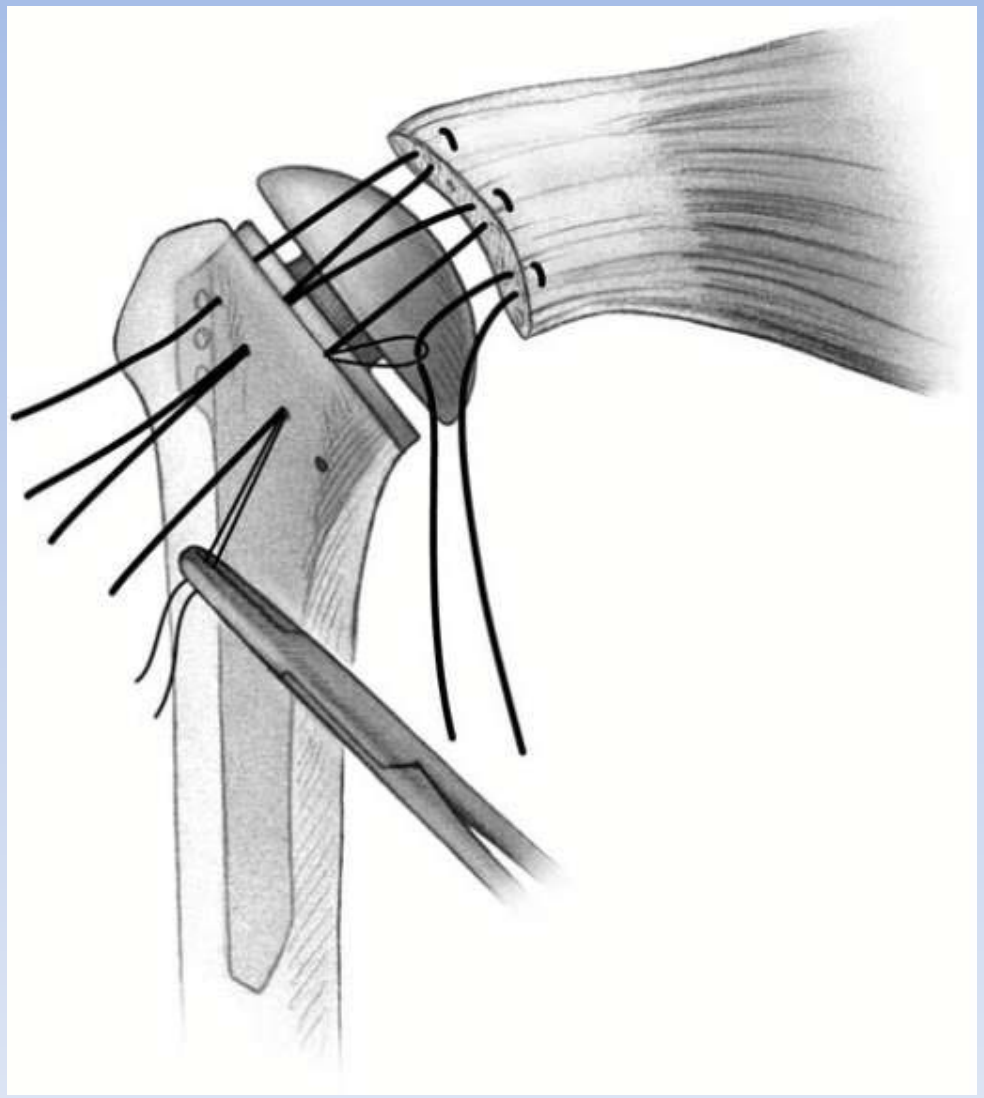




Kritische Details



Kritische Details

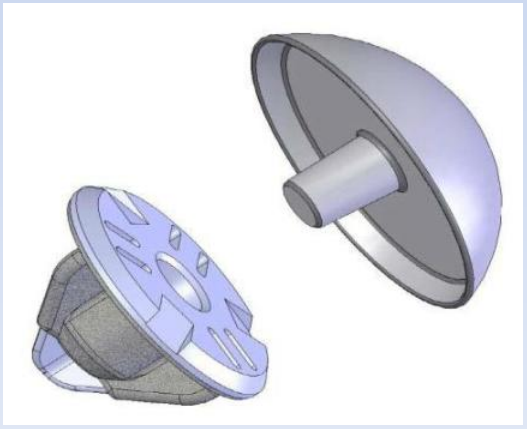


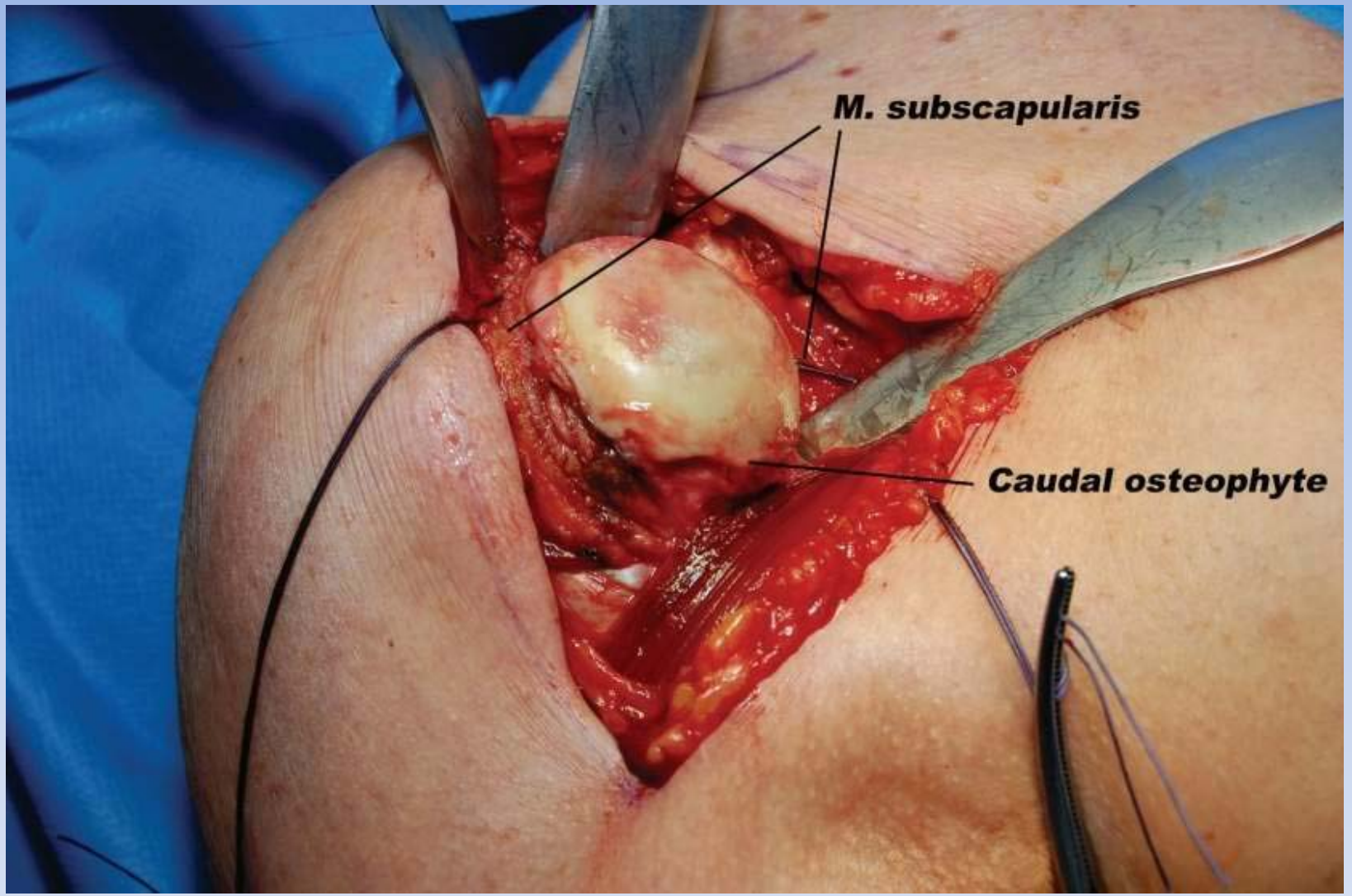
Weichteilbalancing

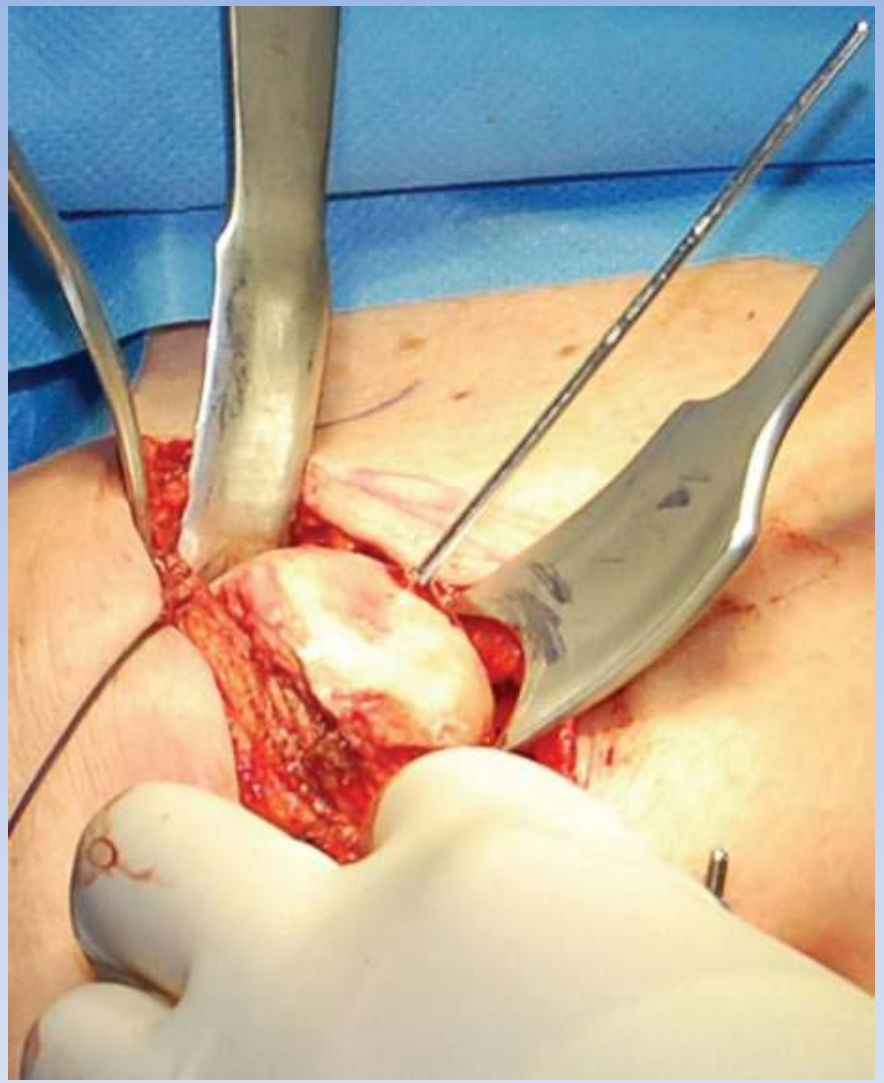
In der Schulterendoprothethik ist es mehr als bei allen anderen Endoprothesenoperationen notwendig, das Weichteilgewebe zu erhalten und zu rehabilitieren. Der Umgang mit den Weichteilen ist ebenso wichtig wie die Positionierung der Prothesenkomponenten

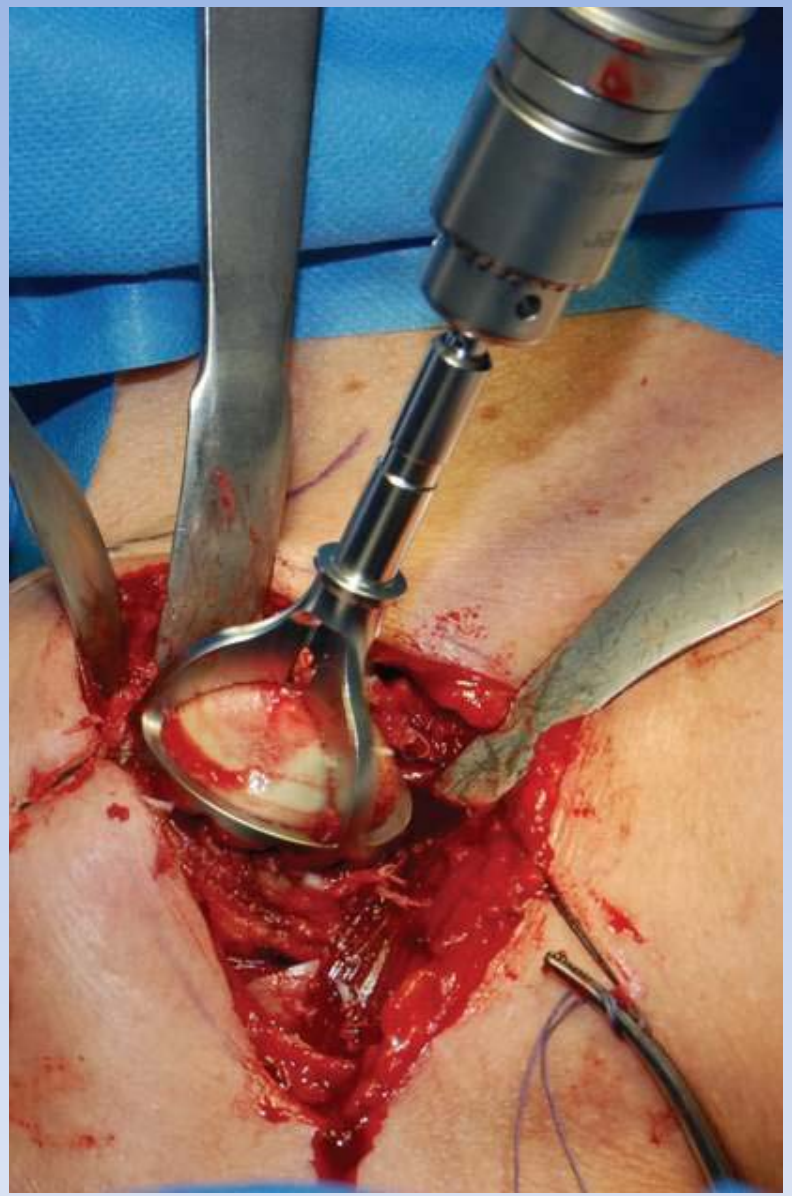
Charles S Neer

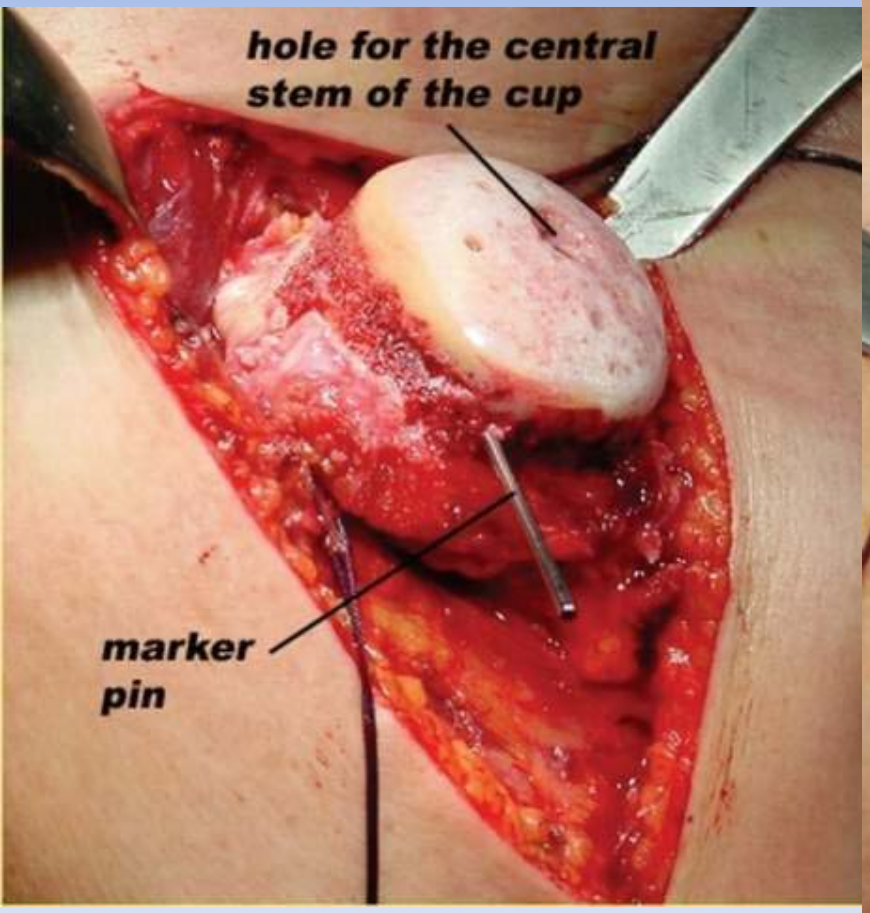
Alternativen zum klassischen Humerusimplantat

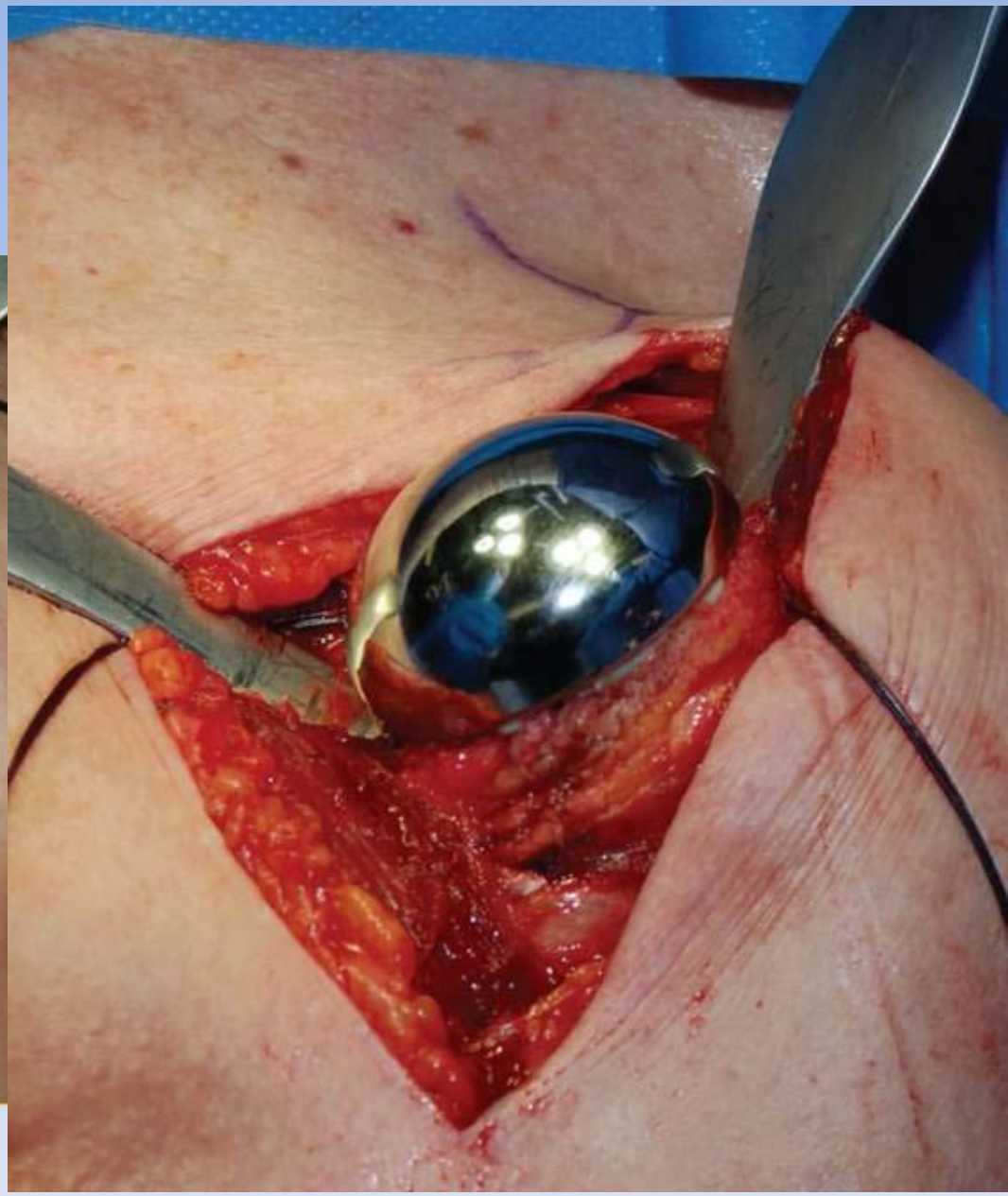



M. subscapularis
Caudal osteophyte



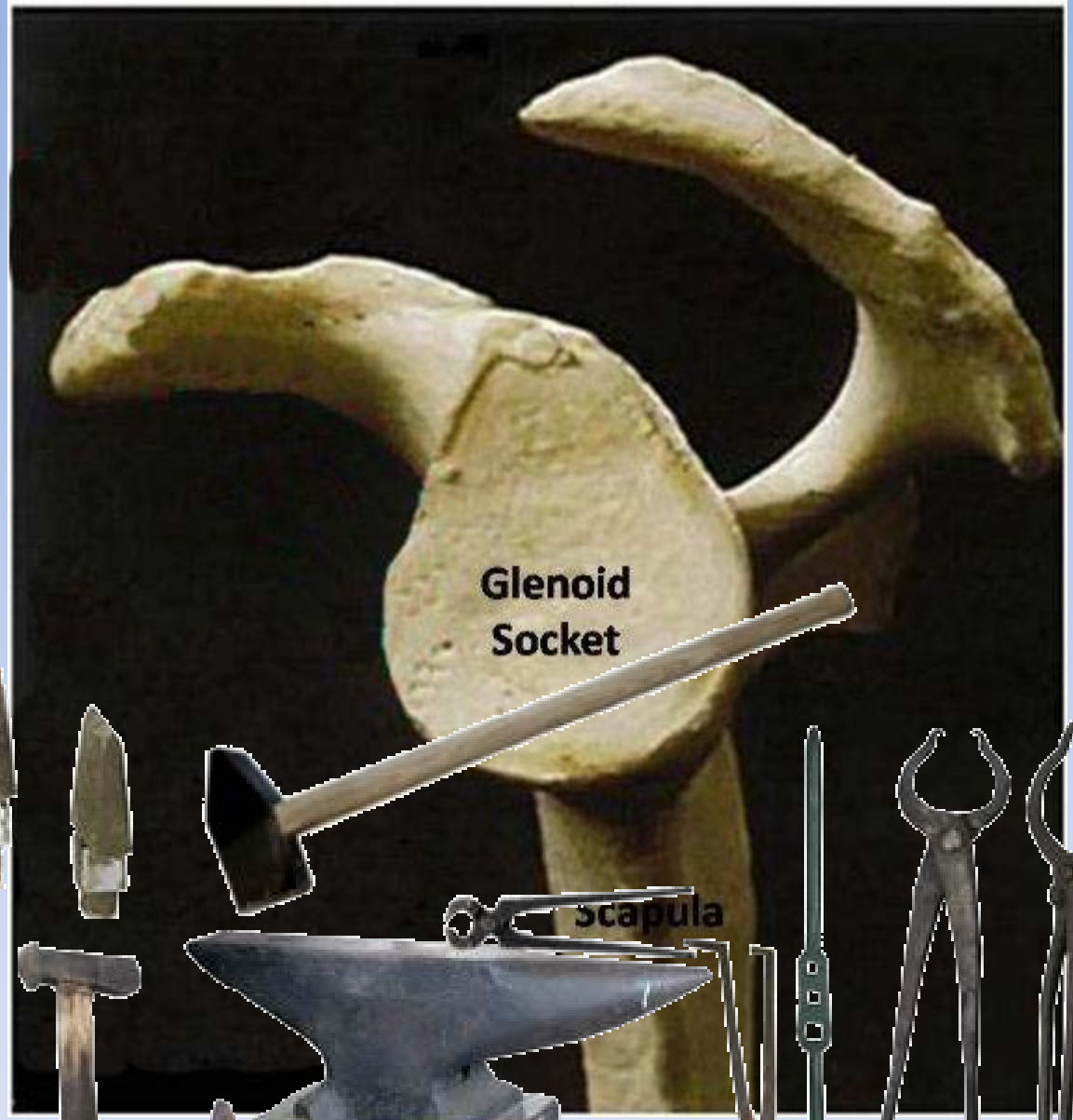


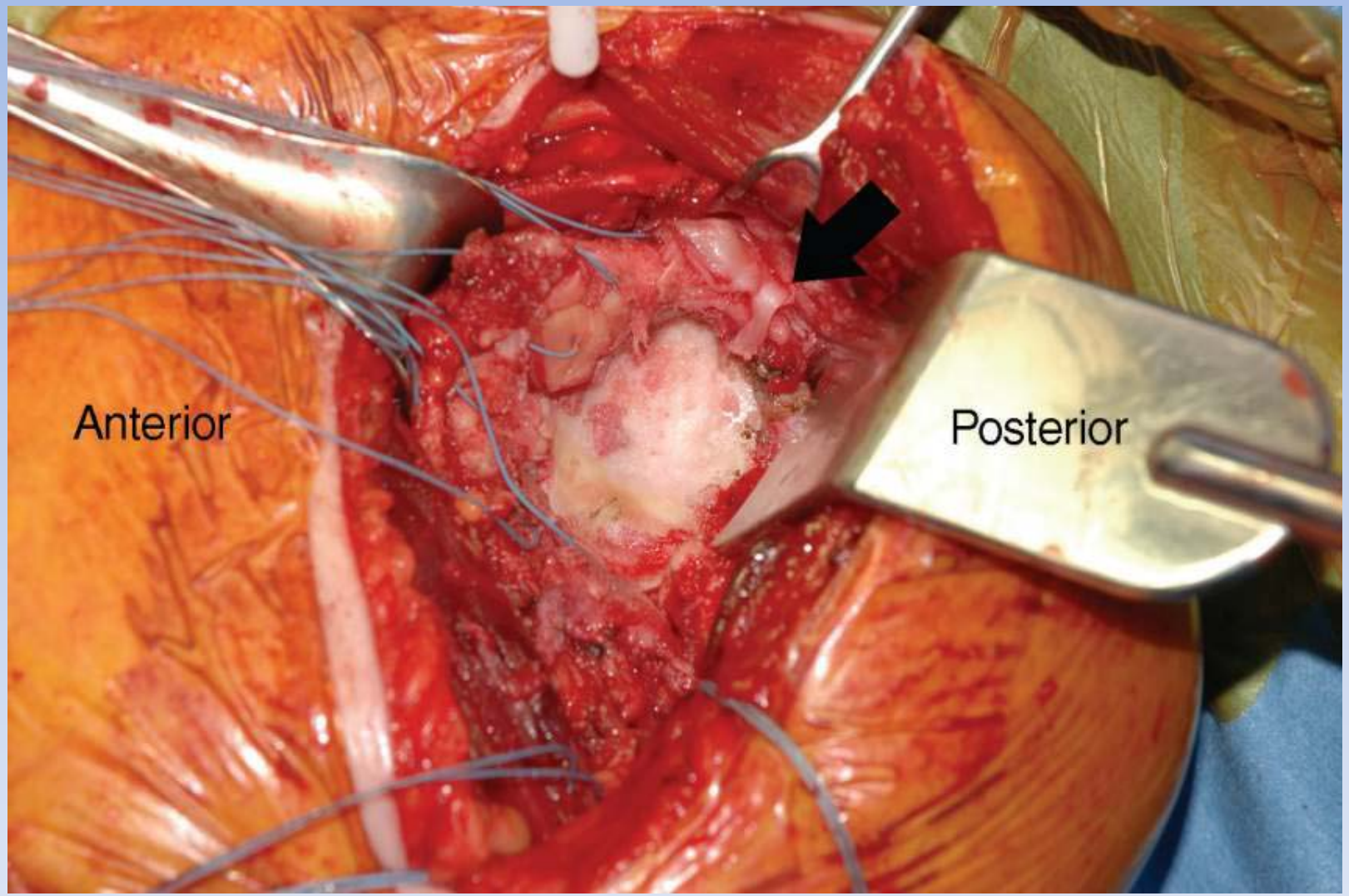

hole for the central
stem of the cup
marker
pin



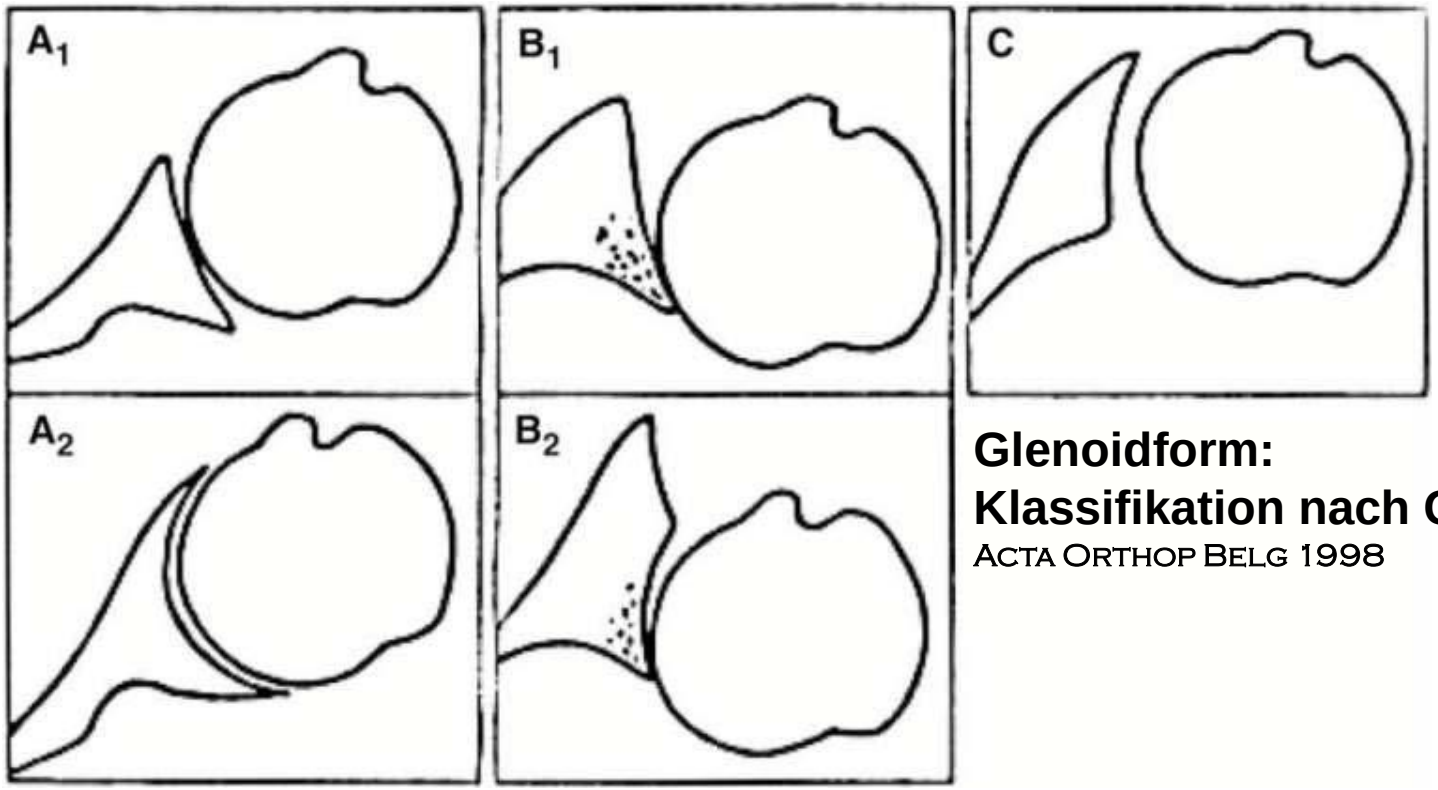
Erhöhung der Kalottendicke um 5 mm
reduziert die ROM um 20-30°
(Harryman 1995)

Zu geringe Kalottendicke verändert die normale Kopfbeweglichkeit und führt zum Impingement der Tuberkula
(Ballmer 1994, Jobe 1995)

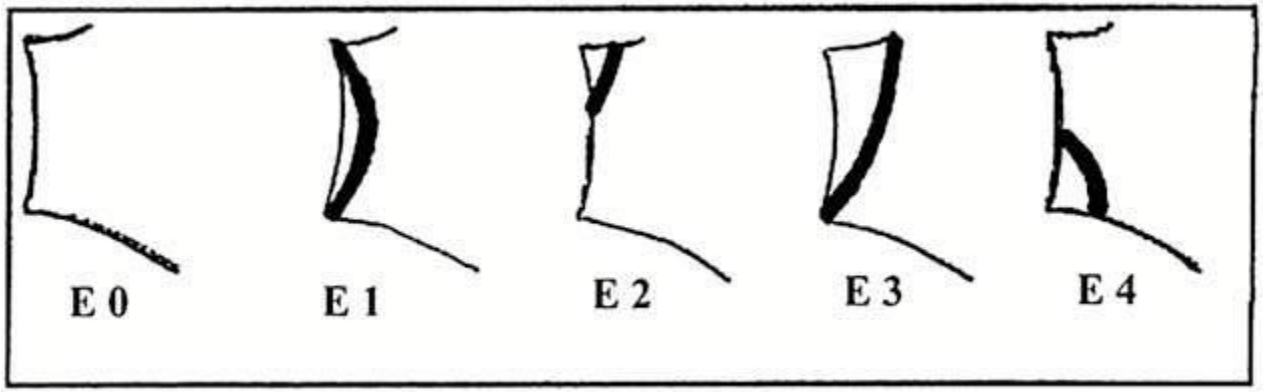

Glenoid
Socket
Scapula



Quelle: J Bone Joint Surg Am. 2009;91(Supplement 2 Part 1):22-29.

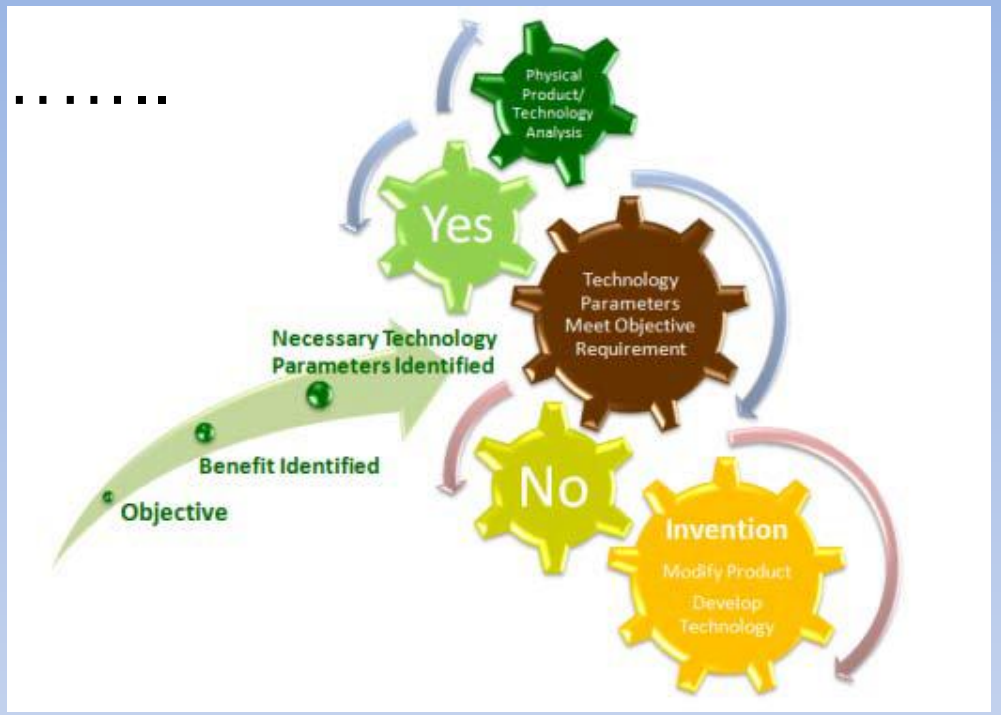


Glenoidform:
Klassifikation nach G. Walch
Acta Orthop Belg 1998

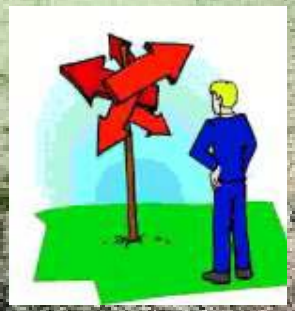


Glenoidform:
Klassifikation nach Favard

GLENOID……..



Quelle Throckmorton et al 2010



TSA erreicht bessere Schmerzreduktion als Hemi

TSA erreicht bessere Funktion als Hemi

TSA haben eine der Hemi vergleichbare kurz und mittelfristige Überlebensrate

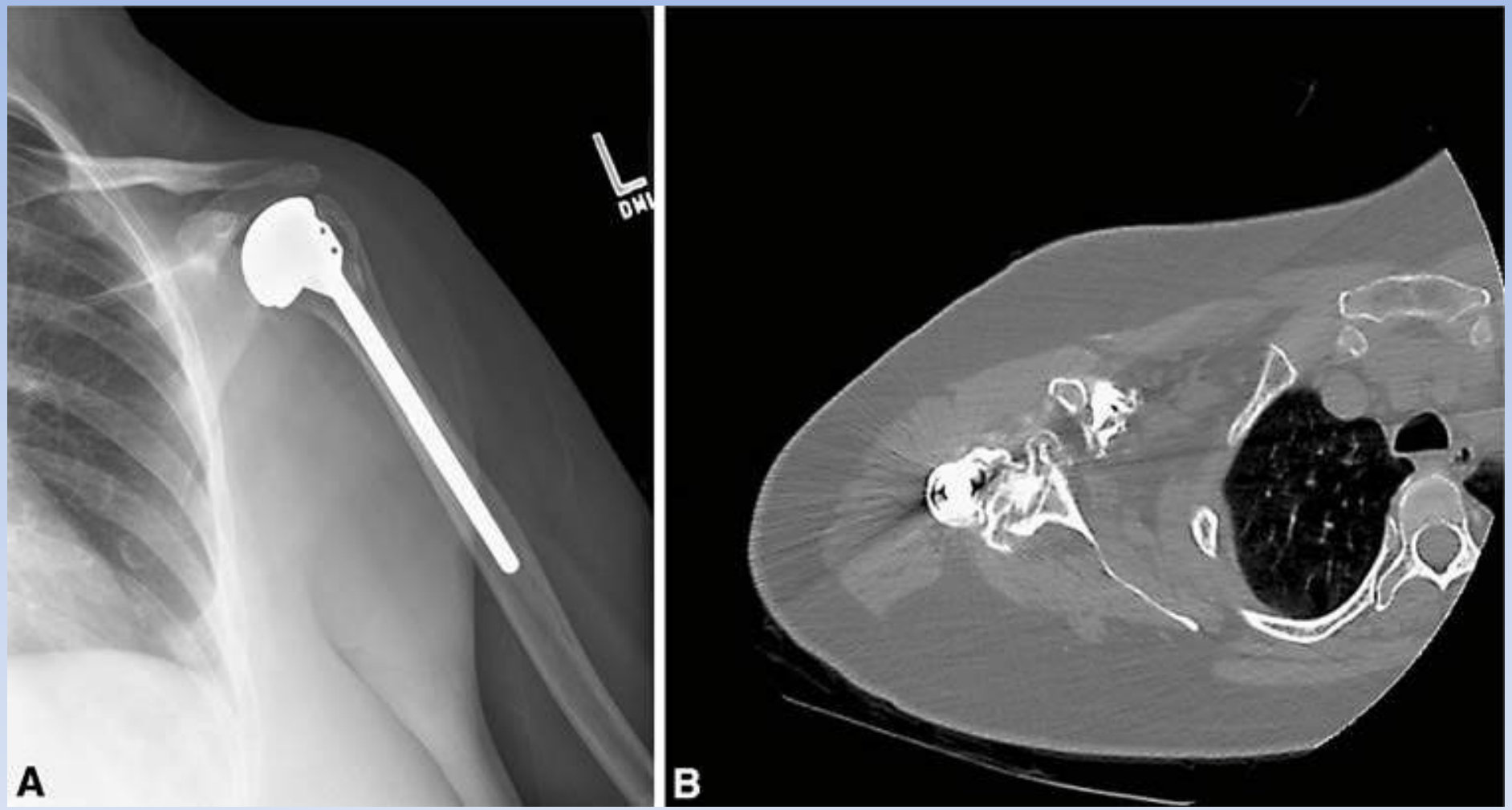
De Beer JBJS Br 2002
Boileau JSES 2001
Pfahler JSES 2006
Craig JSES 2007
Gartsman JBJS 2000
Radnay JSES 2007

Beispiel

	TSA	**Hemi**	
Pain score	85.8	77.6	.0001
FE (°)	141.4	124.9	.0001
Gain in FE (°)	53.7	31.0	.0001
ER (°)	42.7	42.1	.74
Gain in ER (°)	34.5	25.2	.0002

Radnay et al JSES 2007

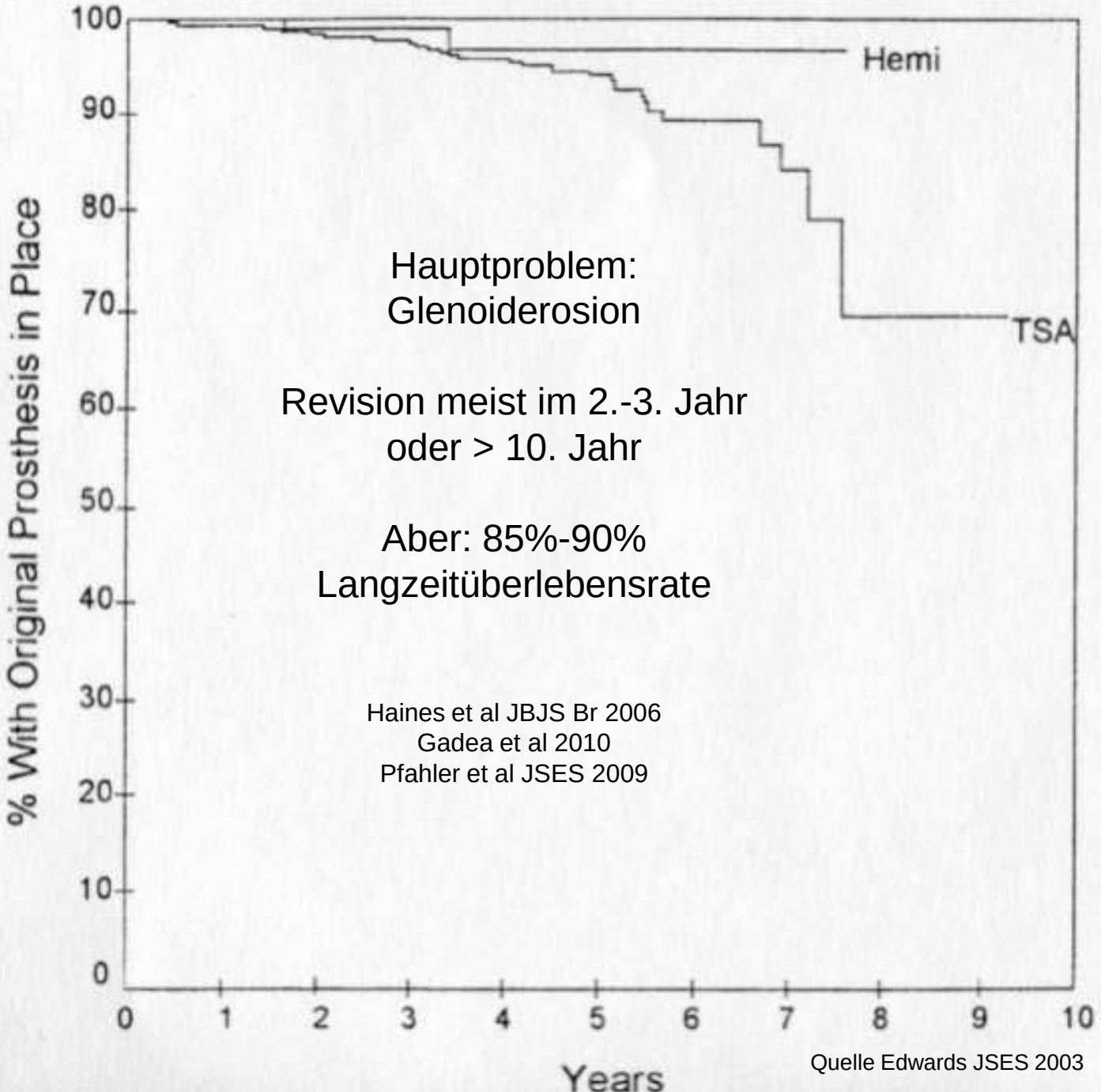
Hauptargument gegen die Hemi: Glenoiderosion



Quelle: Elhassan et al CORR 2008

Geringe
Revisionsrate

Bryant et al JBJS Am 1984
Torchia et al JSES 1997
Krepler et al 2006
Wirth et al JBJS Am 1996



Hauptproblem:
Glenoiderosion

Revision meist im 2.-3. Jahr
oder > 10. Jahr

Aber: 85%-90%
Langzeitüberlebensrate

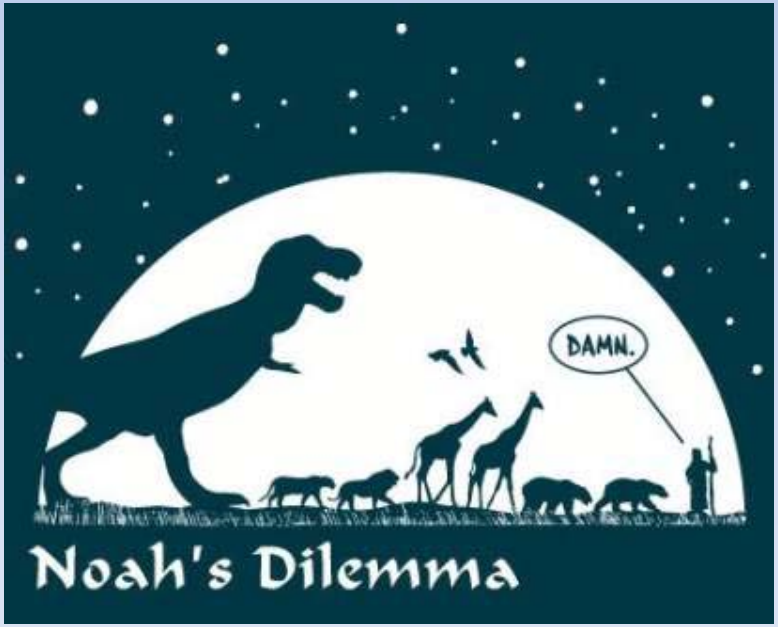
Haines et al JBJS Br 2006
Gadea et al 2010
Pfahler et al JSES 2009

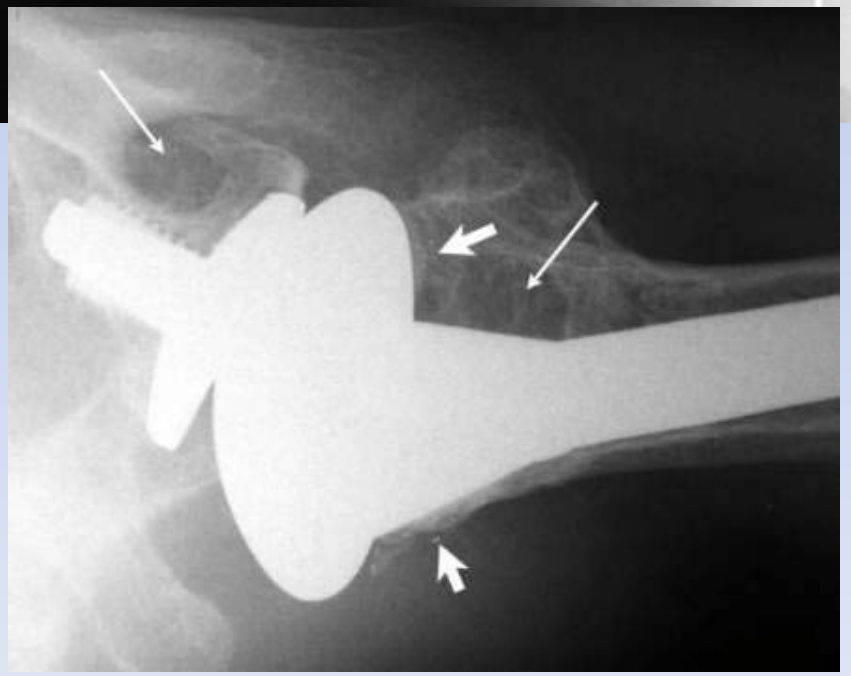
Quelle Edwards JSES 2003

Die Langzeitergebnisse der TSA sind den Hemis derzeit unterlegen

Hill, Norris JBJS Am 2001
Neer JBJS Am 1988
Steinmann JSES 2000

Problem Glenoidlockerung





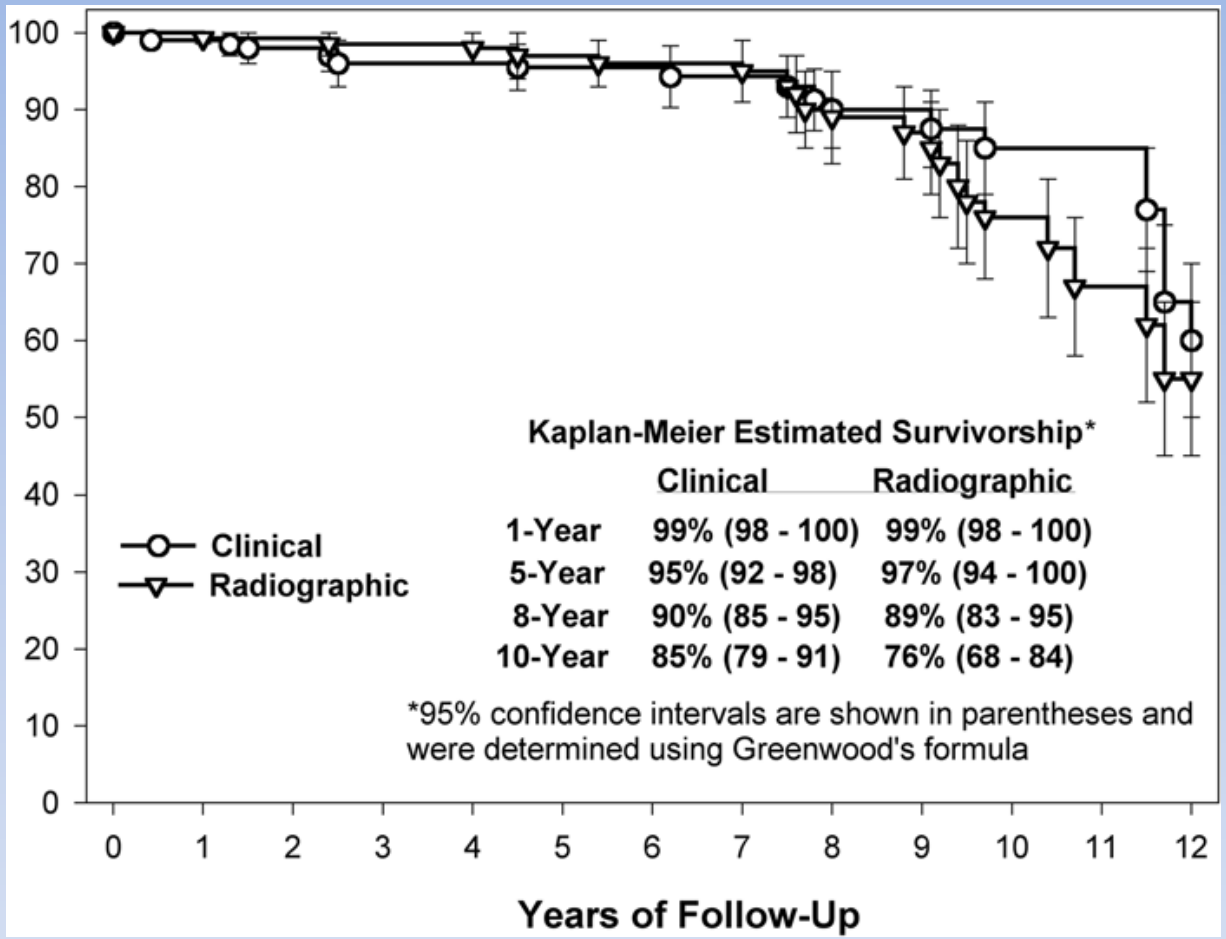
Glenoidlockerung

bis zu 90% radiolucent lines

bis zu 44% radiologische Lockerung

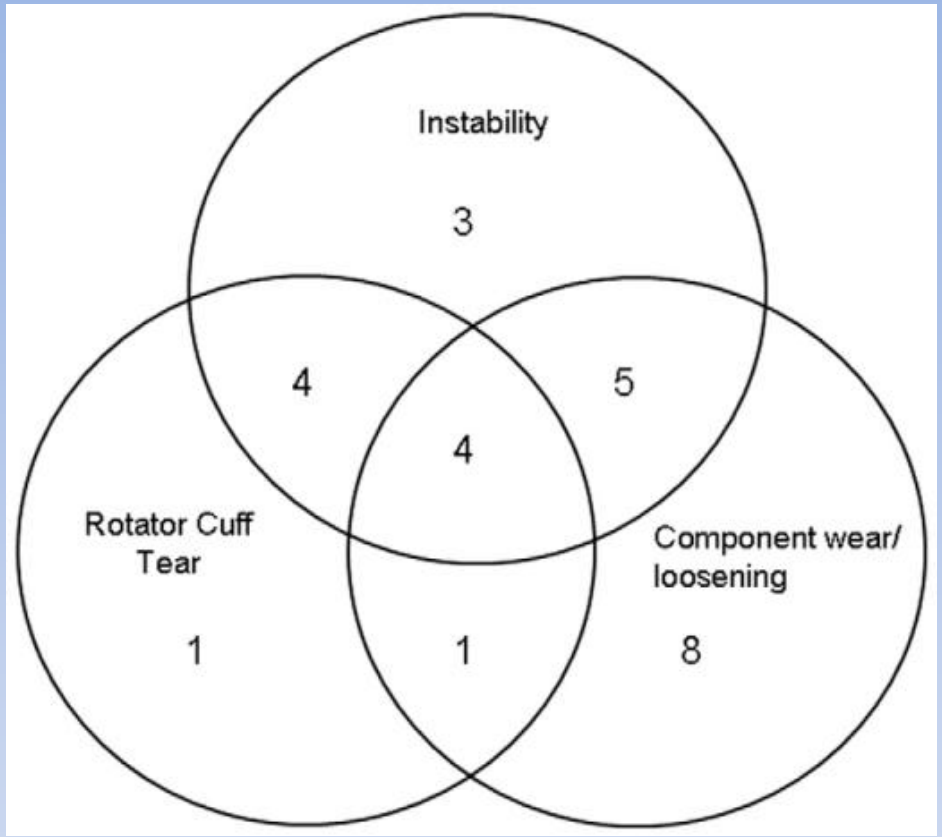
Quelle: MARTIN, et al JBJS AM 2005

Beispiel



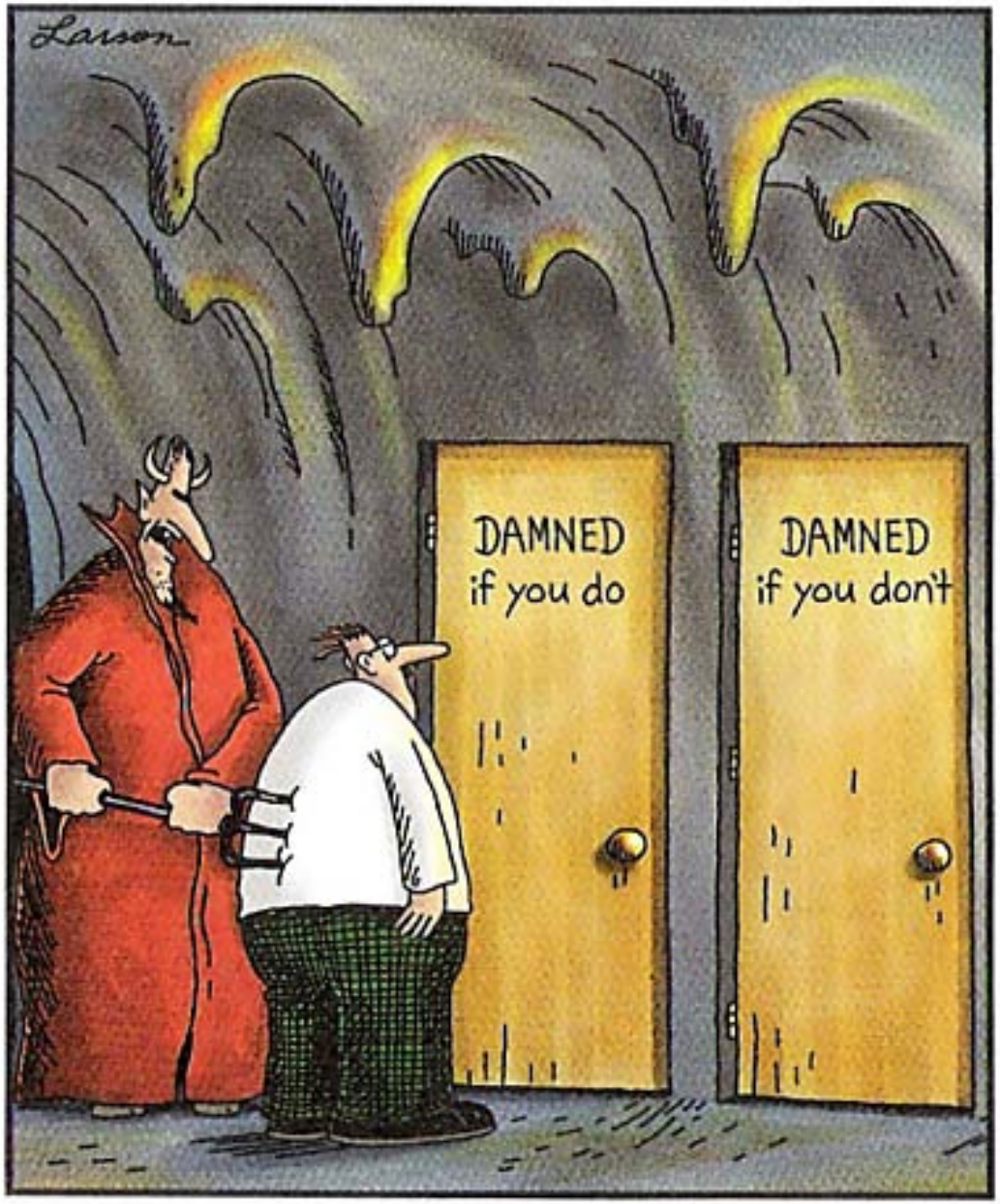
Quelle: MARTIN, et al JBJS AM 2005

PE Abrieb, Metall Metall Kontakt und posterior subluxation.



A Venn diagram illustrating the problems leading to revision surgery.

Quelle: Taunton et al JBJS AM 2008



"C'mon, c'mon—it's either one or the other."

Indikationen für die Hemi

Intaktes Glenoid ……keine Glenoiderosion

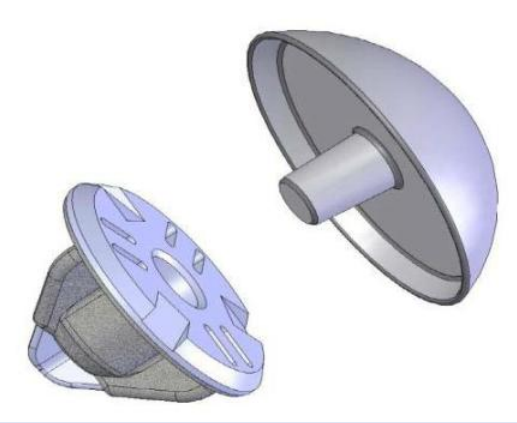
schlechter bone stock ……....keine Verankerung

Junger, aktiver Patient……..hohes Lockerungsrisiko

Rotatorenmanschettenruptur...Zentrierung fehlt

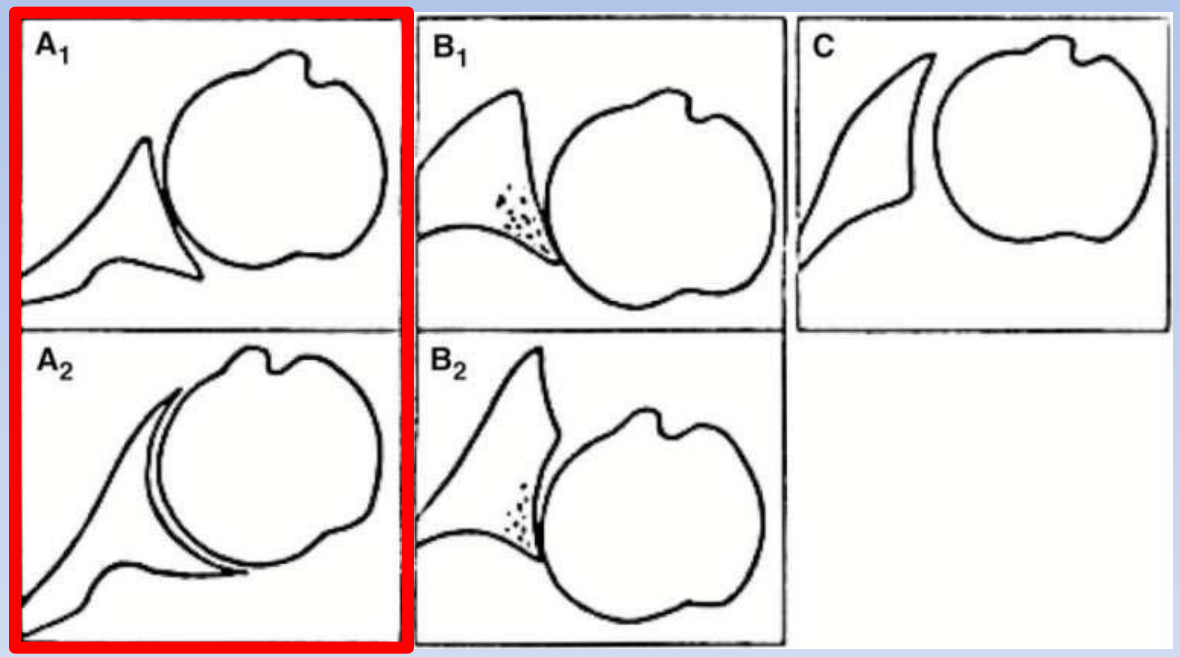
Boileau et al „Arthroplastie of the shoulder“

JBJS Br. 2006



inaktes Glenoid

schlechter bone stock



Glenoidvarianten bei TSA:

Keel oder Pegs

PE (=zementiert)

Metal back (=zementfrei)

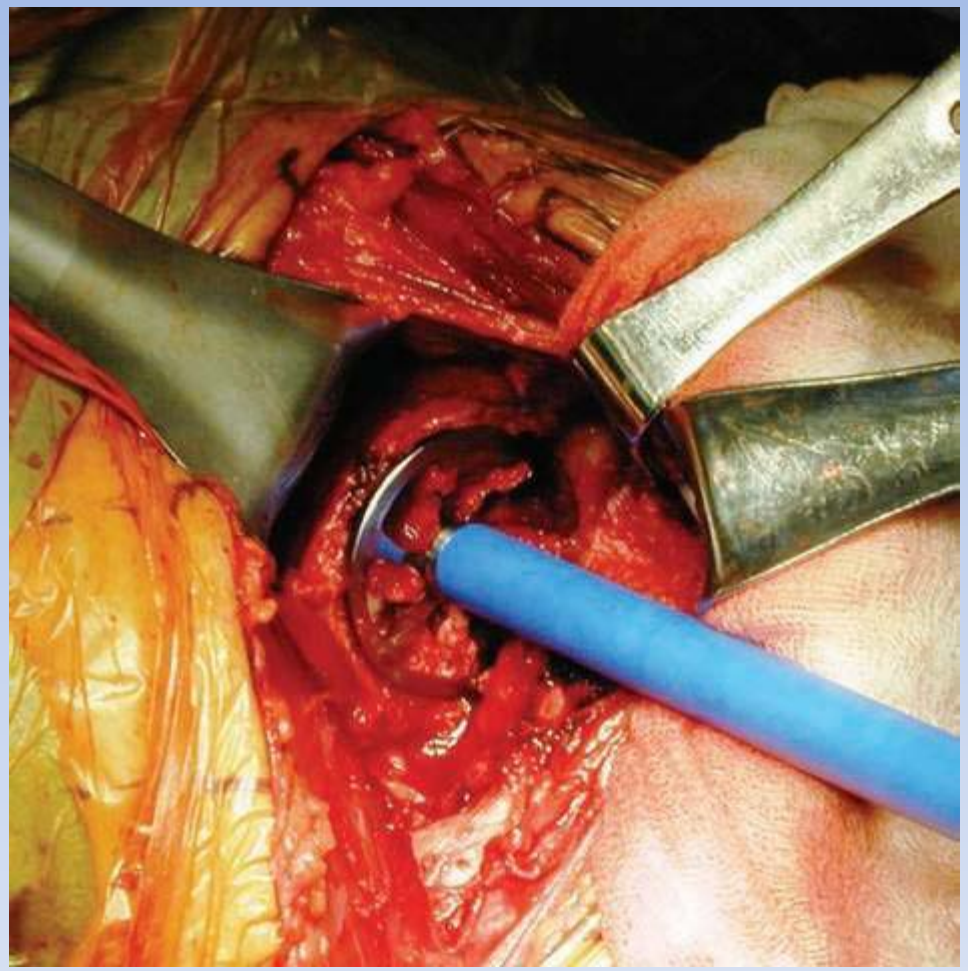
Glenoidbearbeitung bei Hemi:

Nichts tun

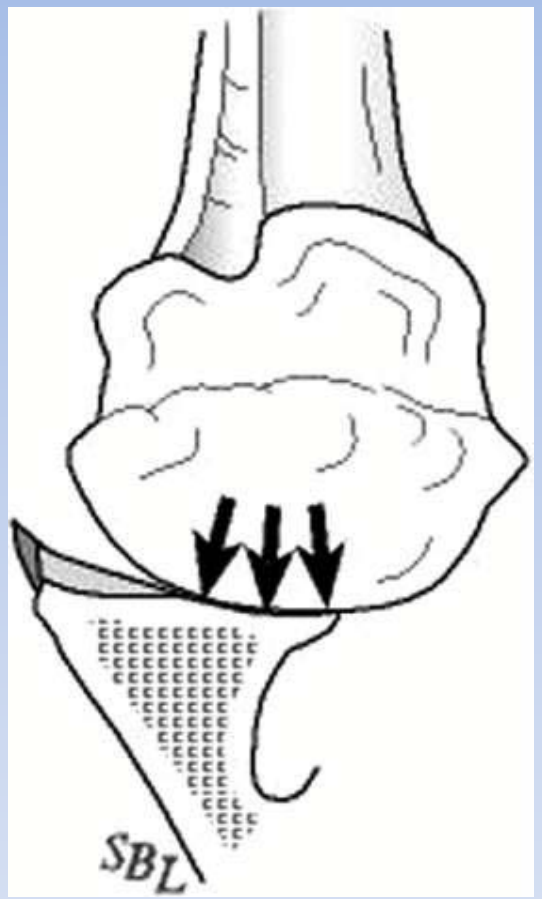
Ream and run (Matsen)

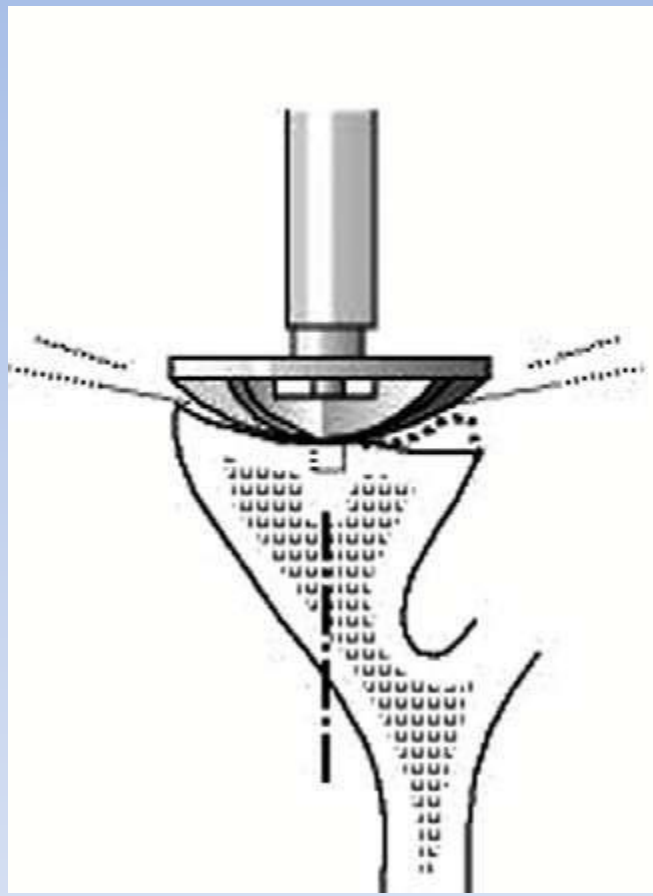
Ream and run+
Meniskusallograft, Achillestendon
(Burkhead)

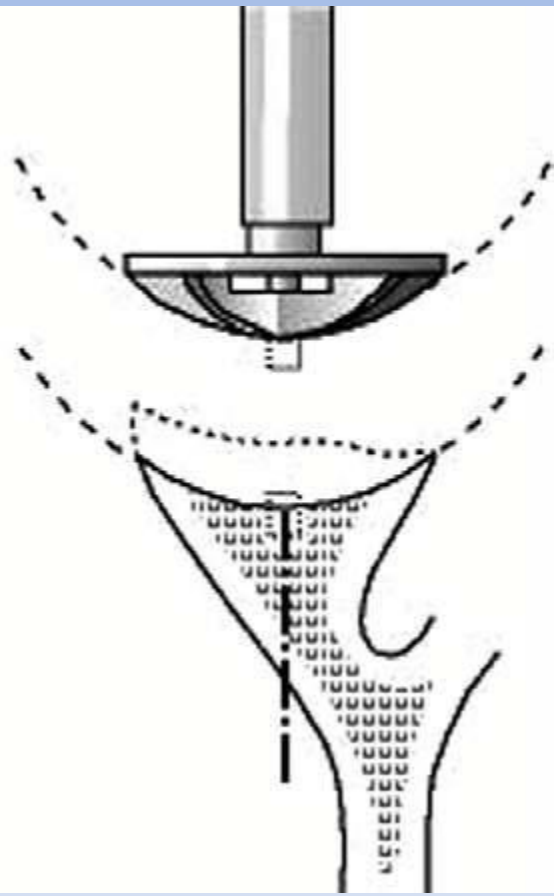
Ream and run



Ream and run

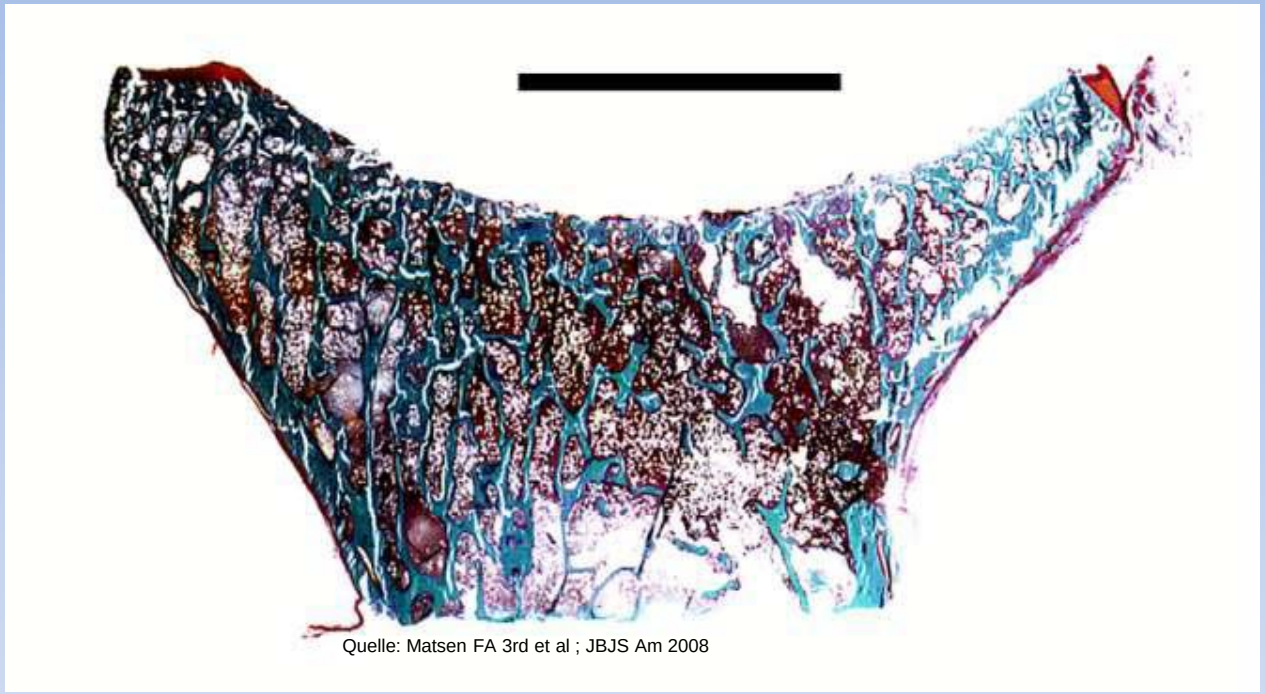






Quelle: Matsen FA 3rd et al ; JSES 2007 (5 Suppl)

Ream and run



Quelle: Matsen FA 3rd et al ; JBJS Am 2008

Glenoid concavity reamed to a diameter 2 mm larger than that of the humeral head.

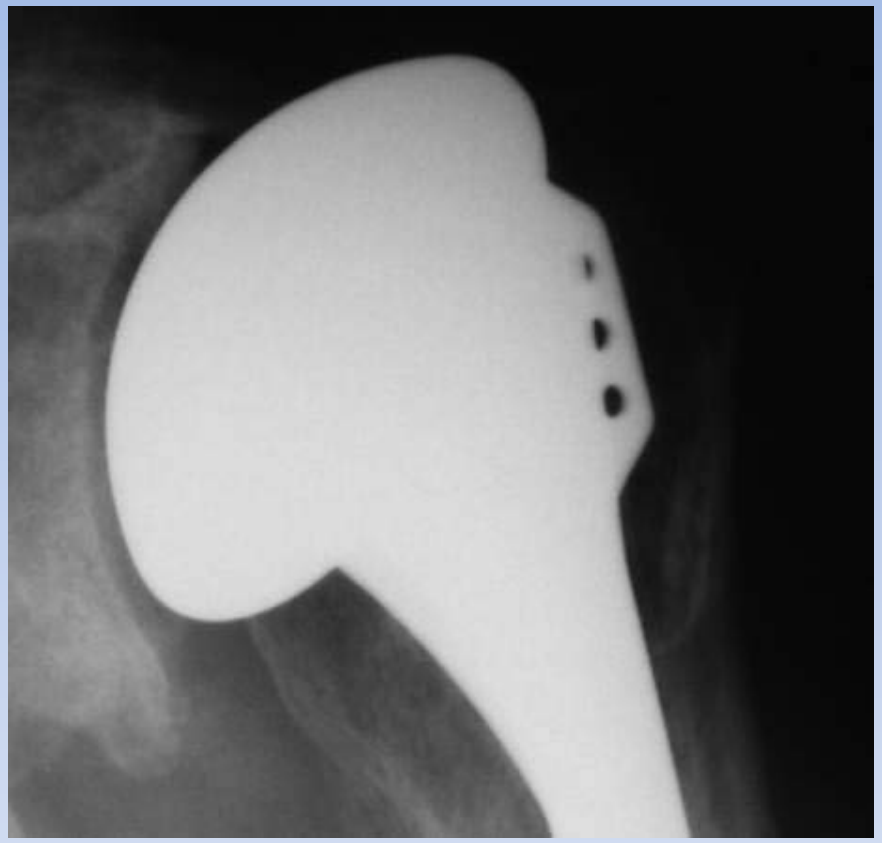
Glenoid component failure in total shoulder arthroplasty.
Matsen FA 3rd, Clinton J, Lynch J, Bertelsen A, Richardson ML.
J Bone Joint Surg Am. 2008 Apr;90(4):885-96.

Ream and run

Ein Jahr nach ream-and-run Operation:
The centering of the humeral prosthesis in the glenoid, the elimination of the biconcavity, and the radiographic space between the humeral prosthesis and the glenoid bone should be noted.

Quelle: Matsen FA 3rd et al ; JSES 2007 (5 Suppl)

Ream and run

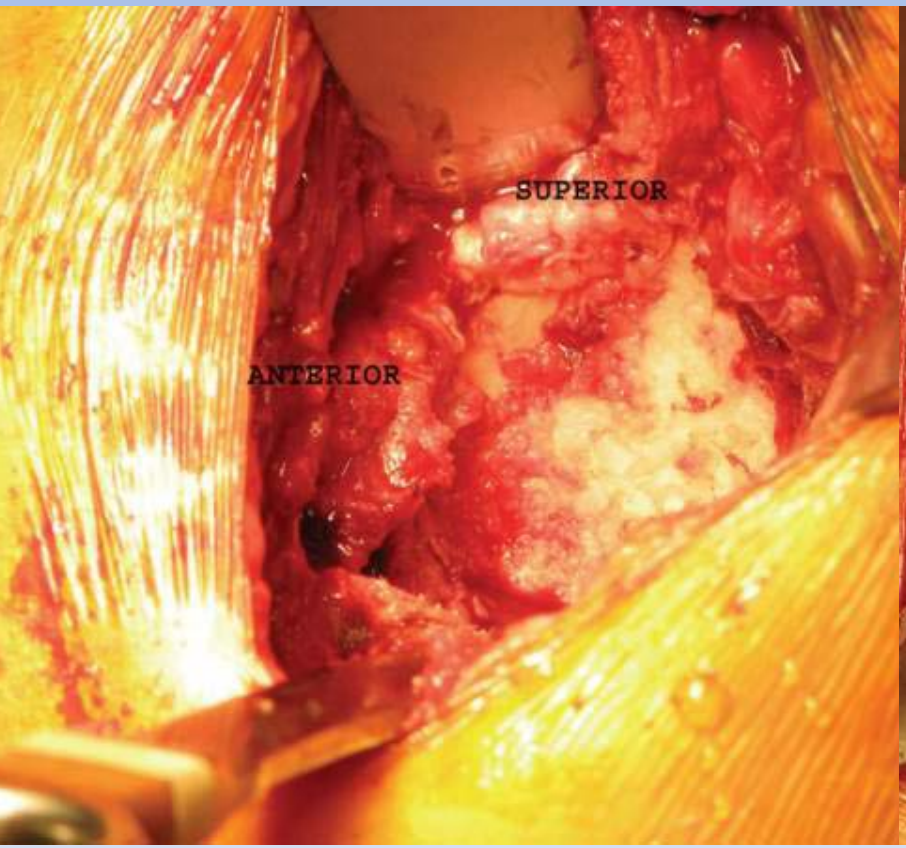


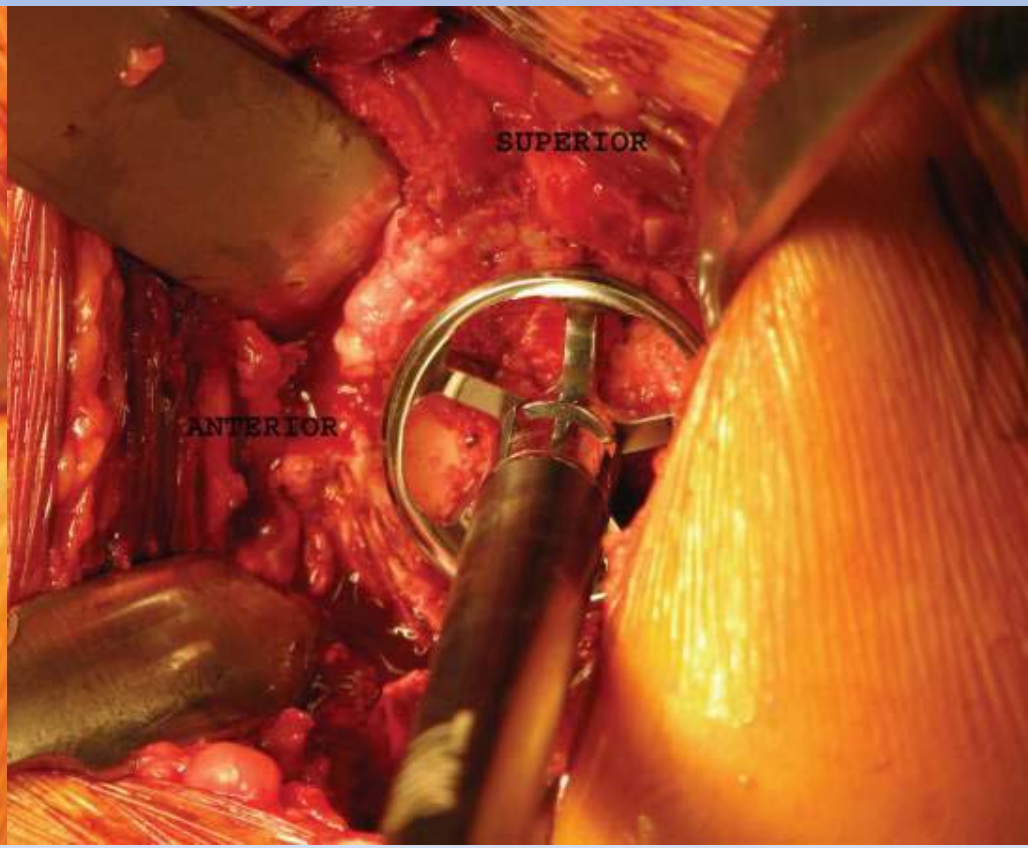
Anteroposterior radiograph suggesting soft-tissue formation between the humeral prosthesis and the glenoid bone 1 year after a ream-and-run procedure.

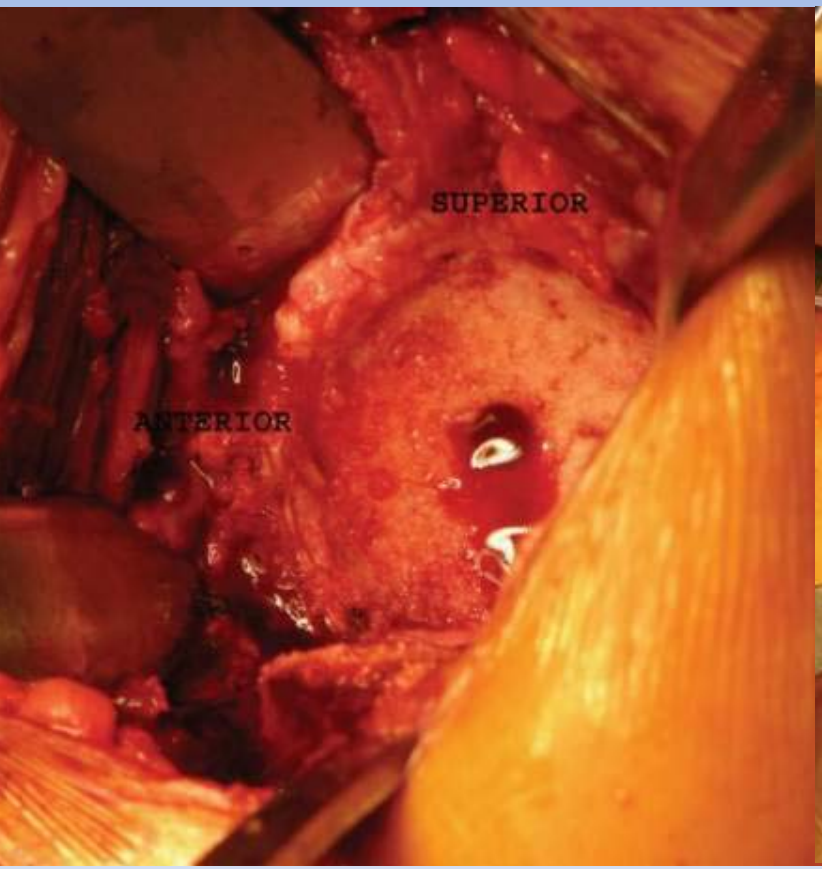
Quelle: Matsen FA 3rd et al ; JSES 2007 (5 Suppl)

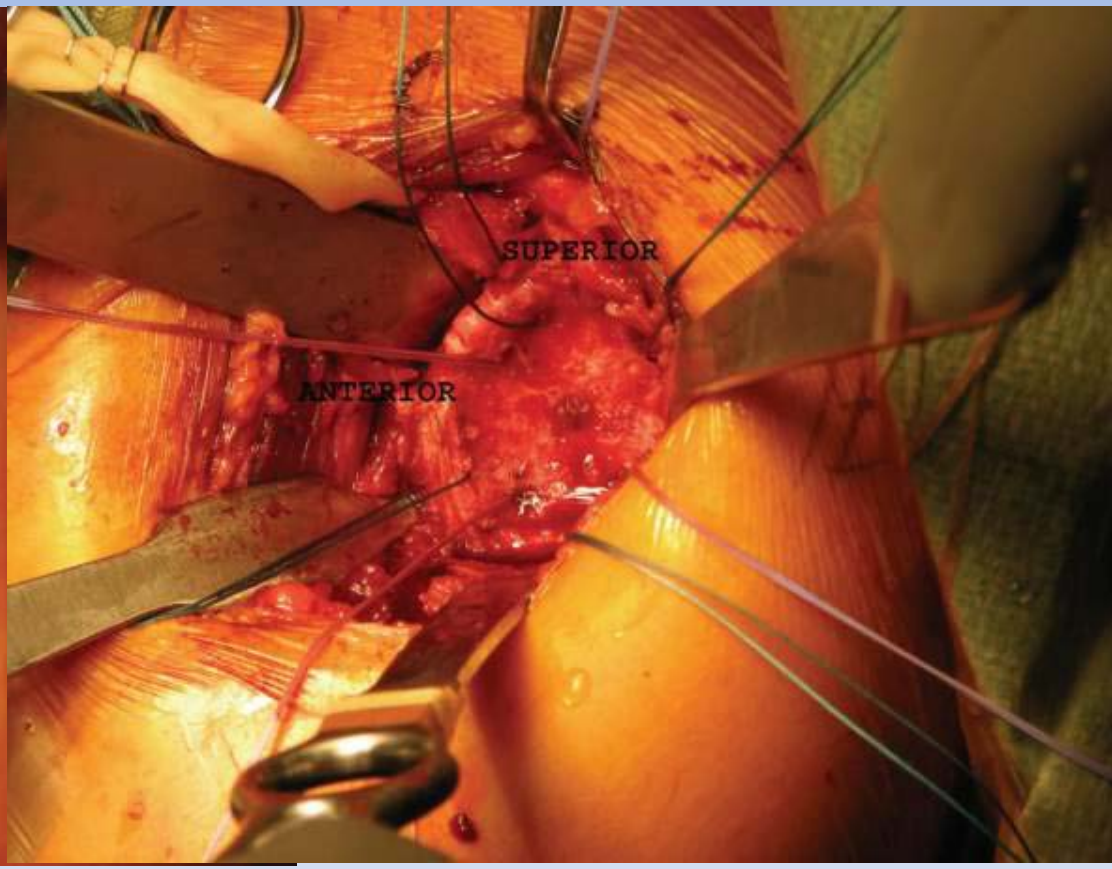
Meniskusallograft, Achillestendon

(Burkhead 1986)






SUPERIOR
ANTERIOR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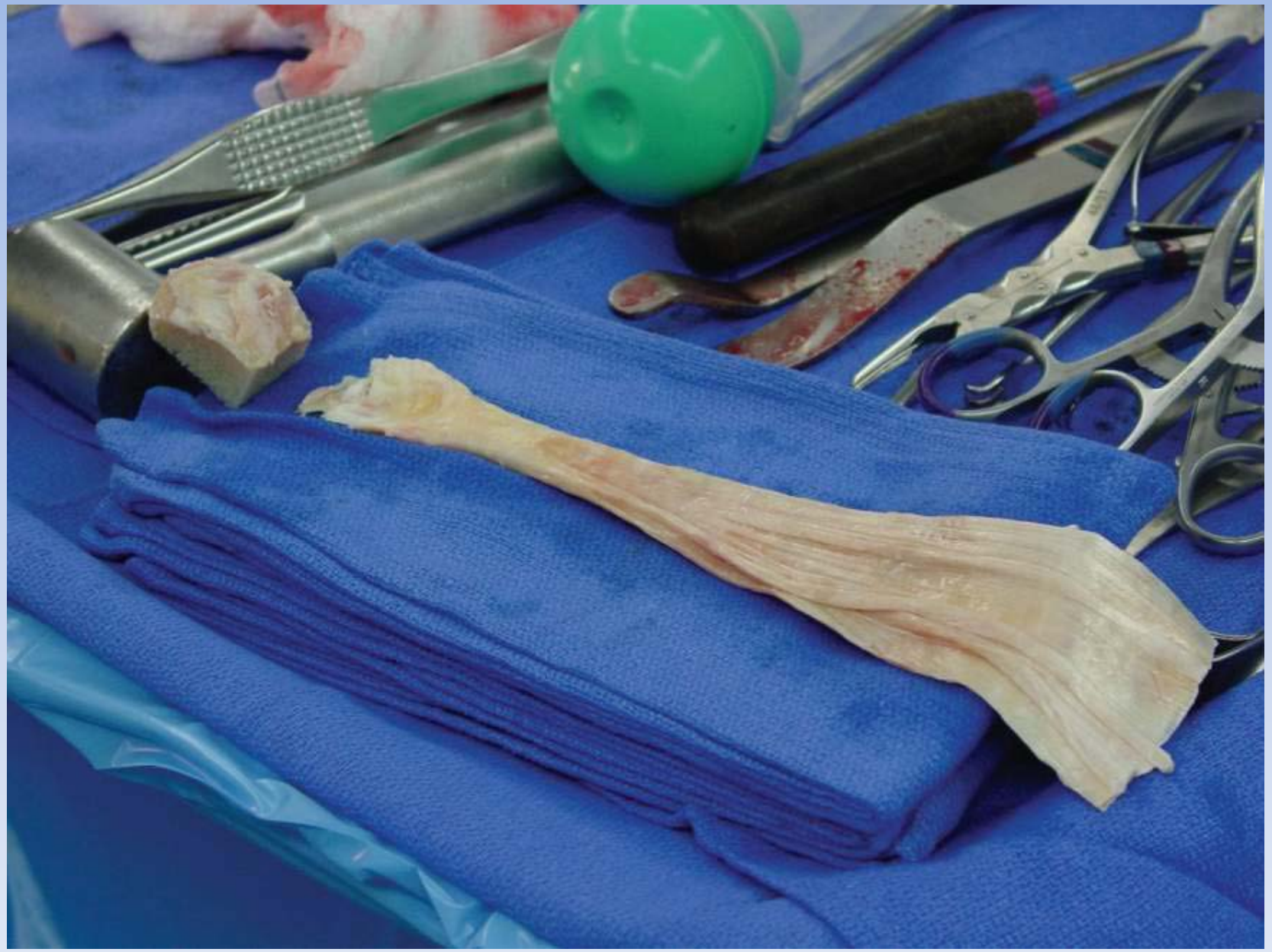
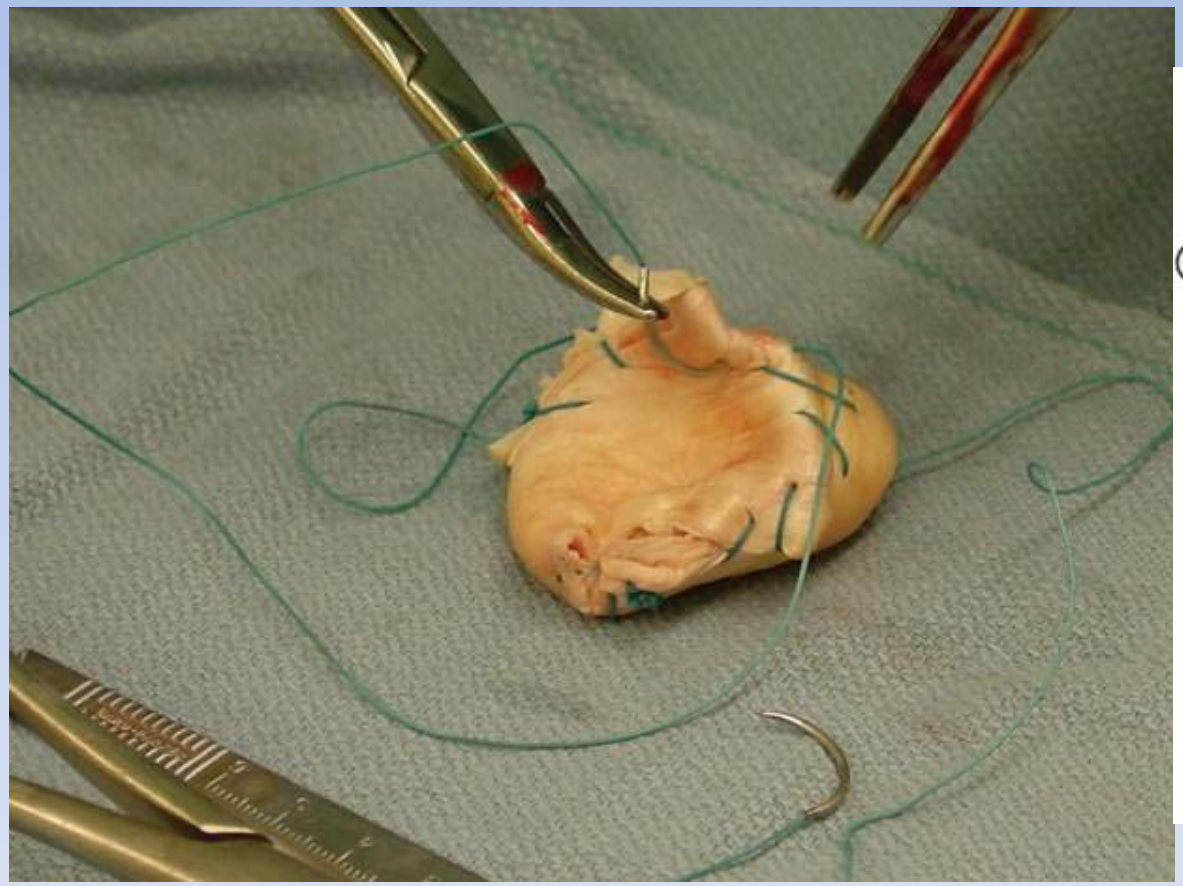
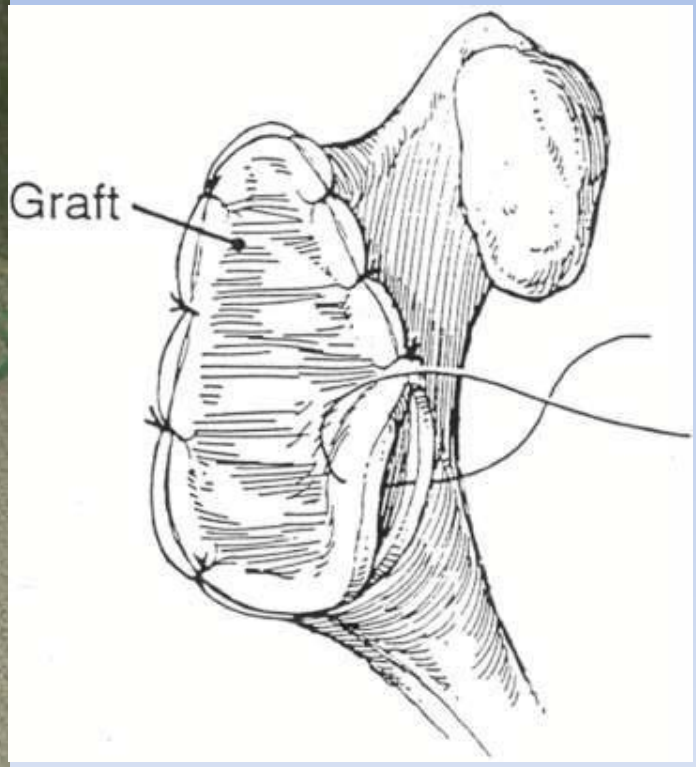
ANTERIOR



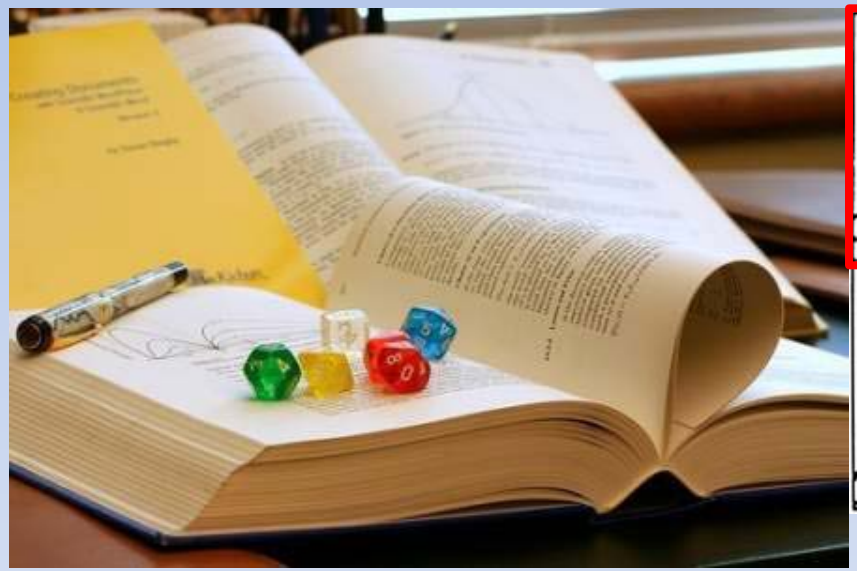


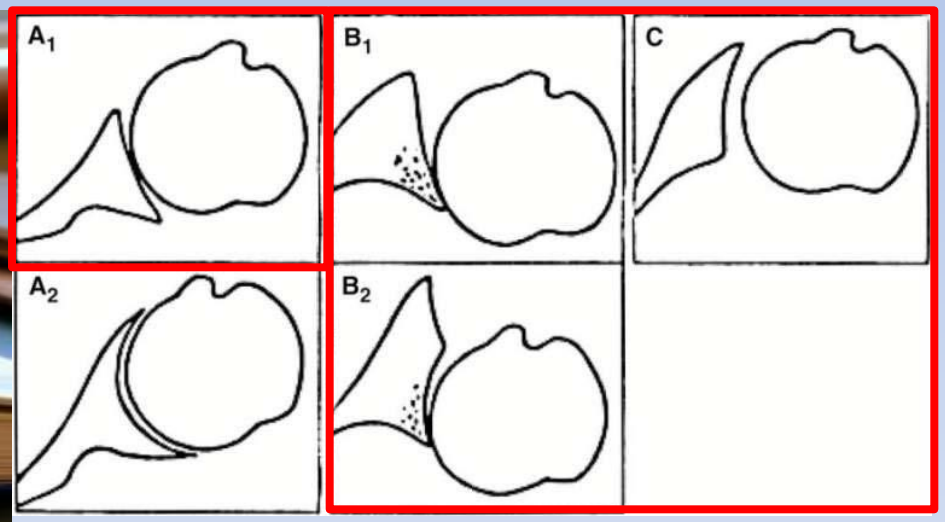

Graft

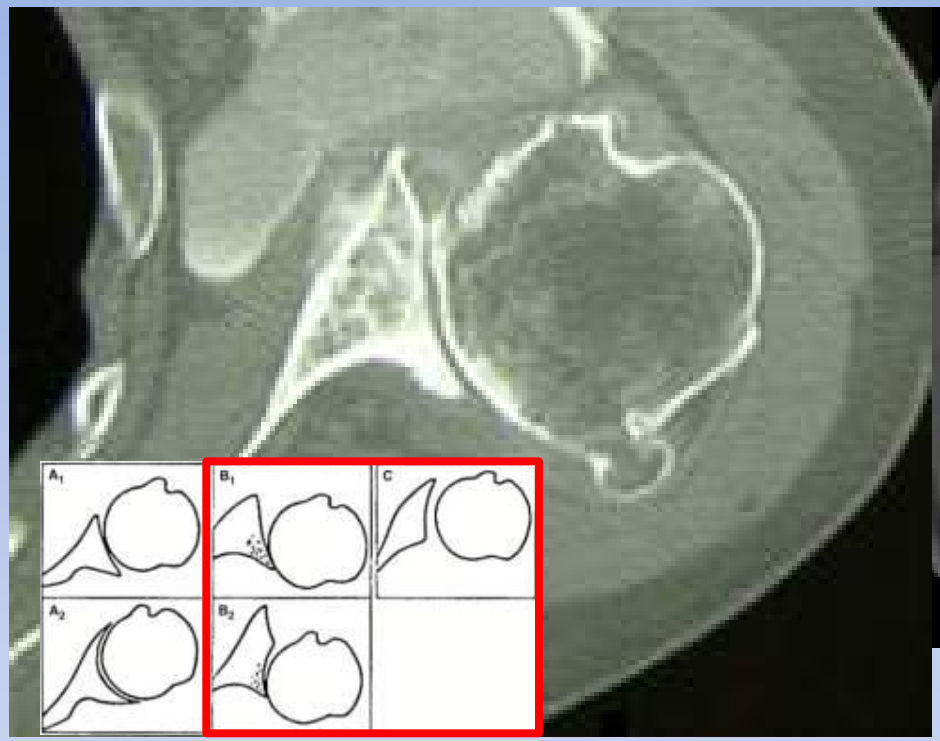

SUPERIOR
ANTERIOR

Achillestendonallograft

Indikation zur Implantation einer Glenoidkomponente







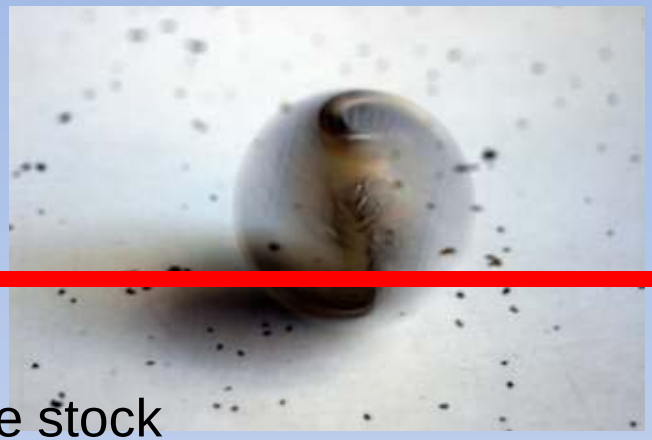
~~Nichts tun~~

Ream and run (Matsen)

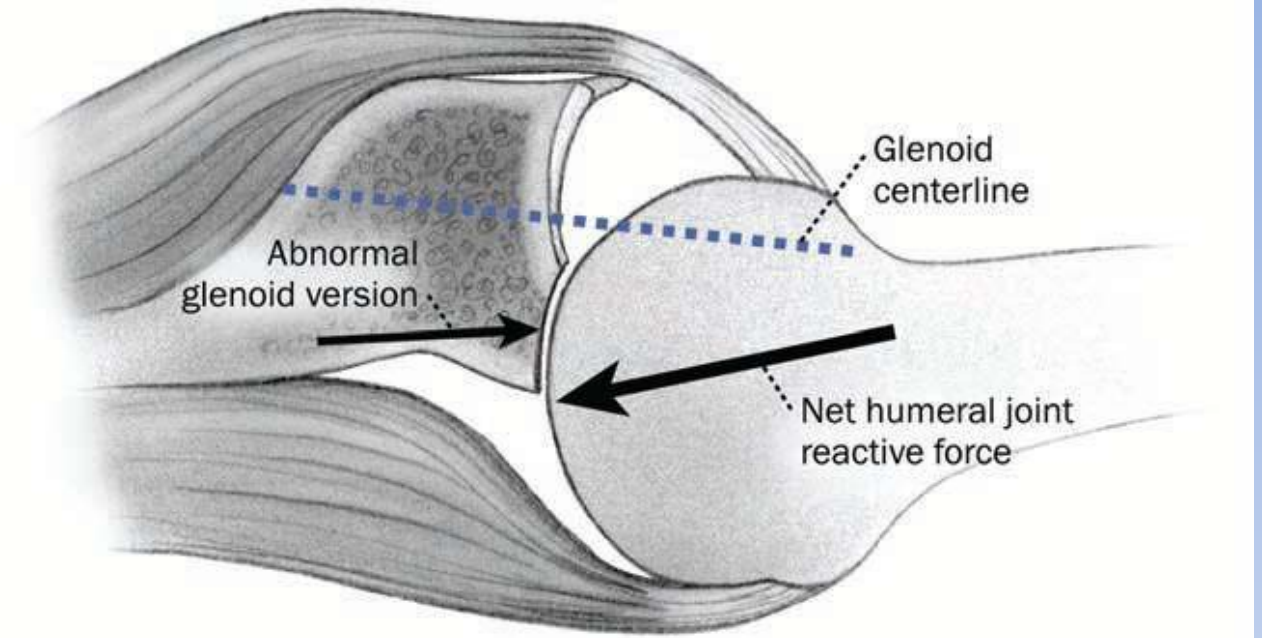
PE Glenoid zementiert oder

Metal back Glenoid zementfrei

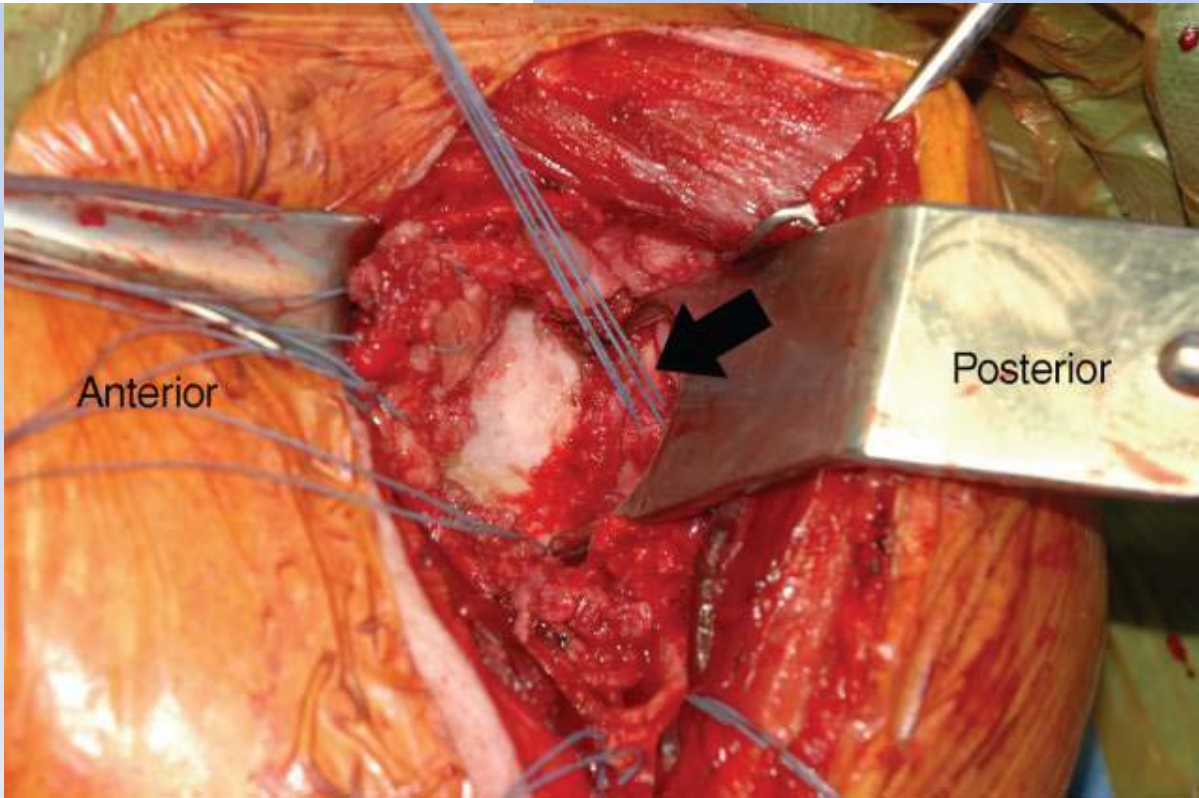
Totalendoprothese



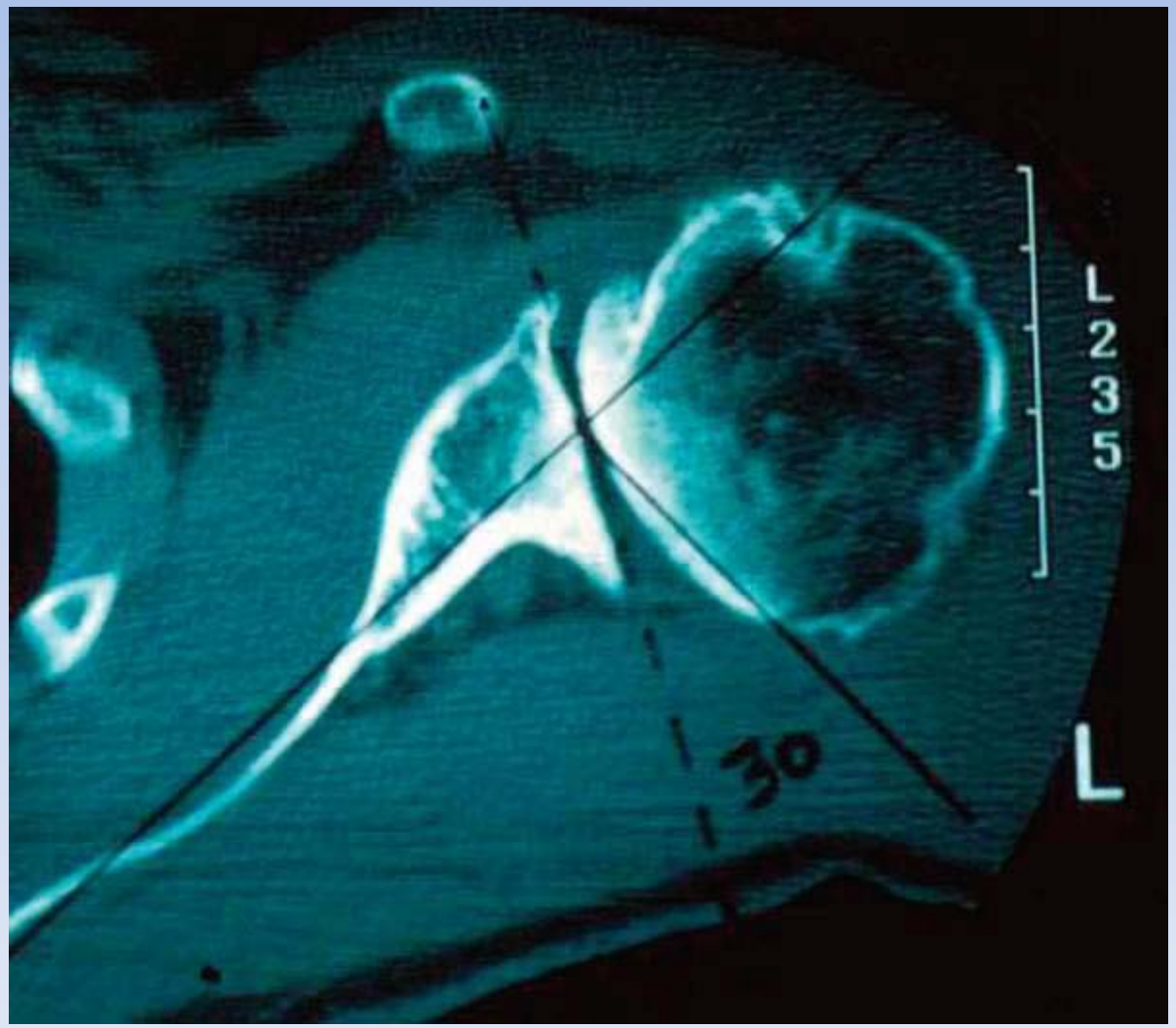
- guter bone stock
- intakte Rotatorenmanschette
- bei B1, B2 mit Retroversion <15 und C
- älterer Patient



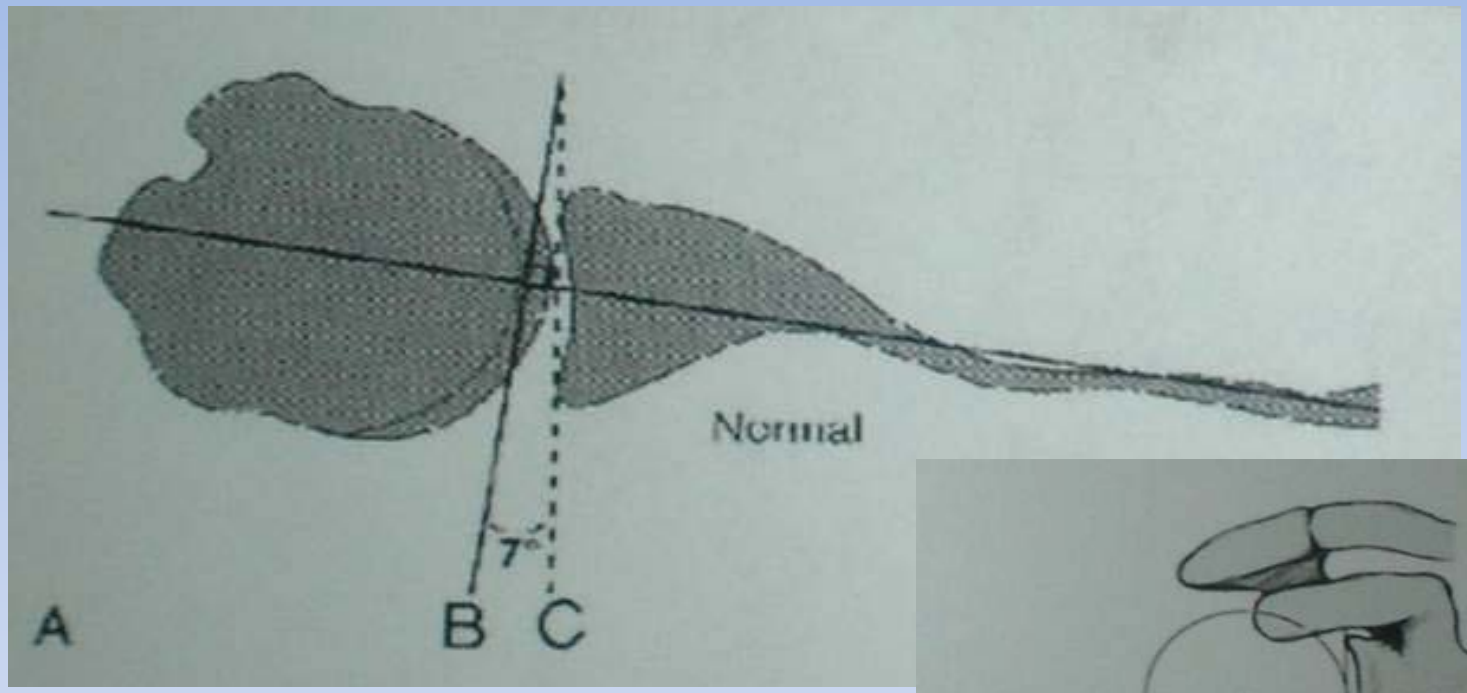
Intraoperative Messungen sind schwierig oder unmöglich

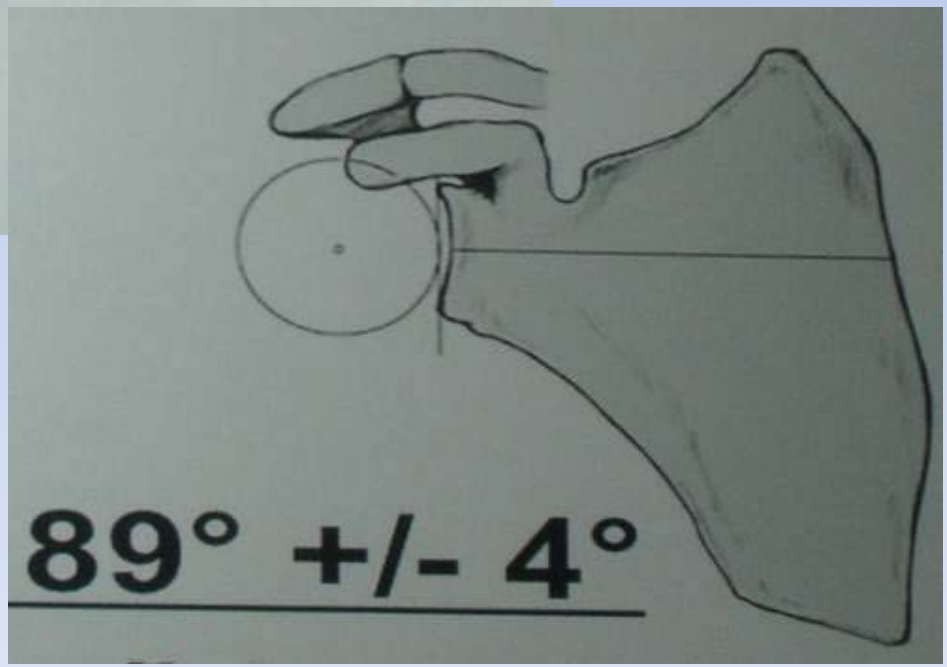


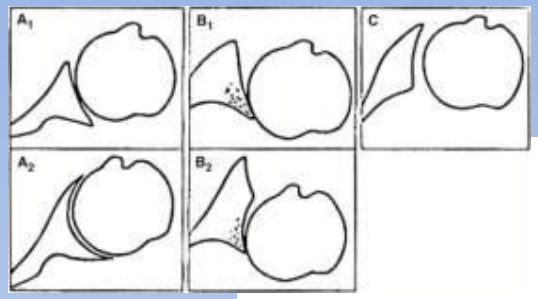
Präoperatives CT der Schulter:
bone stock, zysten und Osteophyten
Glenoidneigung und Muskelqualität

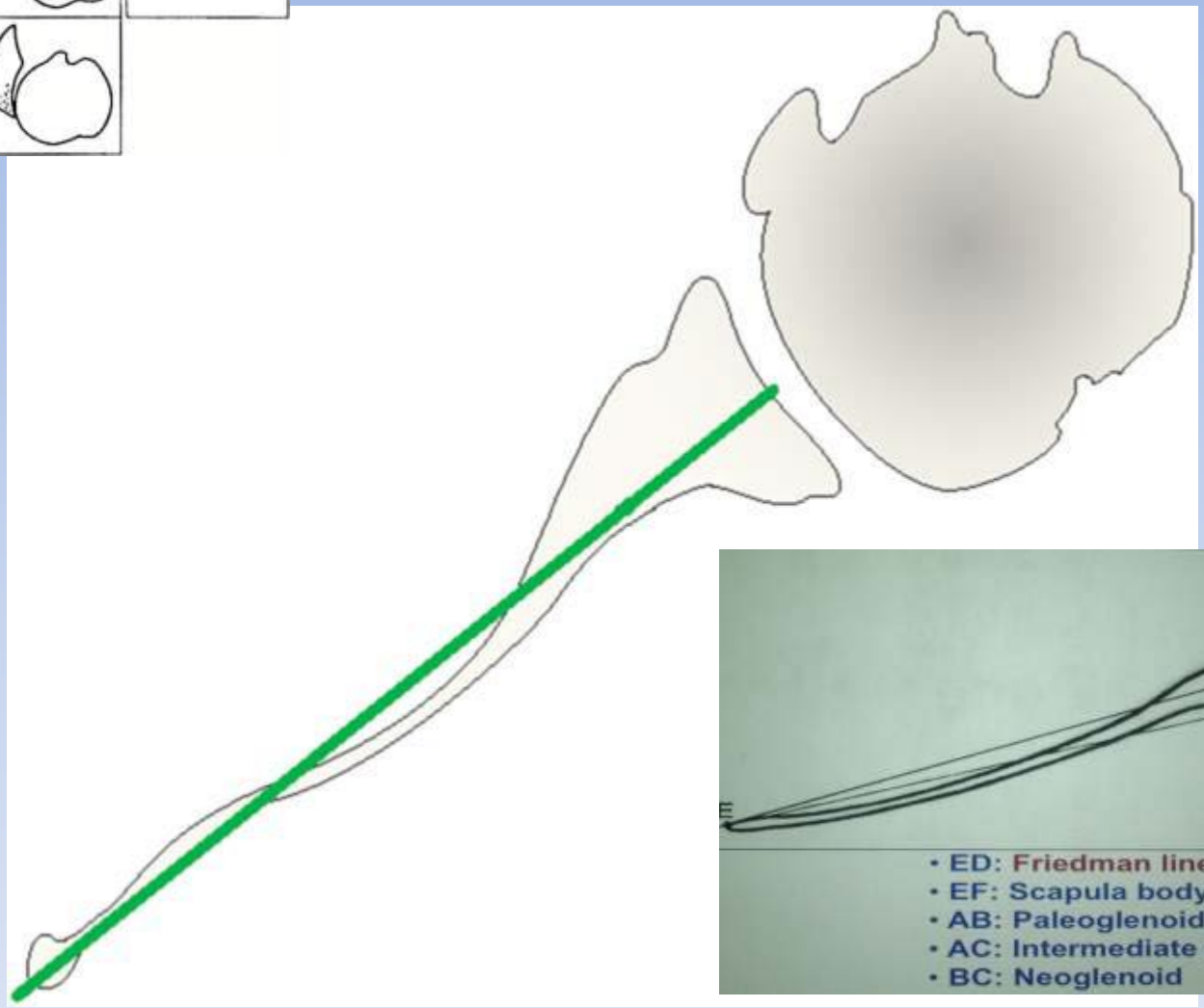


Normalbefunde

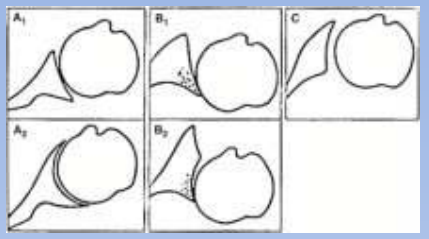


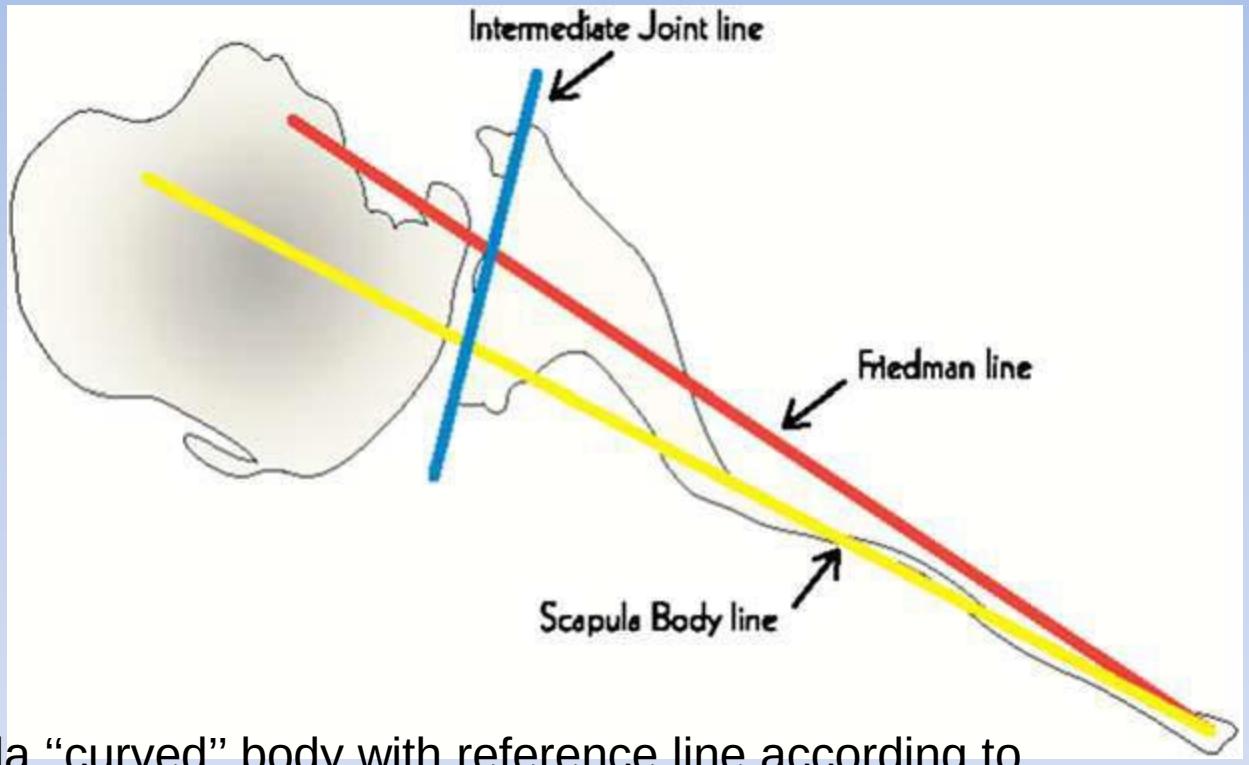






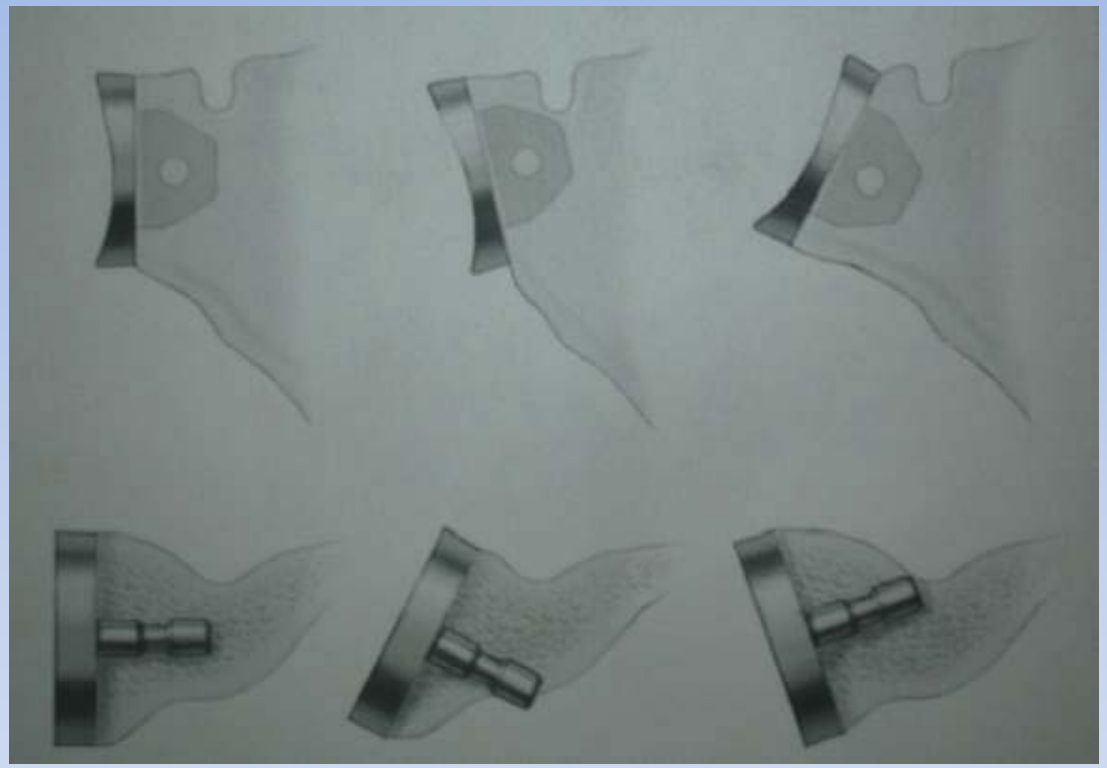
Scapula ‘‘straight’’ body with reference line according to the scapula body method and the Friedman method.





Scapula ‘‘curved’’ body with reference line according to the Friedman method (red) and the scapula body method (yellow).

Was passiert wenn die Glenoidversion nicht korrigiert wird?

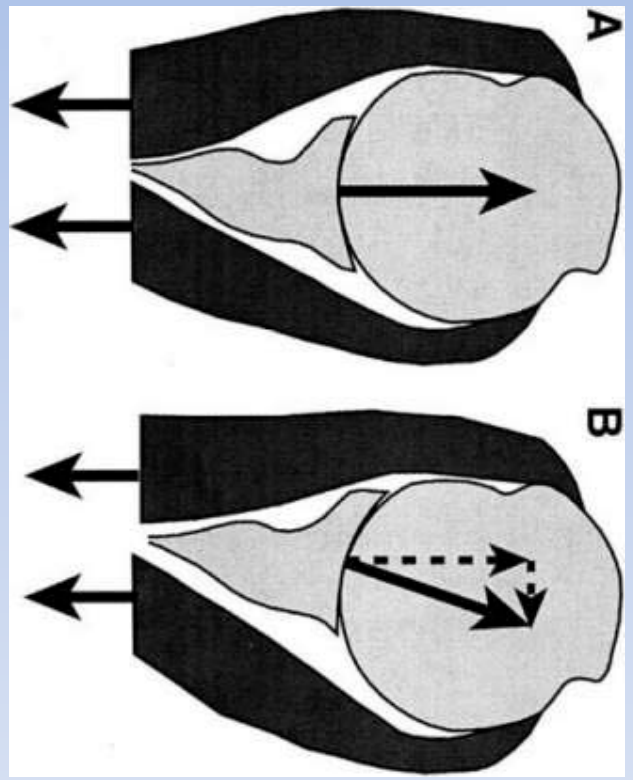


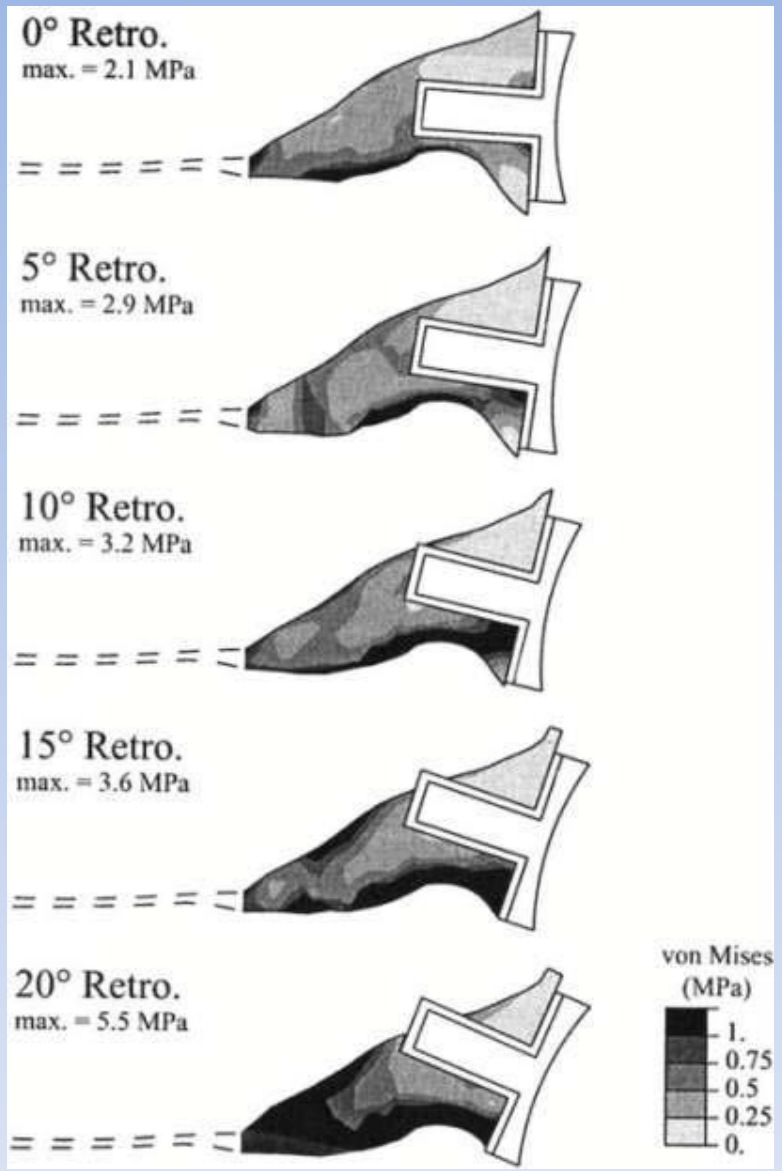
Die Orientierung der Glenoidkomponenten hat Einfluß auf die
-joint reaktion forces
- den Stress im Zementmantel

Shapiro JSES 2007

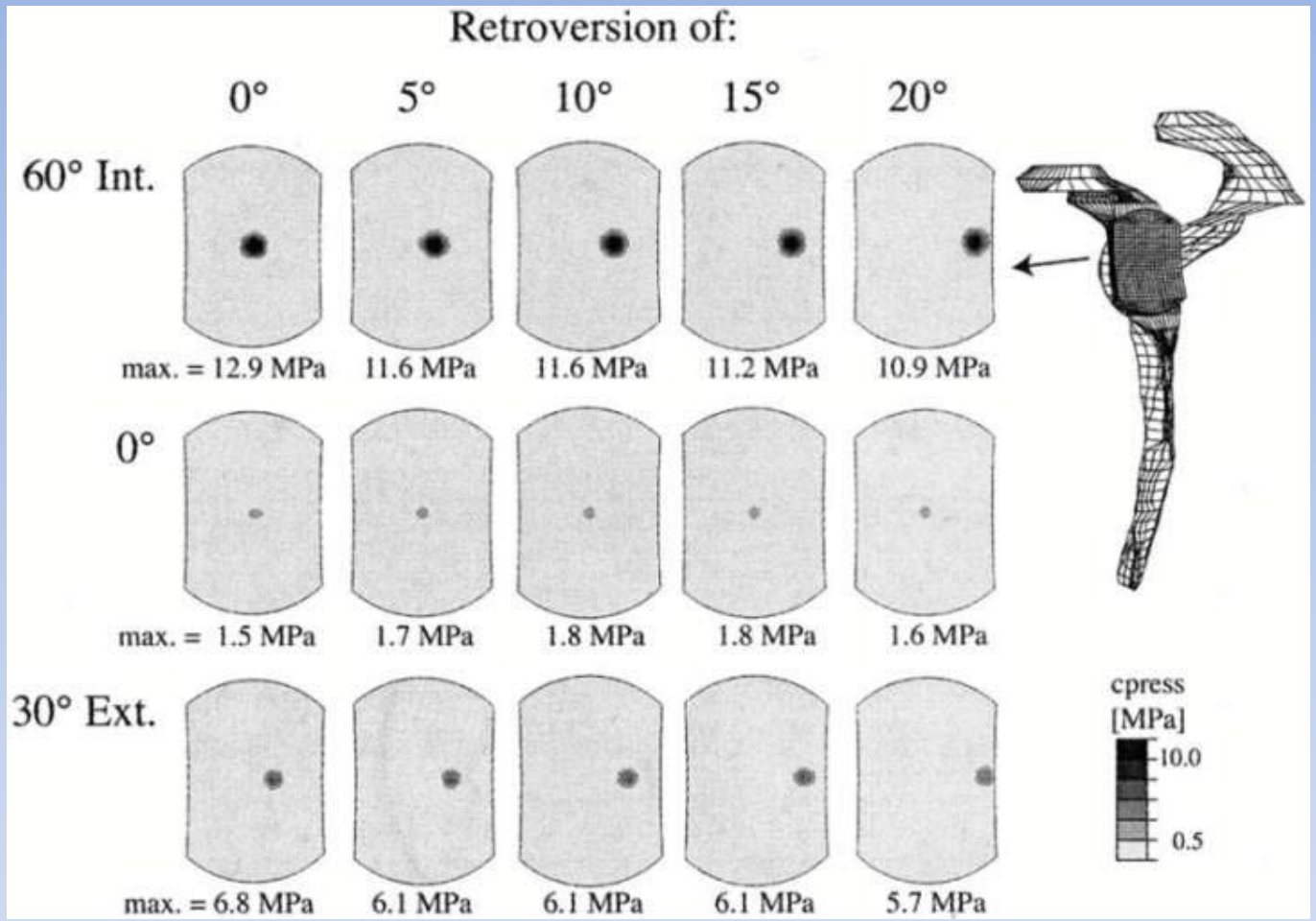
Die Glenoidbelastung erhöht sich bei 20 Retroversion um >300%

Farron et al JSES 2006





Ergebnis: früher PE Abrieb und Glenoidlockerung

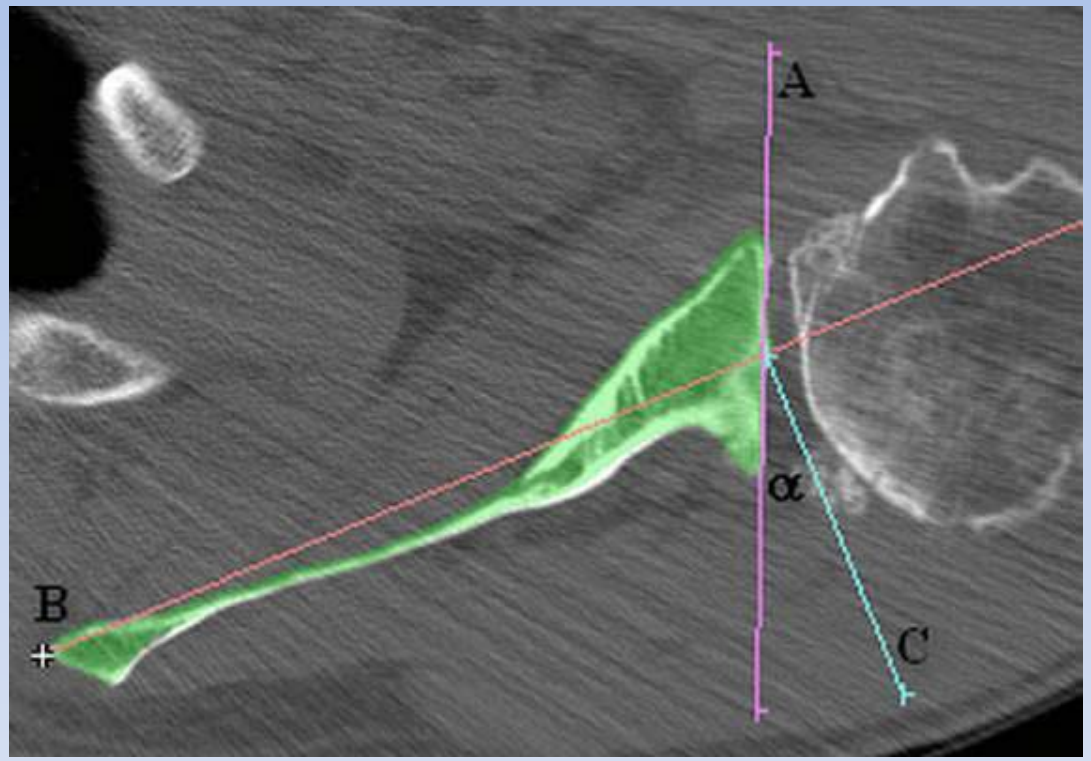


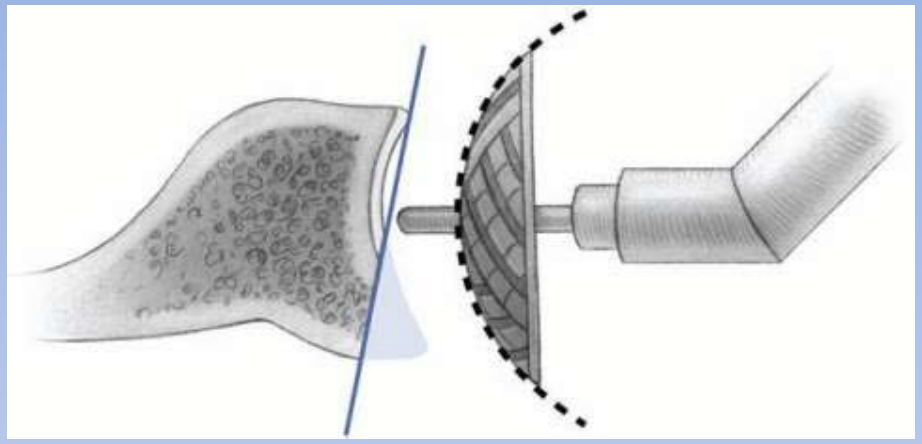
Contact pressures of the humeral head on the glenoid surface at 60° of internal rotation *(top), 0° (middle), and 30° of external (bottom) rotation for the 5 angles of glenoid retroversion.*

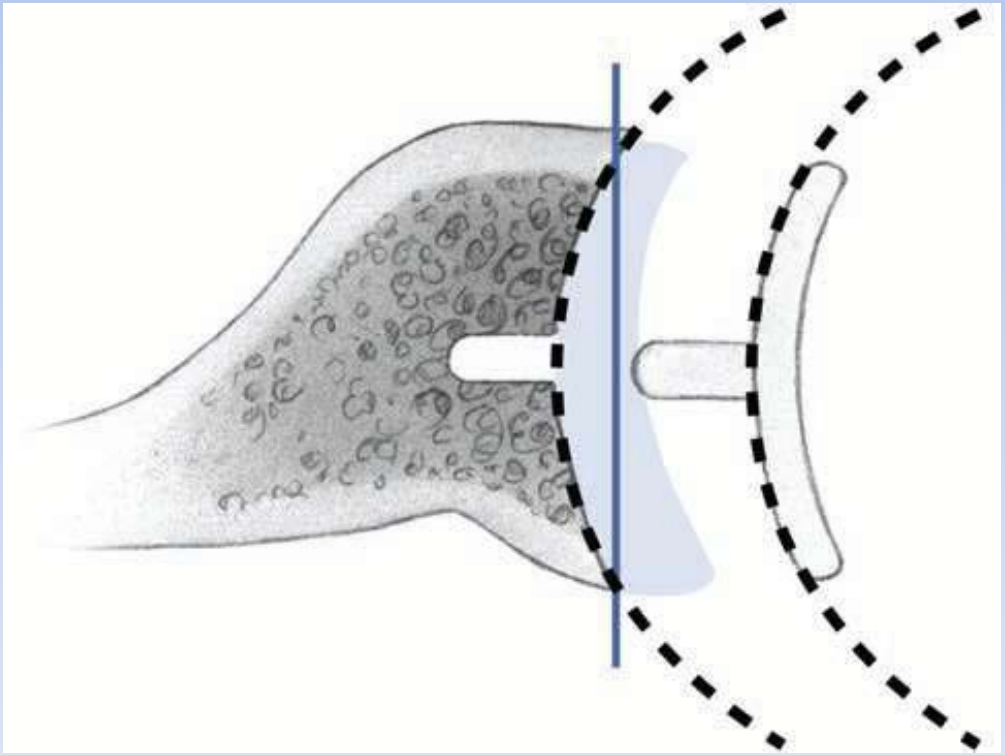
Farron et al JSES 2006

Klinisch besteht eine Korrelation zwischen präop Glenoidretroversion und verminderten funktionellen Resultaten (p<0.018)

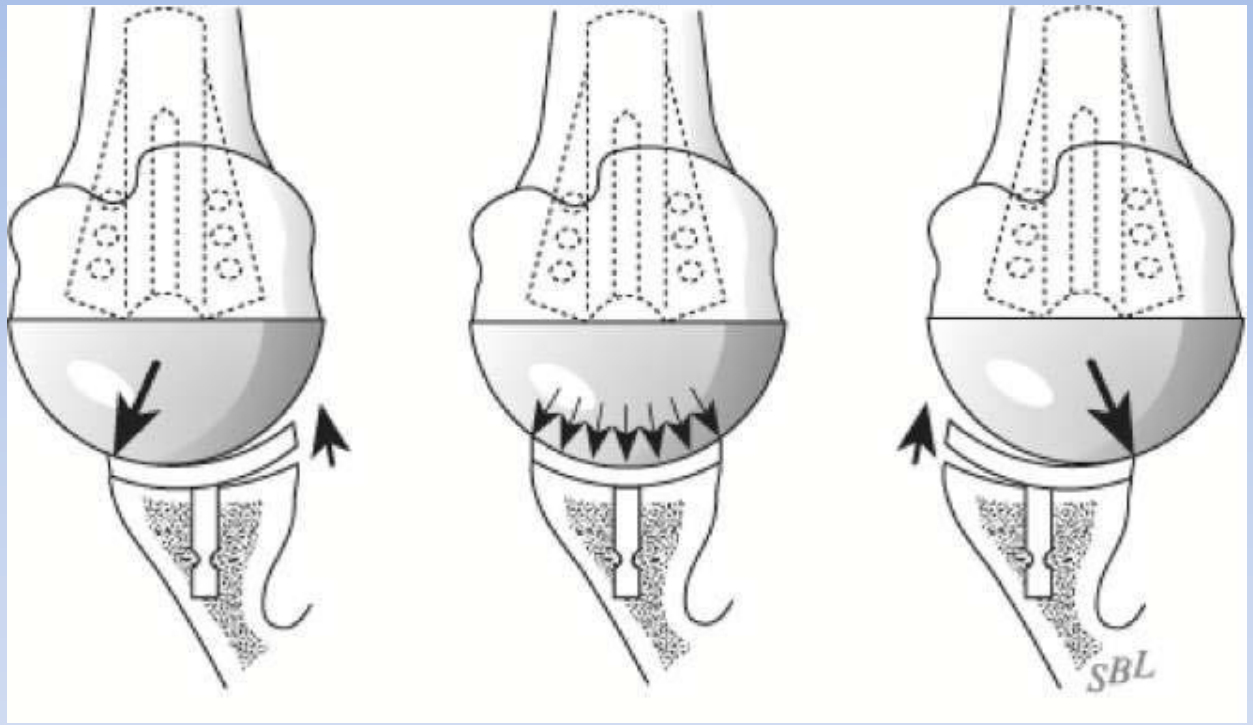
Yian et al JBJS 2005

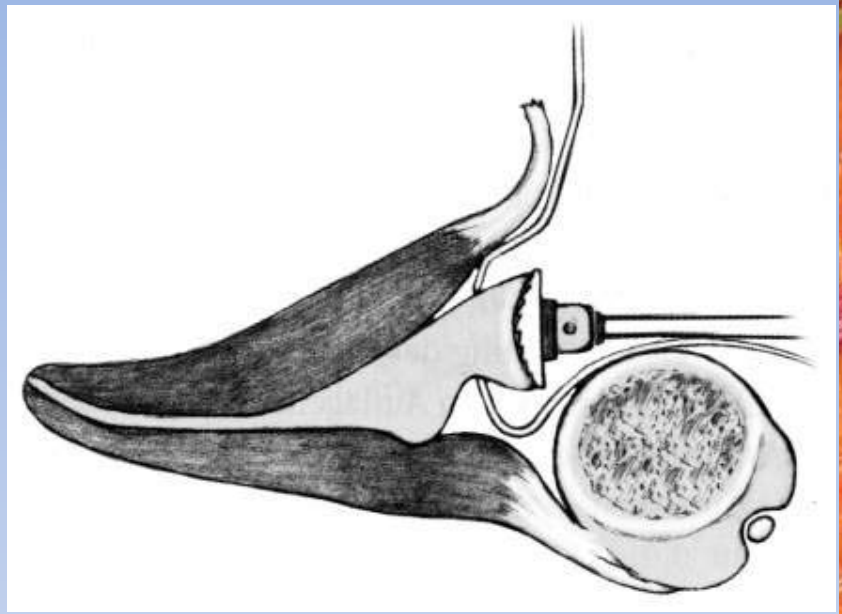


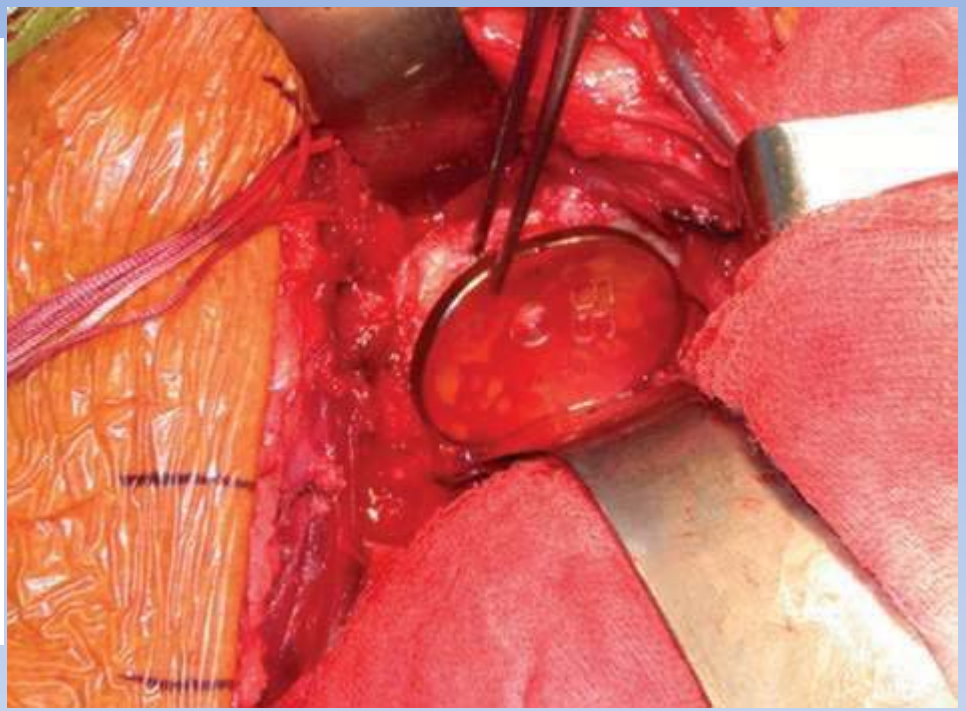




Ein guter Sitz des Glenoids im Knochen ist wichtig um das rocking horse phenomen zu vermeiden







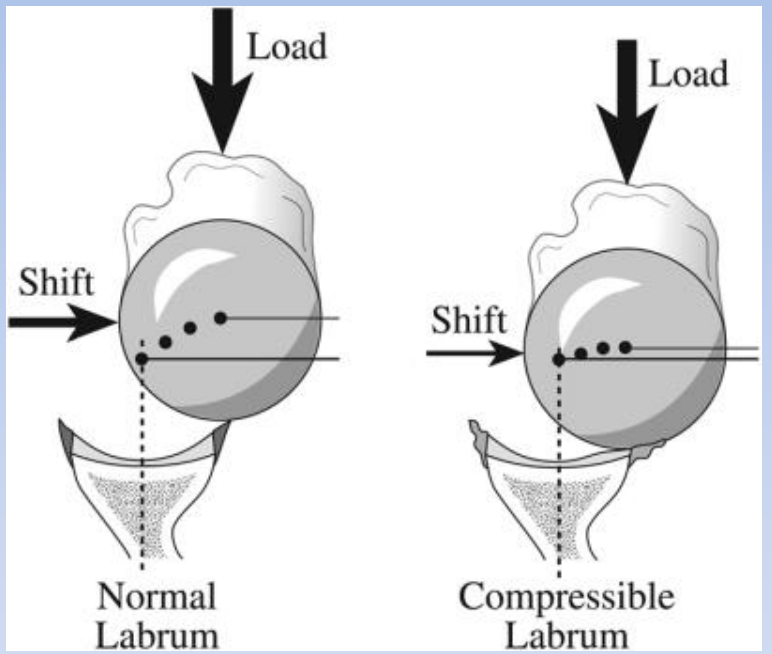

56
52

Zementmantel sollte 0,6 mm dick sein

Photograph of cementless fluted pegged glenoid(Anchor Peg Glenoid; DePuy).

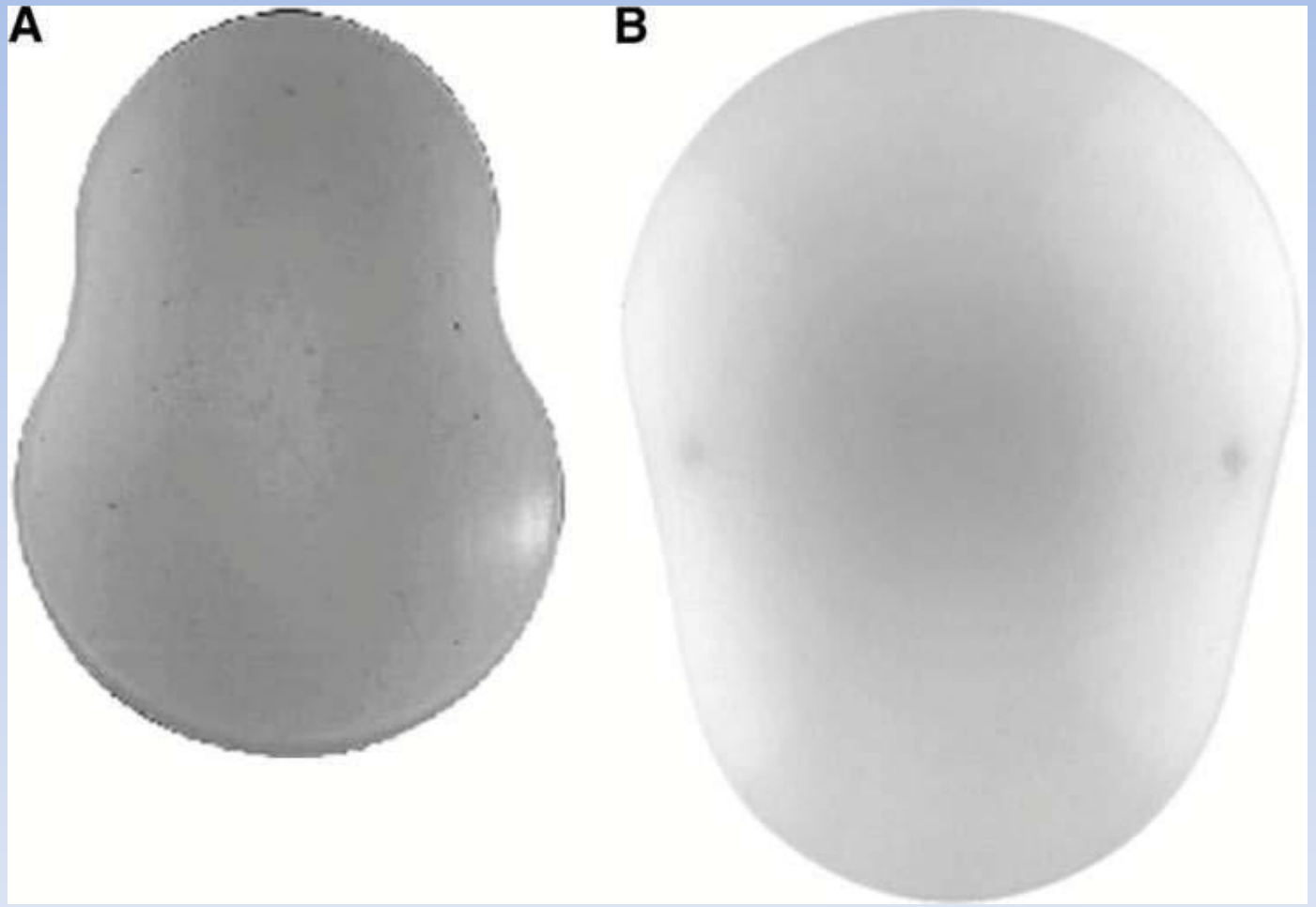
Ein radial mismatch von 6 bis 10mm ist anzustreben

(Walch et al JBJS-A 2002)



Kleine Glenoidkomponenten sind besser als große

(Hertel et al J Arthroplastie 2003)

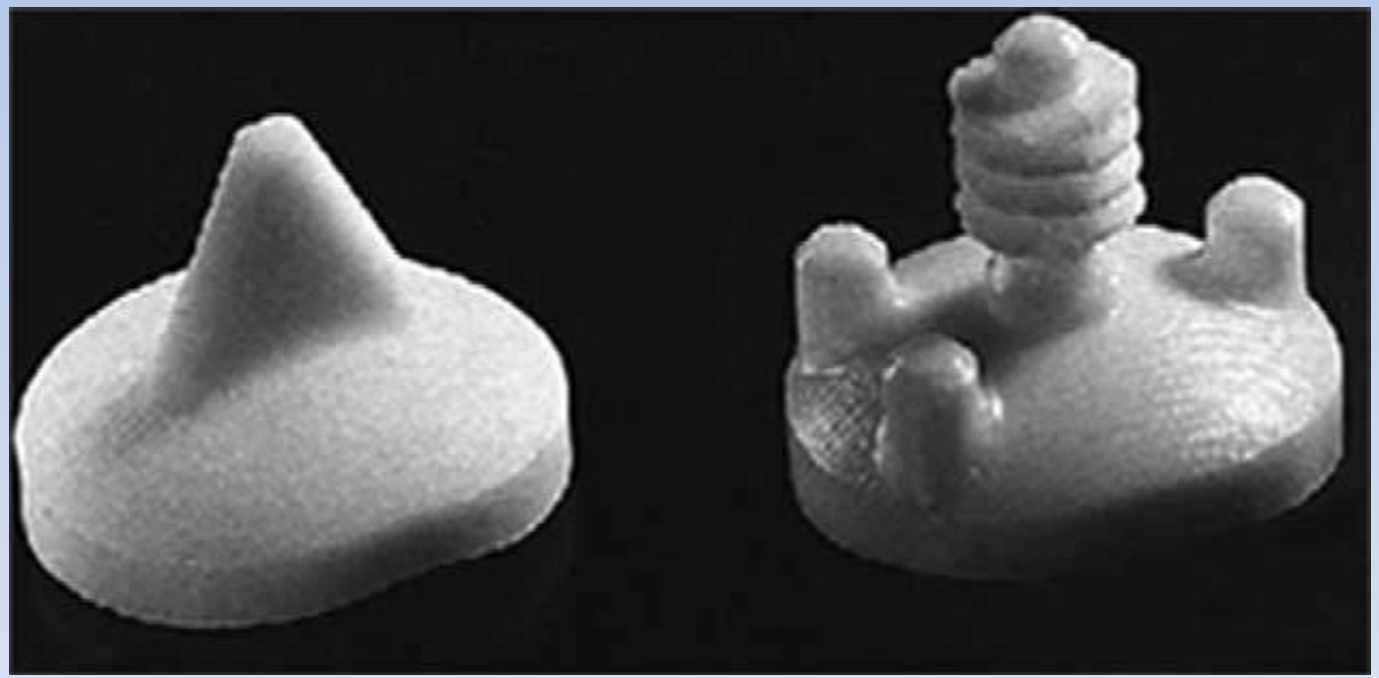


pegs besser als Keel?

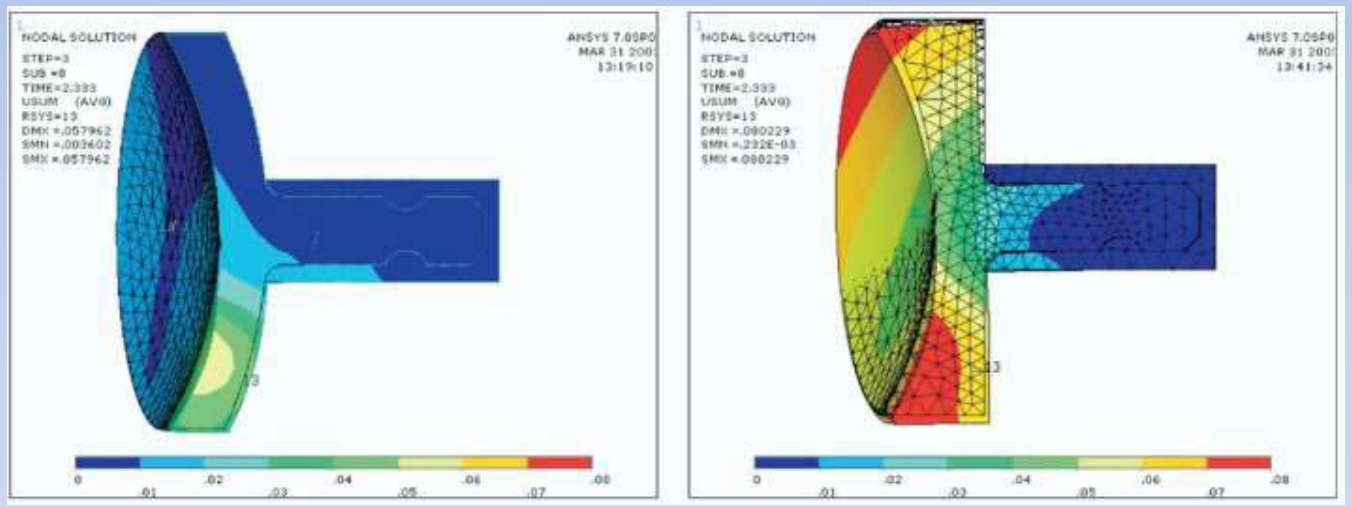
#########

pegged und keeled gleich im outcome

(Throckmorton et al JSES 2010)



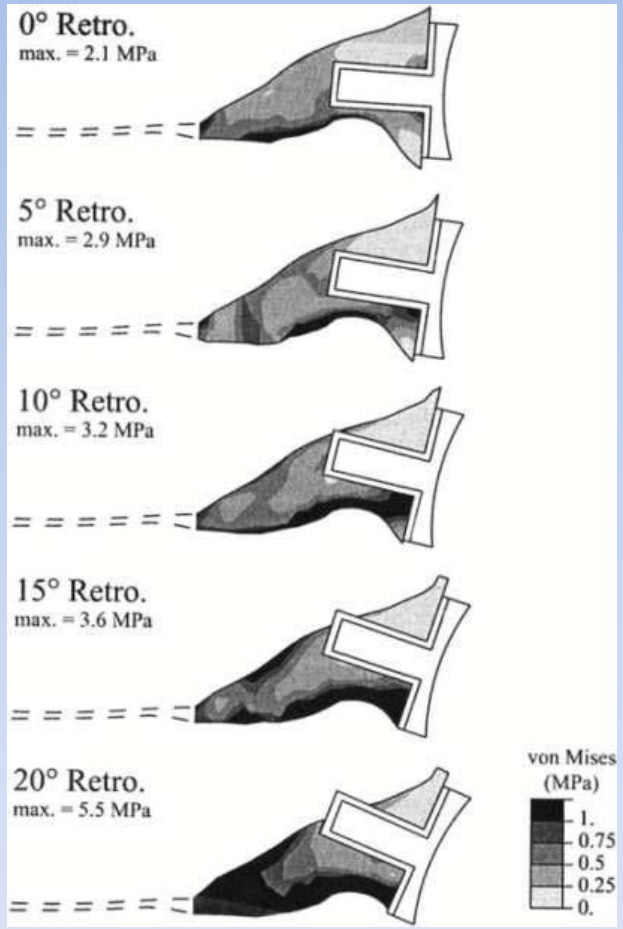
gekrümmte Rückseite besser als flache
(Anglin et al Clin Biomech 2001)



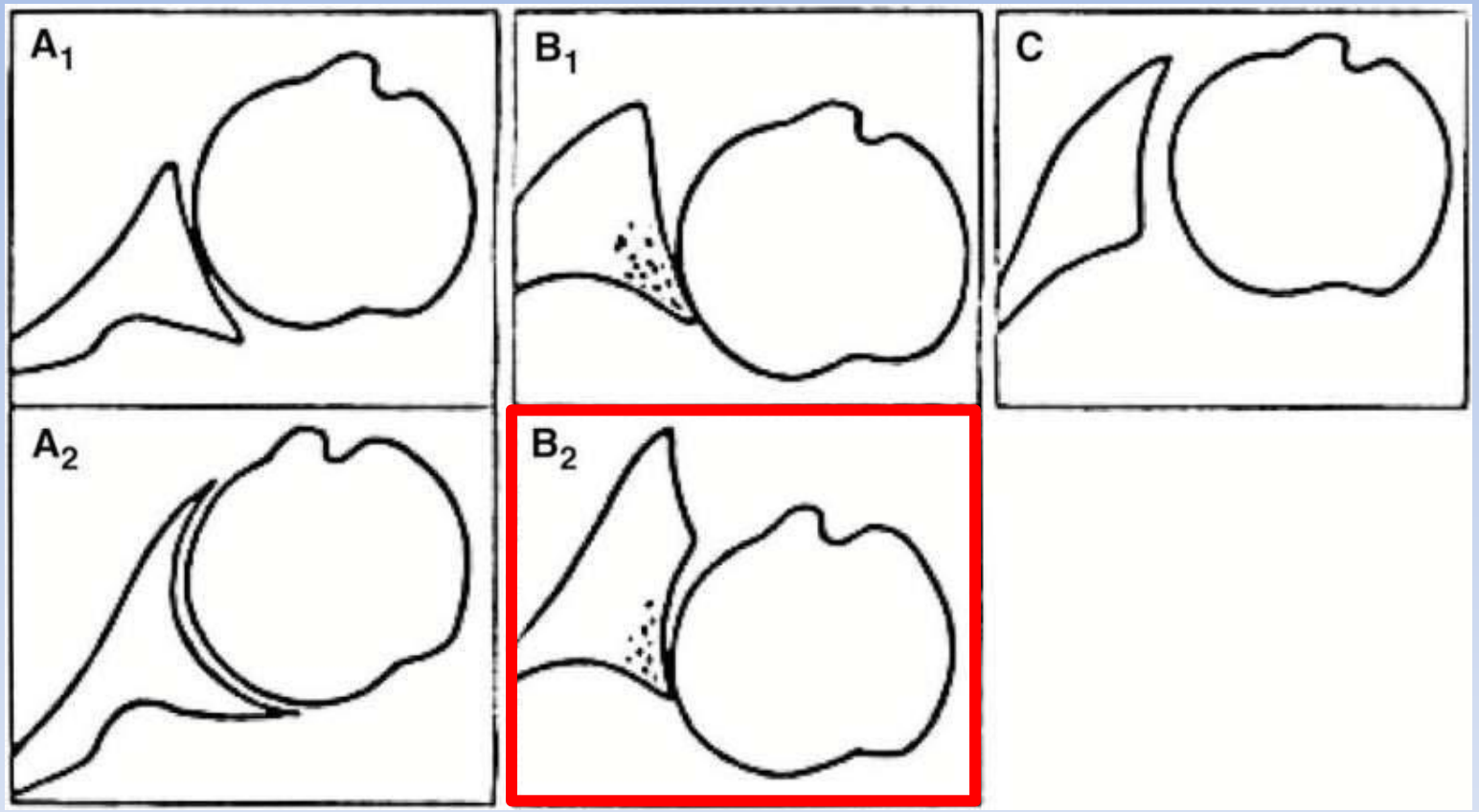
Quelle: Iannotti et al *JSES 2005*

Quelle: Nicholas David Clement, et al

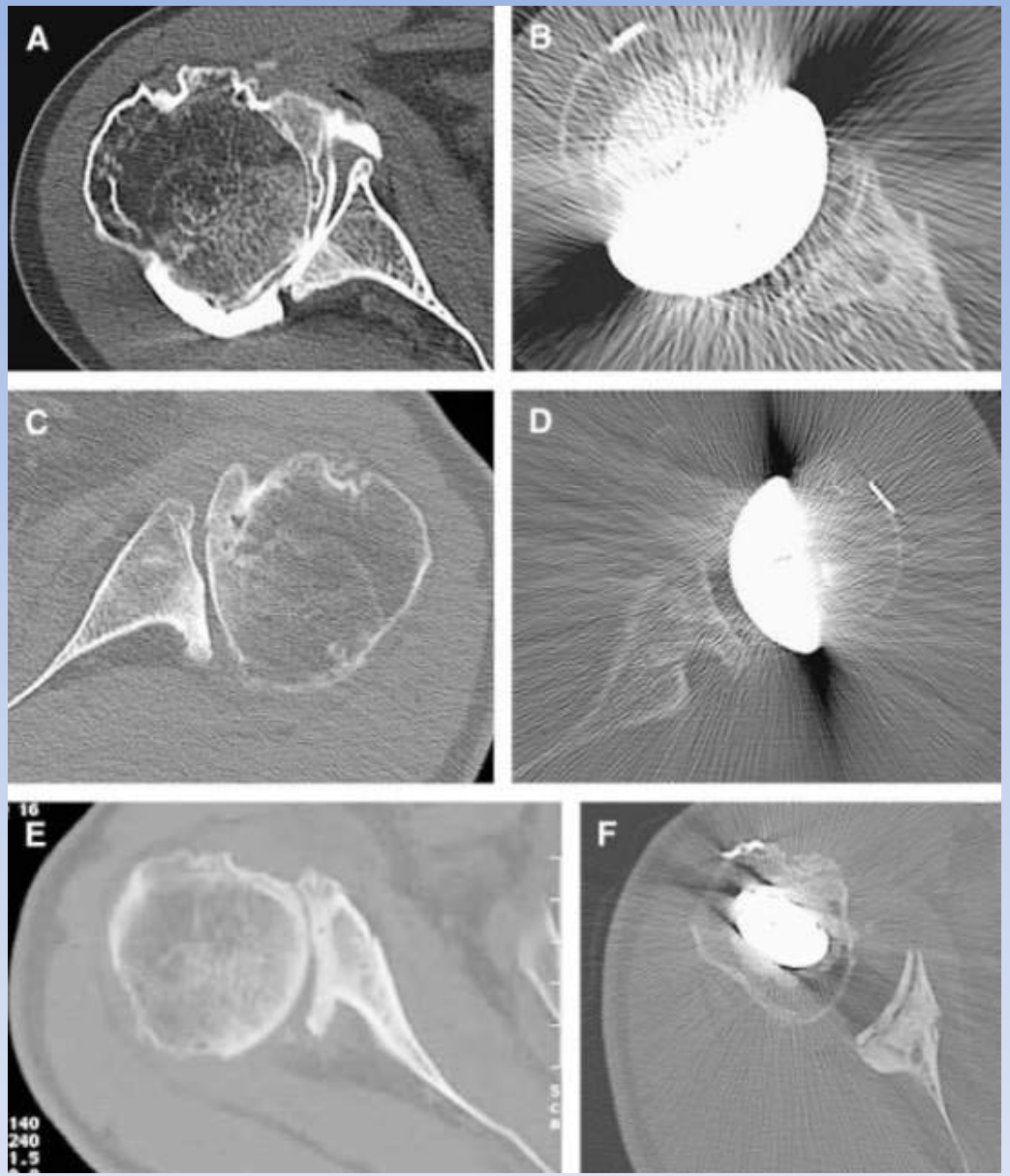
Das Einbringen des Glenoids ist technisch schwierig
gründliche Präparation und sorgfältige Positionierung
mehr Langzeitstudien mit Kontrollgruppen



Höhergradiges B2



Different glenoid erosion and morphology according to Walch



Quelle: Gerber JSES 2009

Totalprothese bei B2 Glenoid

1.anterior reaming

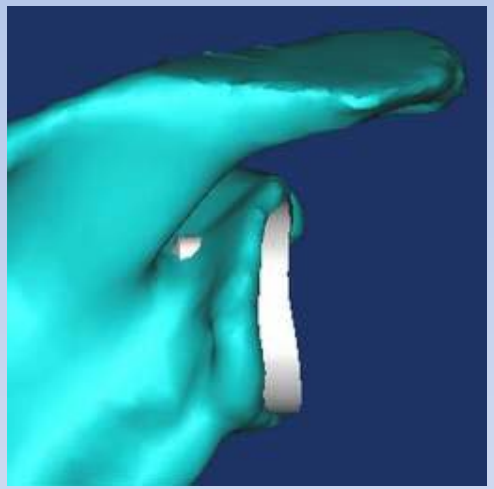
2. dorsales bone grafting

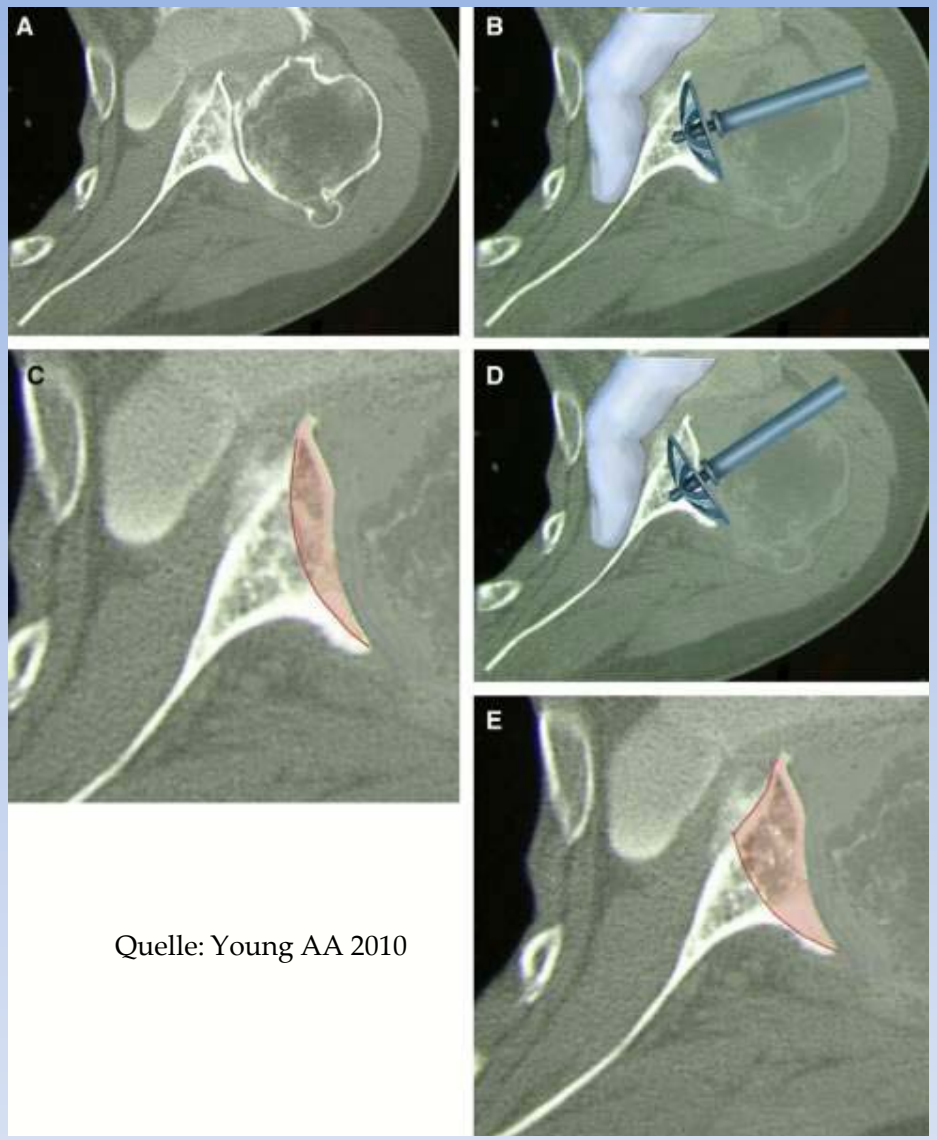
3. assymetrische Glenoidkomponente

4. Inverse Prothese

1) Anterior Reaming

Wieviel kann korrigiert werden?

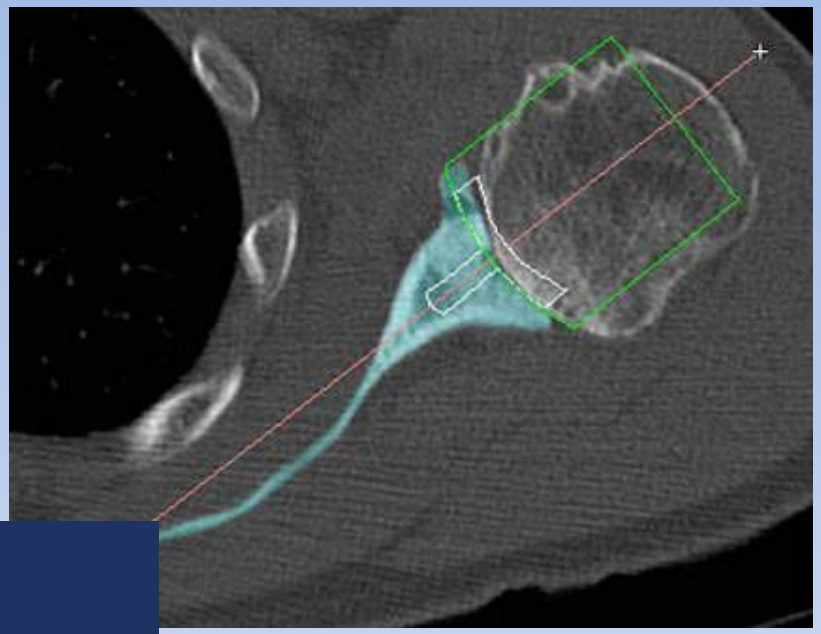




Quelle: Young AA 2010

with acceptance of increased retroversion and estimated resulting glenoid bone loss.
with restoration of neutral version and estimated resulting glenoid bone loss.

mehr als 18 Retroversion für das anterior reaming nicht geeignet



Quelle: Nowak JSES 2009

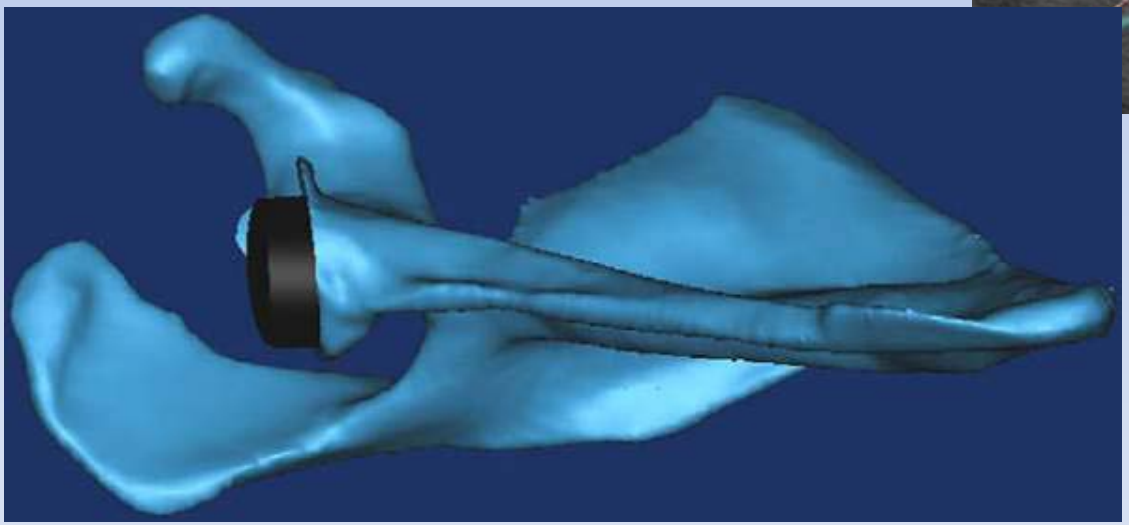
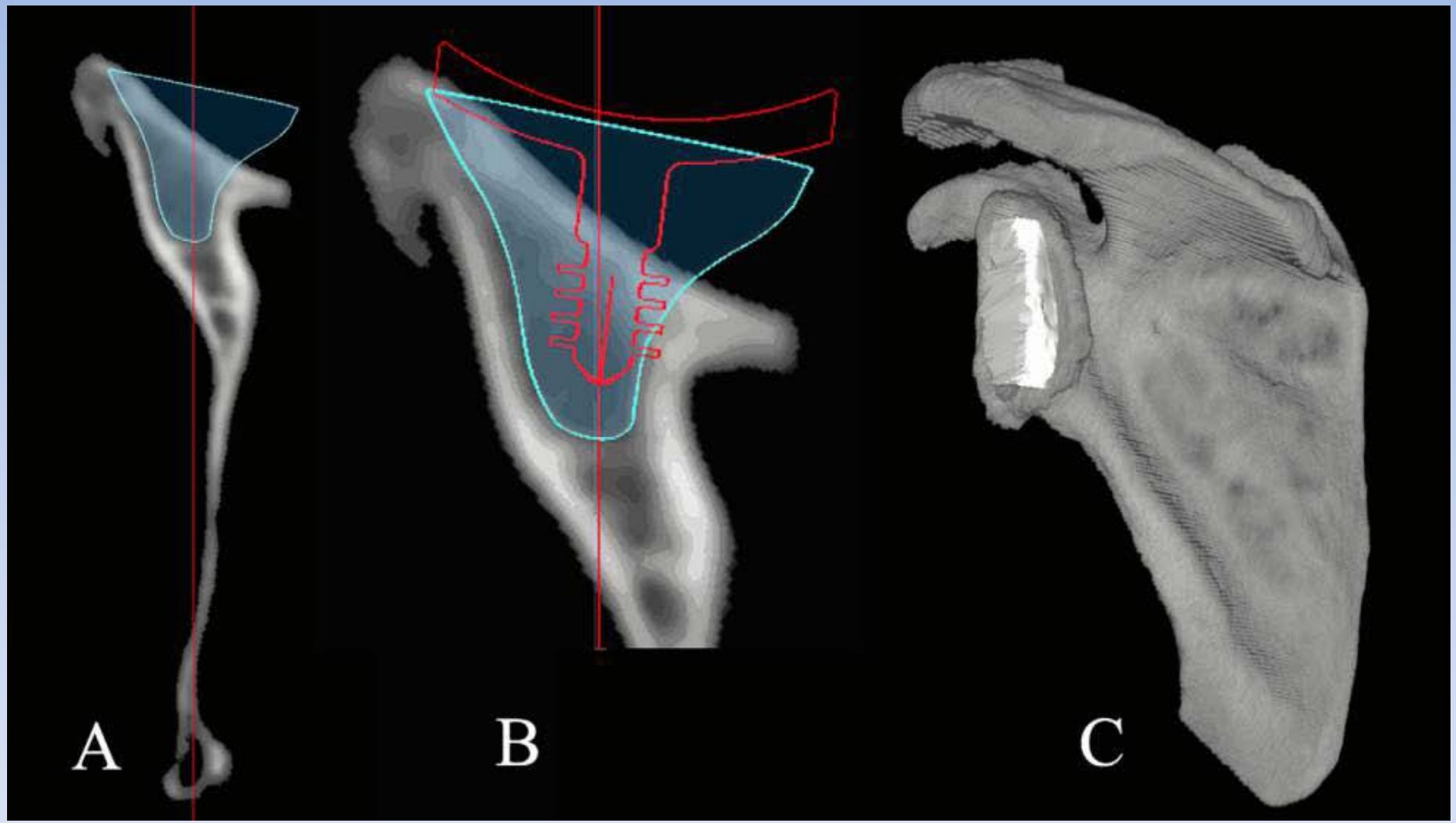


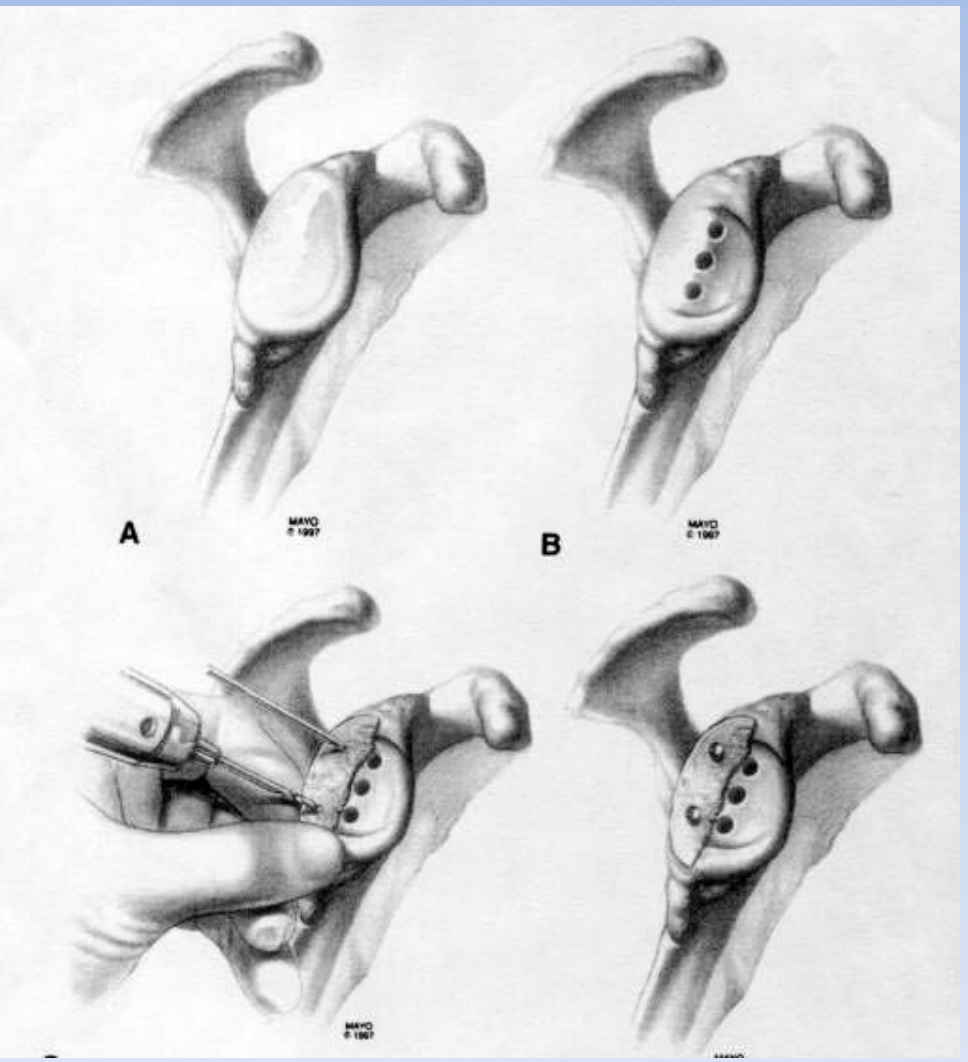
Figure 5 Inferior view shows of postsurgical simulation of patient resurfaced with a 40-mm glenoid at 6.5 of retroversion. Vault violation occurred when attempting implantation at neutral version.

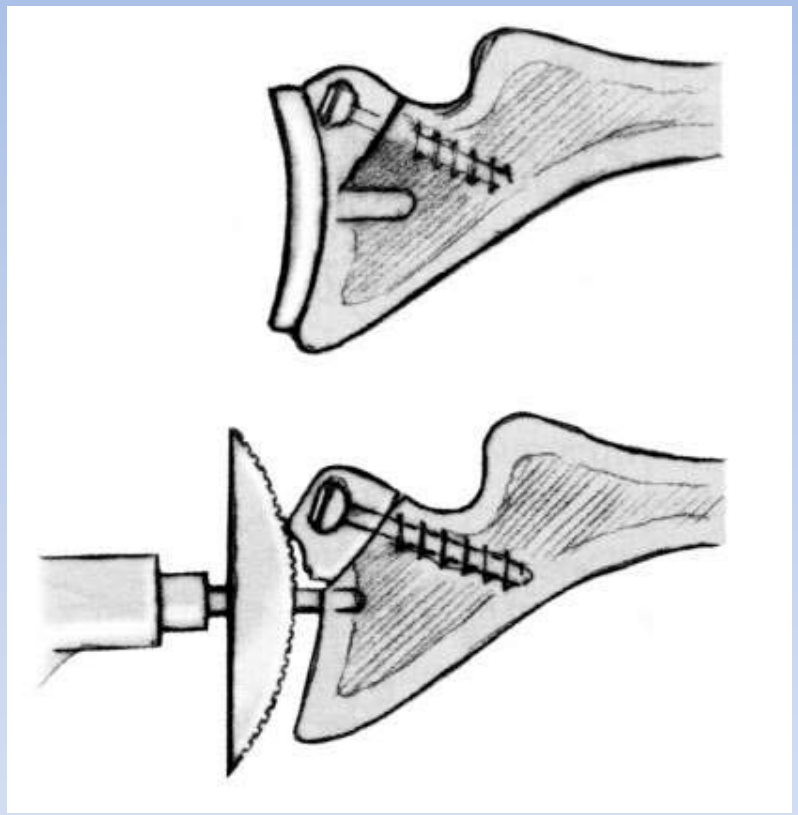
Quelle: Nowak JSES 2009

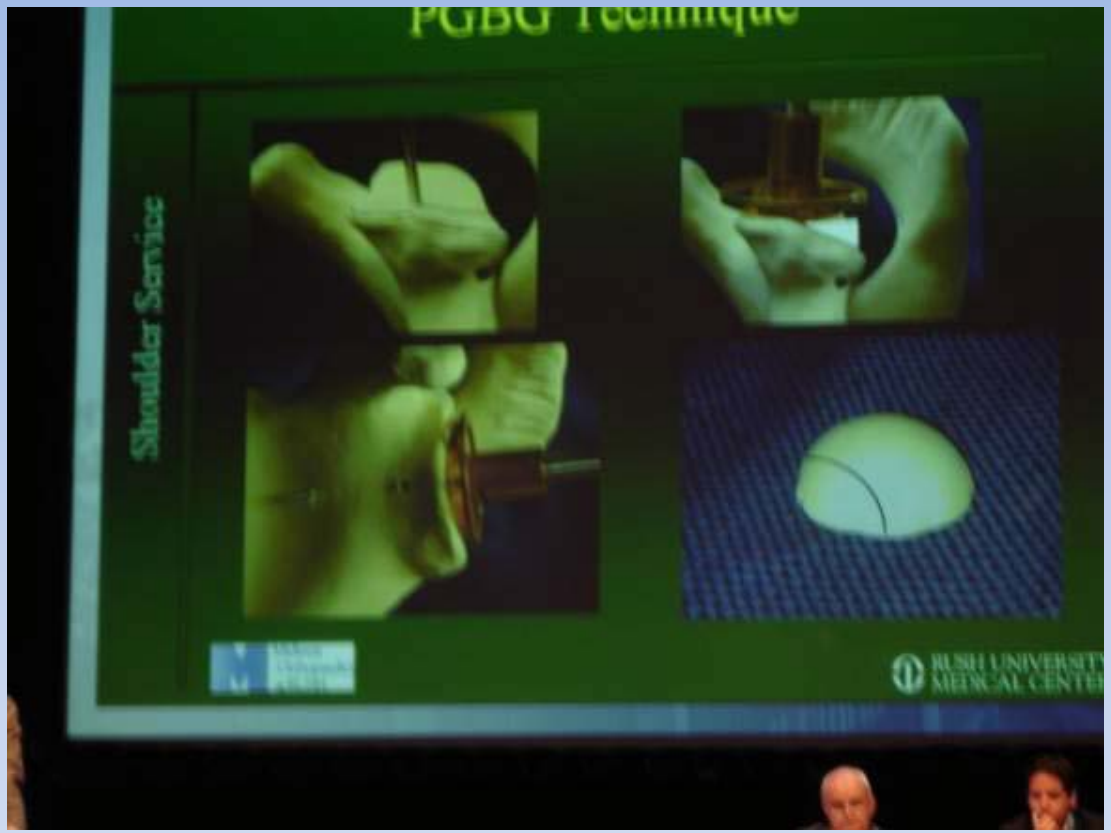


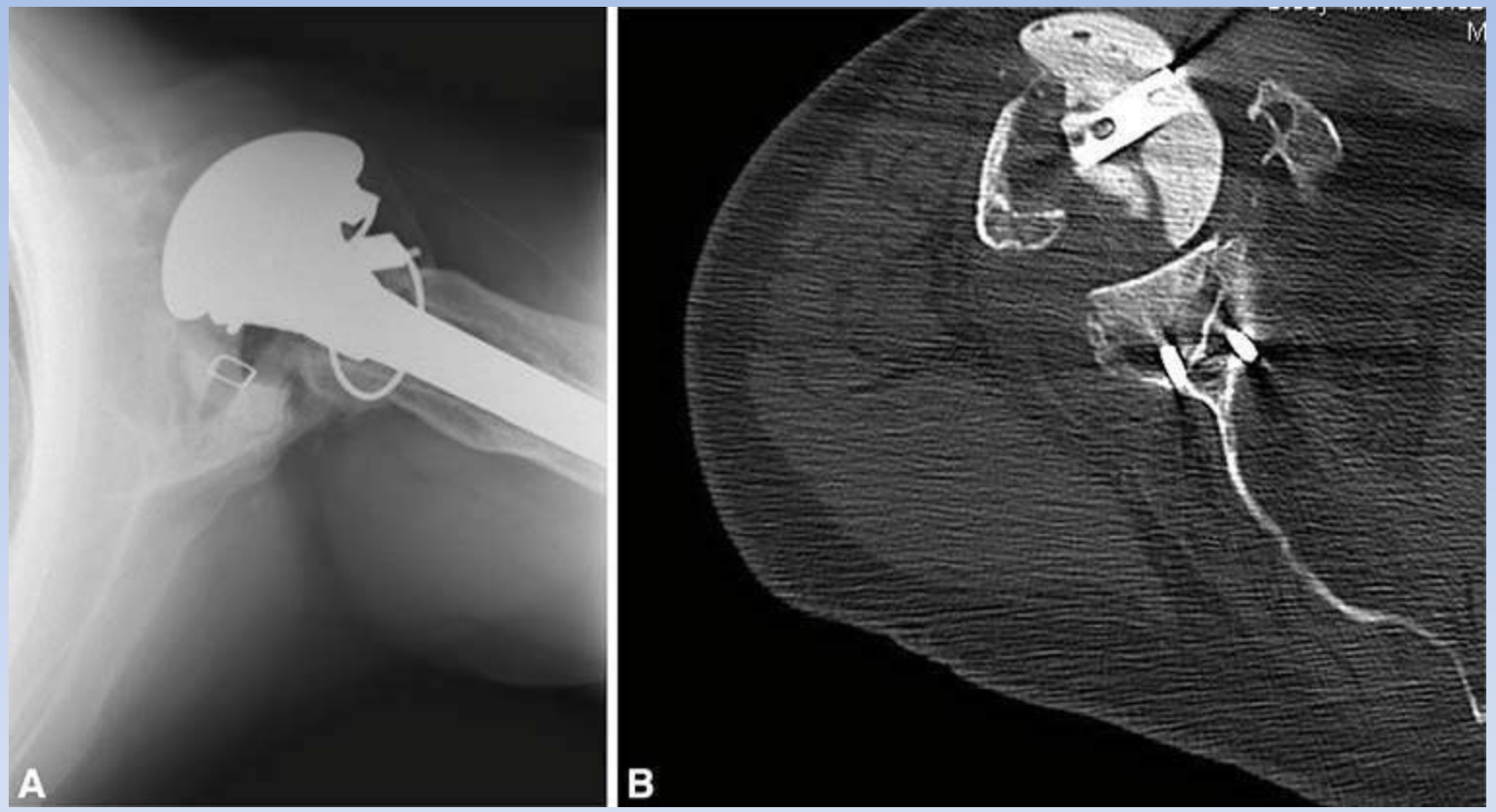
Quelle: Scalise JJ 2008

2) Bone grafting der posterioren region

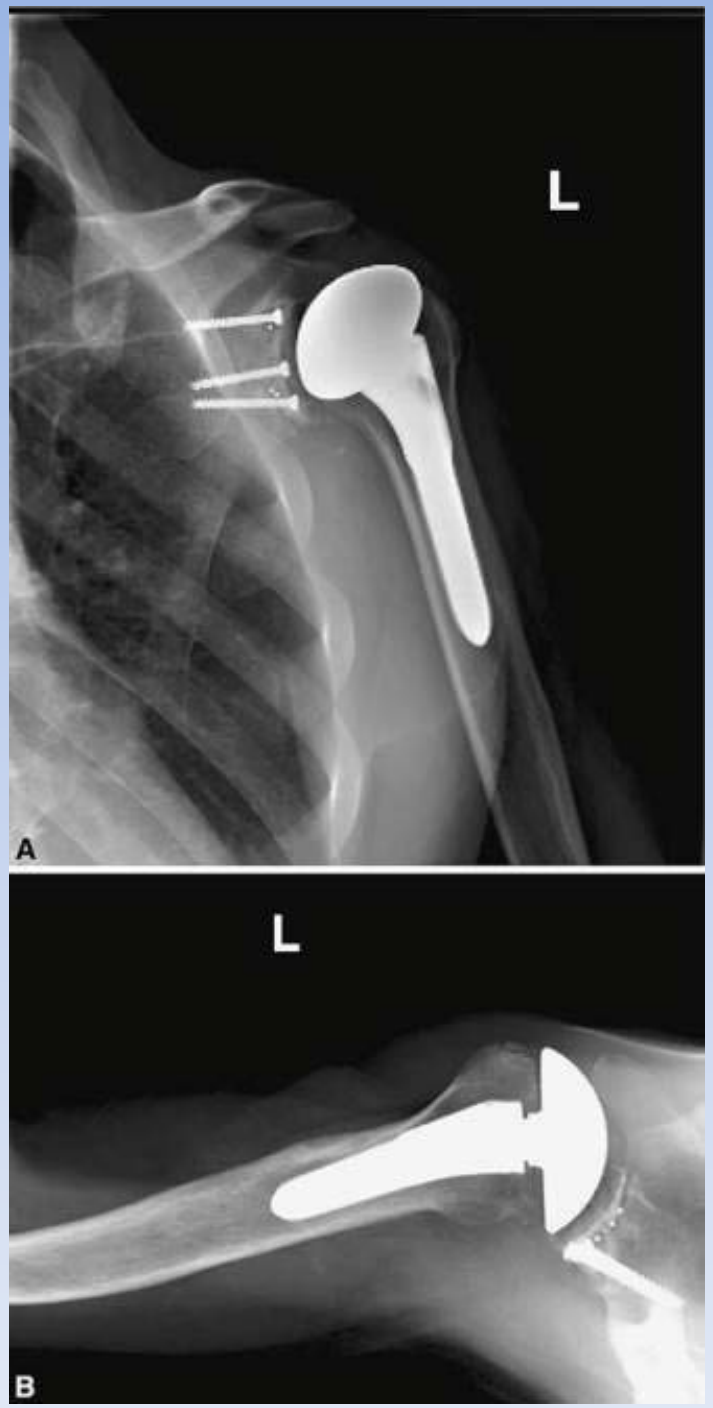





PGBG Technique
Shoulder Service
RUSH UNIVERSITY
MEDICAL CENTER



Quelle: Elhassan et al
CORR (2008)



3 years follow up show a well-integrated femoral bone allograft with well-positioned humeral and glenoid implants.

Quelle: Elhassan et al
CORR (2008)

3) dorsal augmentiertes Glenoidimplantate

(Rice und Cofield CORR 2008)

4) Inverse prothese

enttäuschende Resultate der Hemiprothesen bei B2

Levine JSES 1997

höhe Versagerrate der Totalprothesen bei B2

Hill, Norris JBJS Am 2001

Neer JBJS Am 1988

Steinmann JSES 2000

Totalendoprothese vs Inverse Prothese bei B2 Glenoid

(SECEC 2010 Edinburgh)

Complications

TSA 37% (dorsale Dislokation)
RSA 0%

Glenoid loosening or migration
TSA 50%
RSA 0%

Constant Score

TSA 44,5

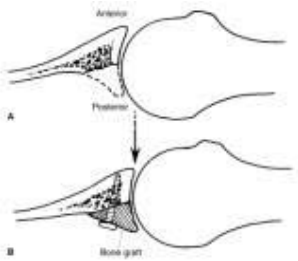
RSA 76,3

Empfehlung:

(SECEC 2010 Edinburgh)

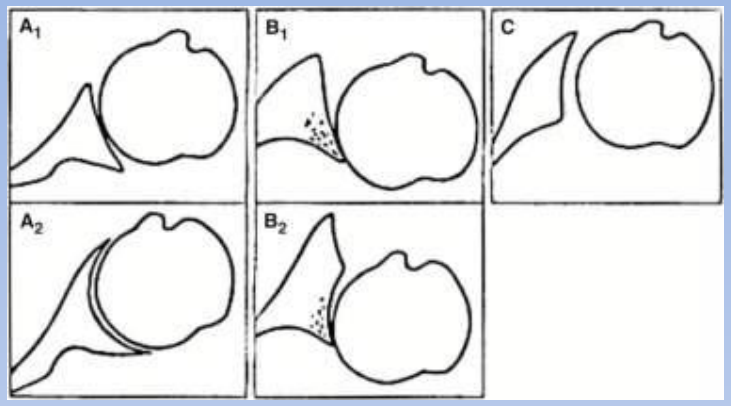
TSA und eccentric reaming bei
Retroversion <15°

primär RSA bei Typ B2
retroversion von >15°
mit oder ohne bone block
(norris Technik)



Hemiprothese oder

Totalendoprothese:



Indikation für die TSA

- guter bone stock
- intakte Rotatorenmanschette
- bei B1, B2 mit Retroversion <15 und C
- älterer Patient

Indikation für die Hemi

Intaktes Glenoid ….……keine Glenoiderosion
schlechter bone stock ……....keine Verankerung
Junger, aktiver Patient……..hohes Lockerungsrisiko
Rotatorenmanschettenruptur...Zentrierung fehlt

Boileau et al Arthroplastie of the shoulder JBJS Br 88(5): 2006

nicht indiziert bei : B2, C

Inverse Prothese
cuff artthropathie/pseudoparalyse
Typ B2 Retroversion von >15

Um wieviel besser ist denn die TSA?

1. Analyse „metal backed“ Glenoide

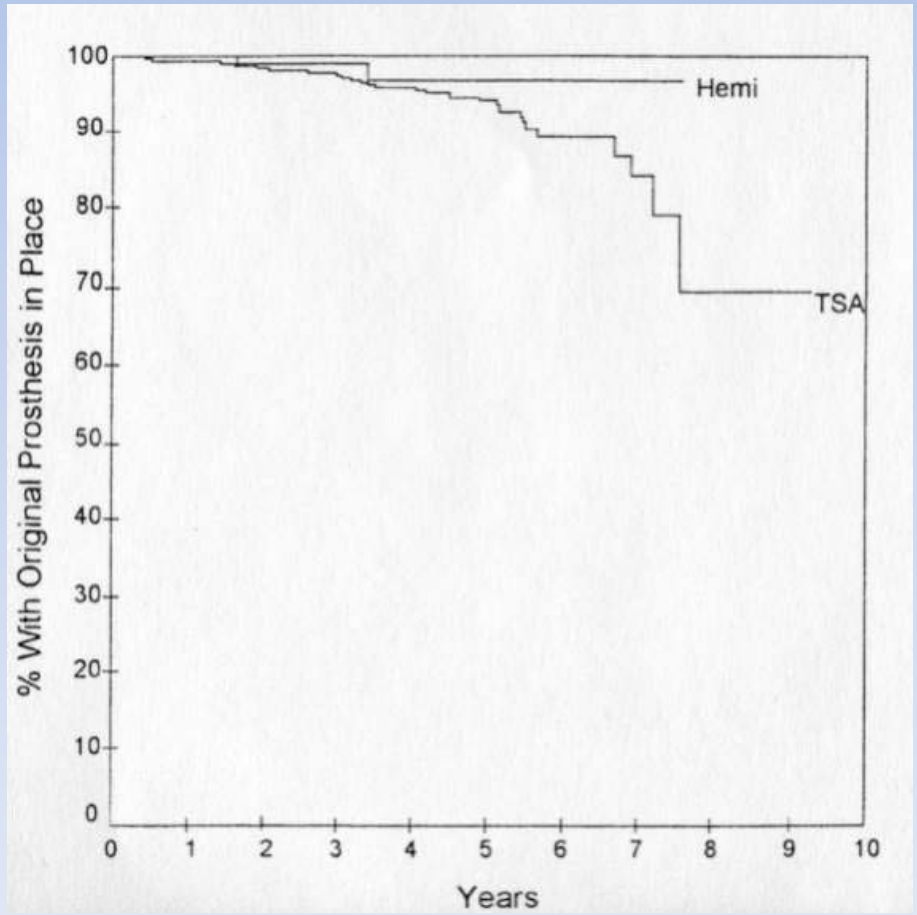
Multicenterstudie Hemi vs Total

<u>1542 primäre Schulterprothesen</u>
bessere Resultate im Constant Score für die TSA

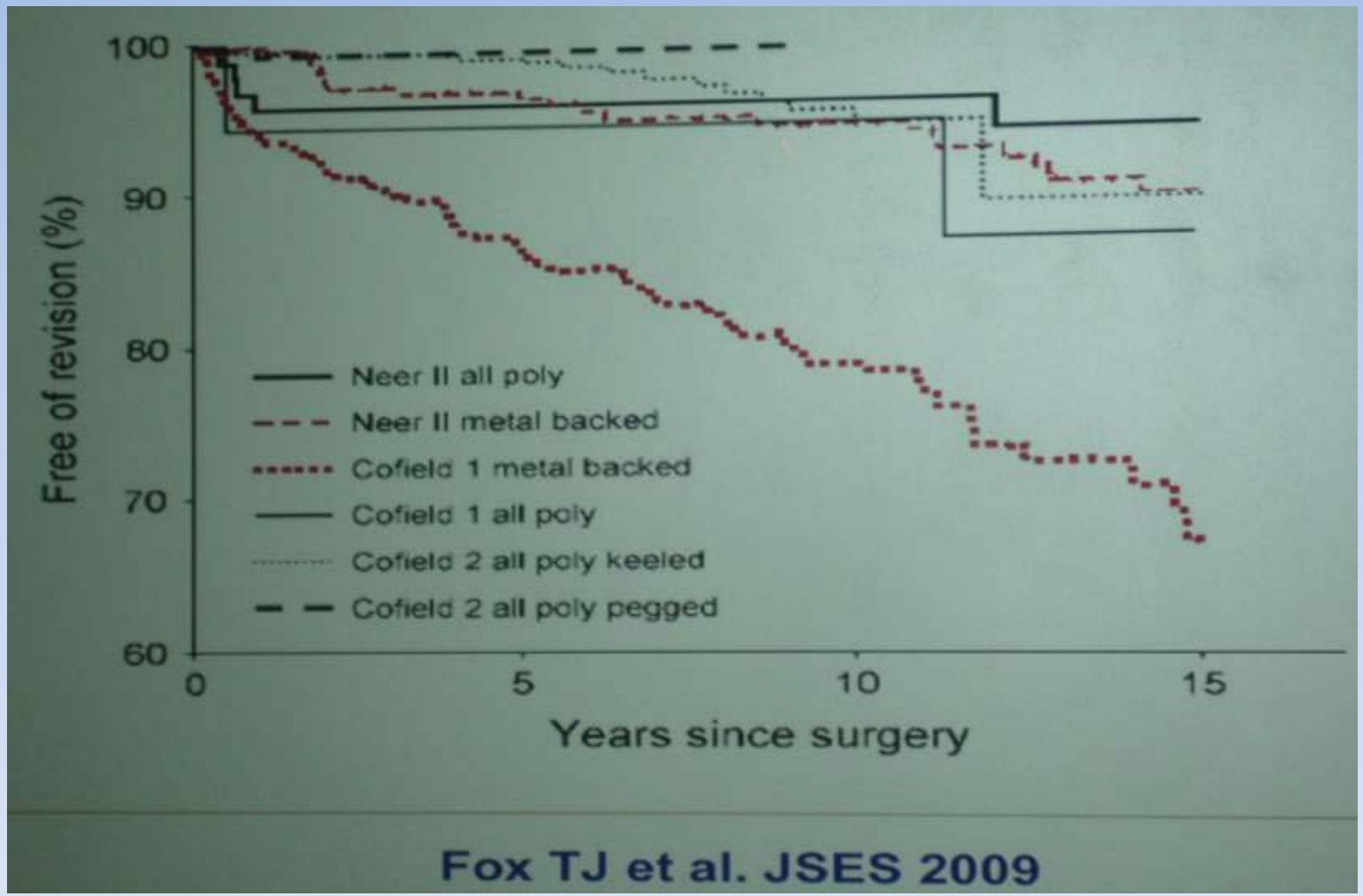
Edwards et al JSES 2003

56% der TSA hatte radiolucent lines im Glenoidbereich

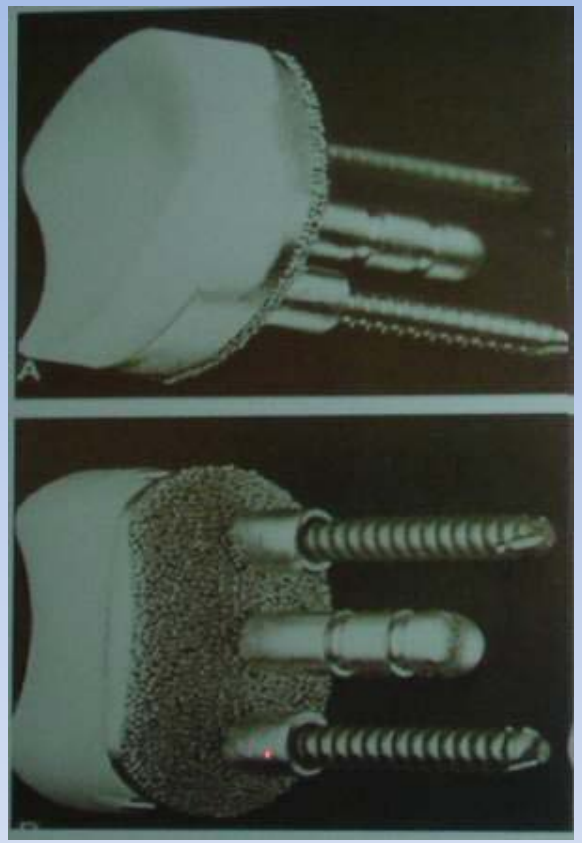
die Kaplan Meier Überlebensrate der TSA(69%) war nach 9 Jahren deutlich schlechter als die der hemis (97%)



Datenanalyse „metal backed“



Cofield Glenoid



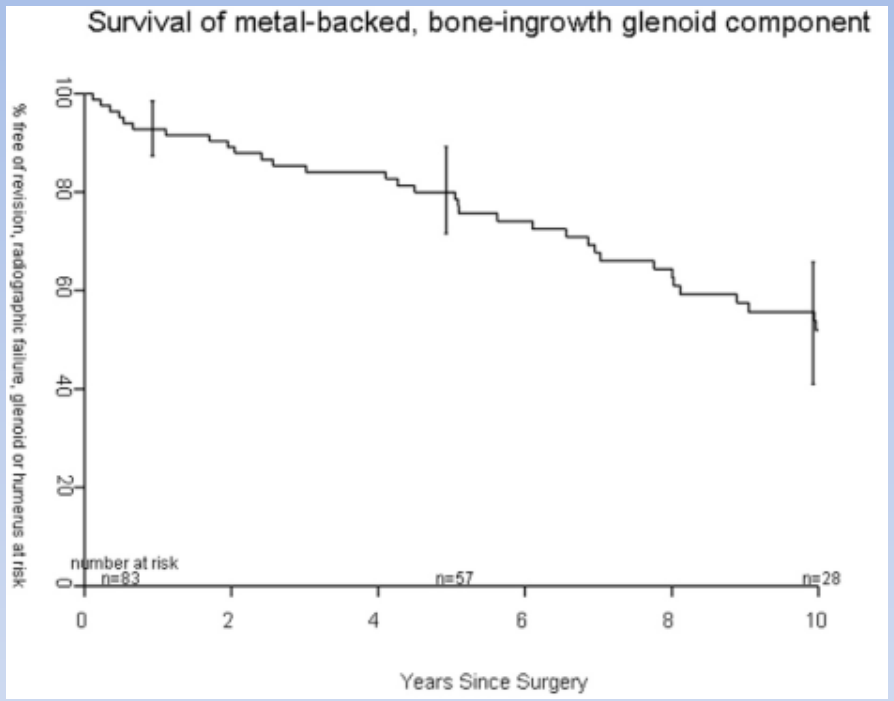


Fig. 6-B Survivorship curve, with 95% confidence intervals, illustrating the percentage of total shoulder arthroplasties free of revision surgery or radiographic failure.

Quelle: Taunton et al JBJS AM 2008

This study indicates that total shoulder arthroplasty with use of a metal-backed bone-ingrowth glenoid component has an increased level of high-density polyethylene wear, subsequent metal wear, osteolysis, and component loosening.
This failure mechanism does not stabilize but continues to accrue with time.
These findings raise substantial concern for the use of this component, and perhaps other metal-backed bone-ingrowth glenoid components, other than for special situations.

Quelle: Taunton et al JBJS AM 2008

Warum lockern sich Glenoidkomponenten so leicht

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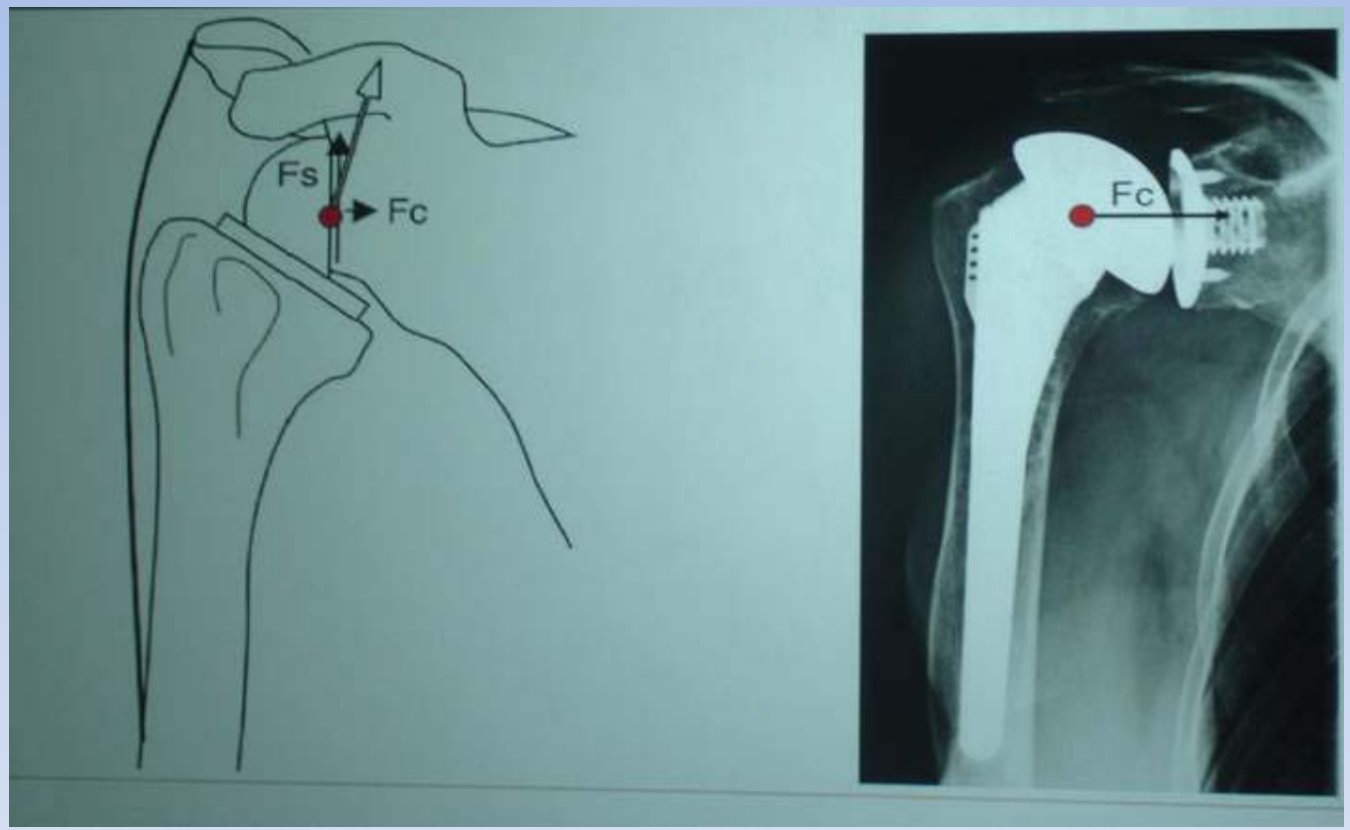
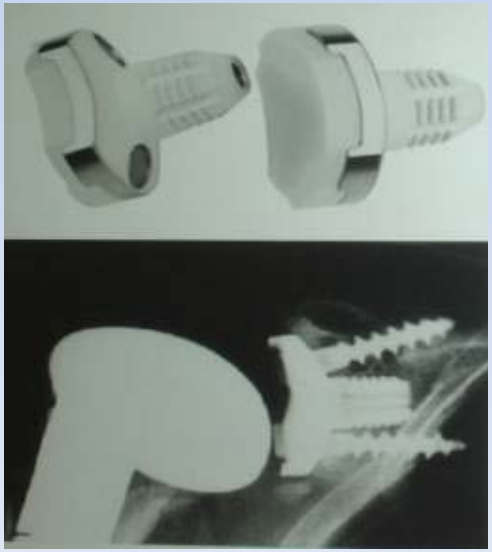


Midterm results neuer Modelle zeigen bessere Ergebnisse

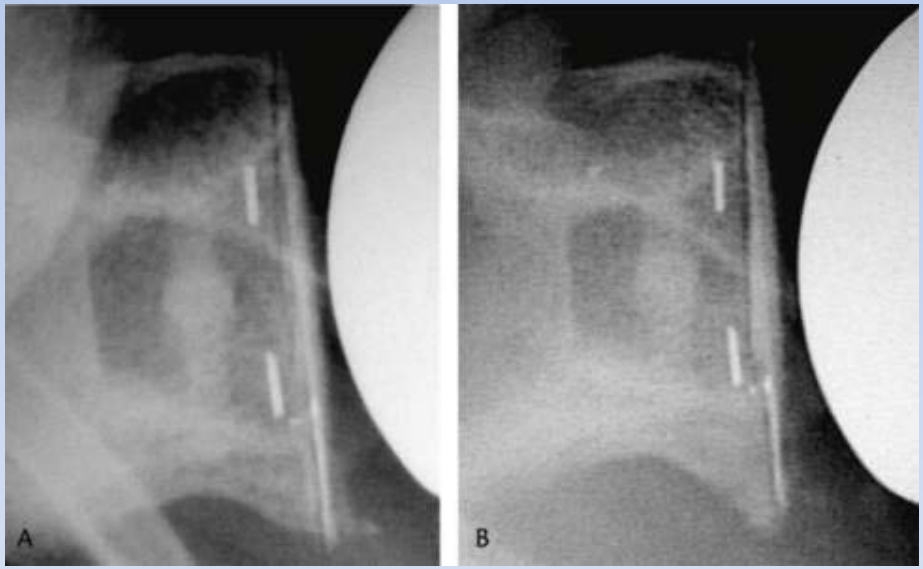
Author	Implant	N / FU	Radio lucent lines	Rad. Loosenig	PE-Dis sociation	PE -wear	Glenoid loosening	Glenoid revision surgery
Castagna A JBJS Br 2010	Randelli (Lima)	35 / 75 Mo	8	0	0		0	0
Gerber C JSES 2010	Sulmesh (Zimmer)	22 / 68.5 Mo	2			2	13.6% fracture of the metal tray	13.6%
Habermeyer P Salzburg 2010	Univers (Arthrex)	53 / 65 Mo	4		0	3	9.4%	11.3%



Datenanalyse PE Glenoide zementiert

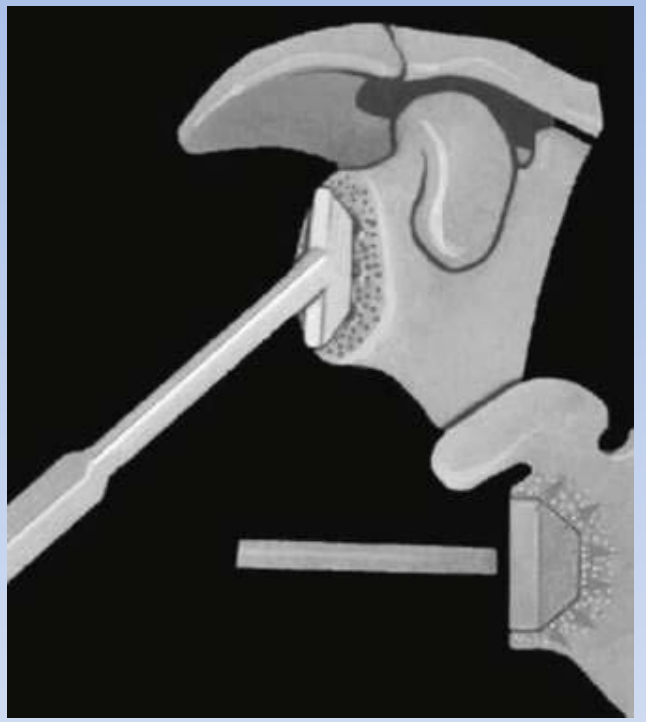
308 TSA

dritte Generation Äqualis mit flacher Glenoidrückseite
durchschnittlicher Follow up 10 Jahre



Walch et al

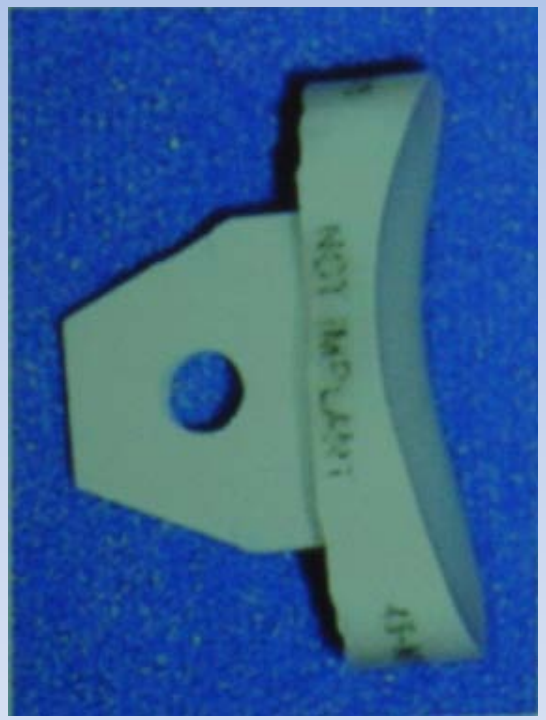
Glenoidpräparation



in 62% Curretage nach Neer
in 36% Verdichtung nach Gazielly

Radiologische Überlebensrate des Glenoids

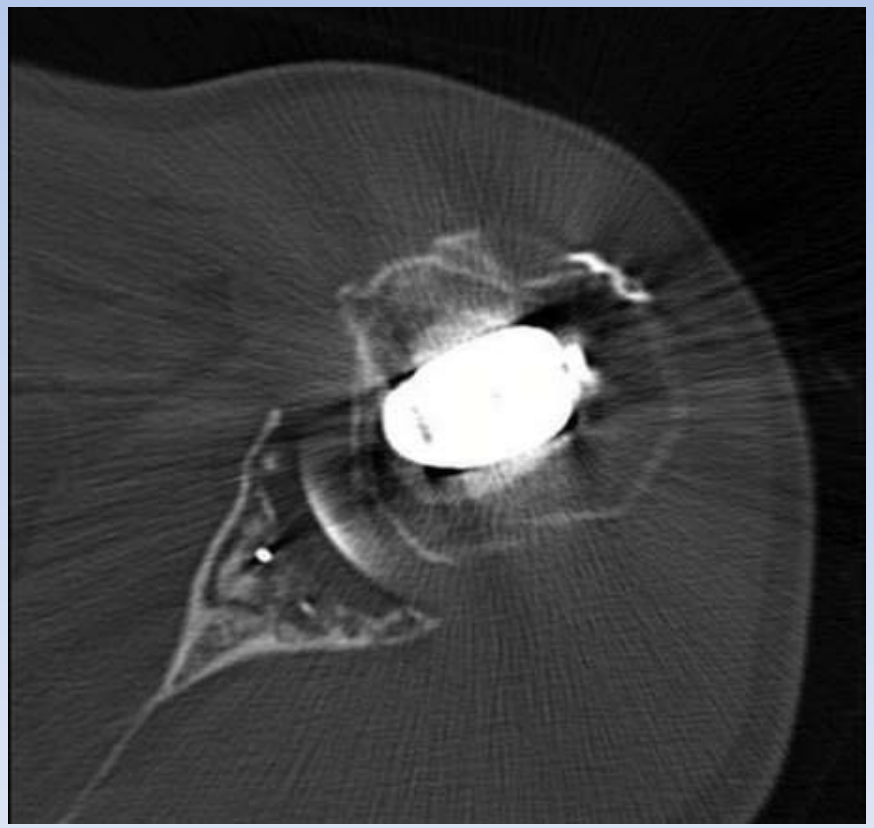
99% nach 5 a; 80% nach 10a;

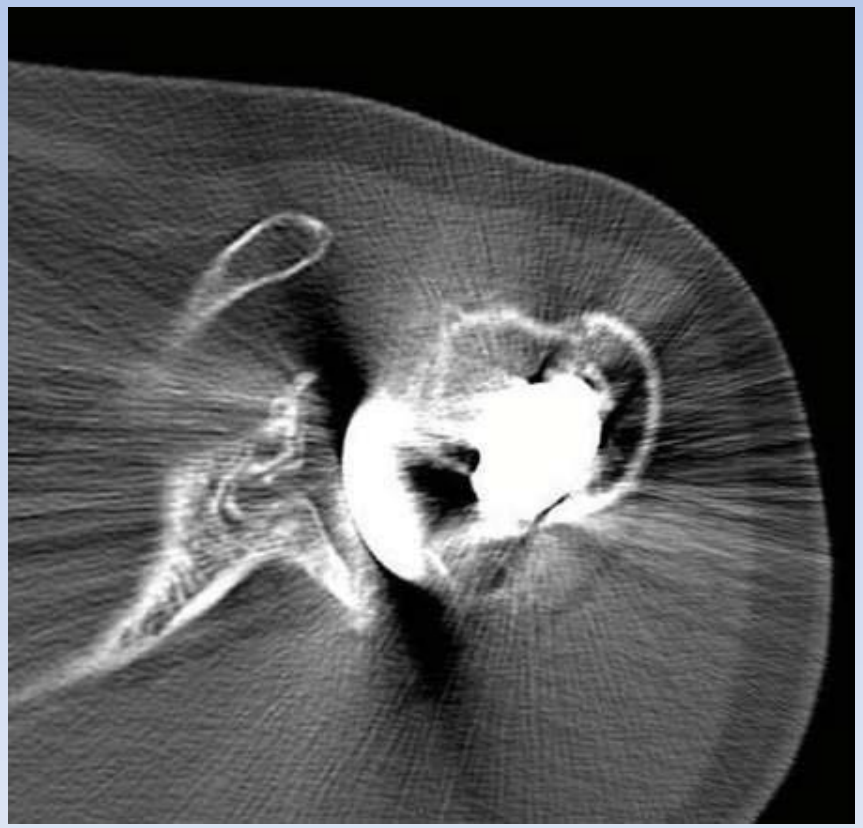


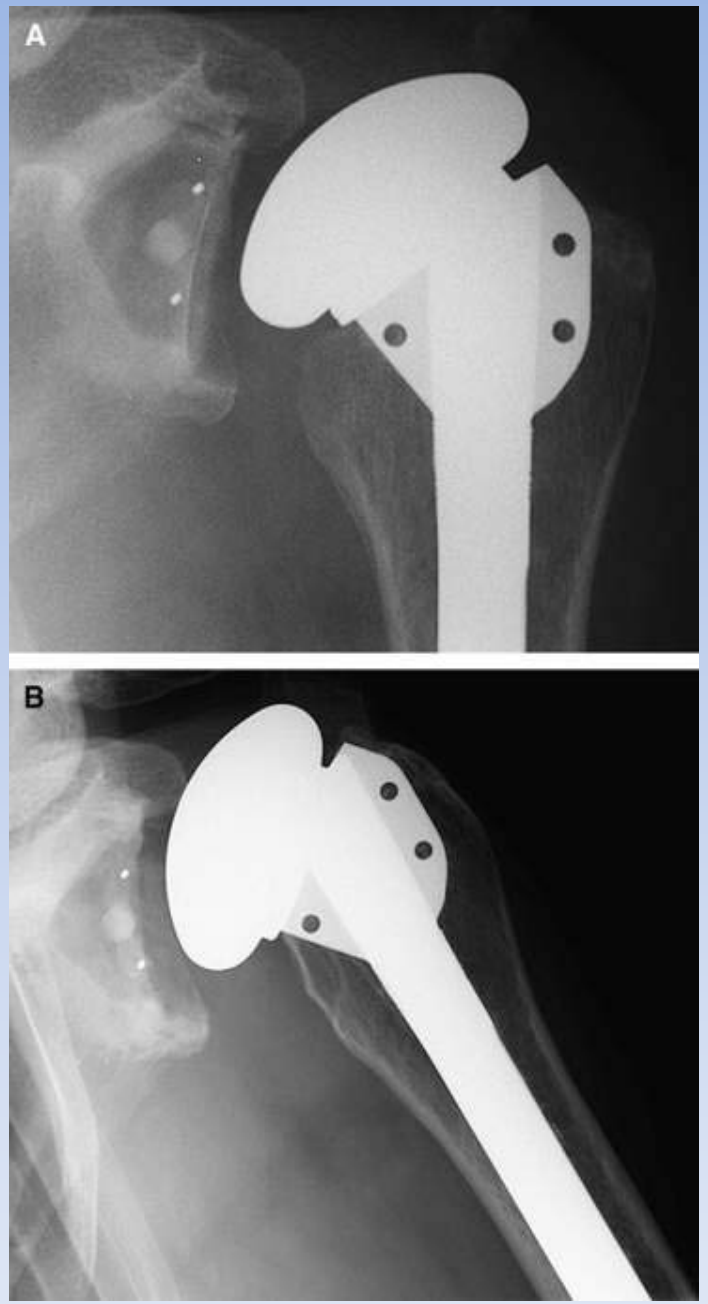
33% nach 15a

Vergleich radiologischer Überlebensraten nach 10 Jahren

Äqualis; Walch et al	80%
Haines (JBJS Br 2006)	46%
Kasten (konvex Kiel)(JBJS Br 2010)	67%







Faktoren die die radiologische Glenoidlockerung bedingen

Länge des Follow up $p<0.0001$

Durchschnittsalter bei der Operation
64 vs 68 Jahre $p<0.001$
jünger bedeutet höheres Risiko

Chirurgische Technik
(Impaktion vs Curretage) 32% vs 59%

keinen Einfluß haben,Geschlecht, dominante Seite, Glenoidform präoperativ

Quelle Throckmorton et al 2010

Take home message

signifikanter Abfall der Überlebensrate erst nach 5 bis 10 Jahren

Radiologische Lockerung ist ein bessere Indikator für das klinische Ergebnis als die Revisionsrate

Radiologische Lockerungslinien sind progressiv und haben deutlichen Einfluß auf das klinische Ergebnis

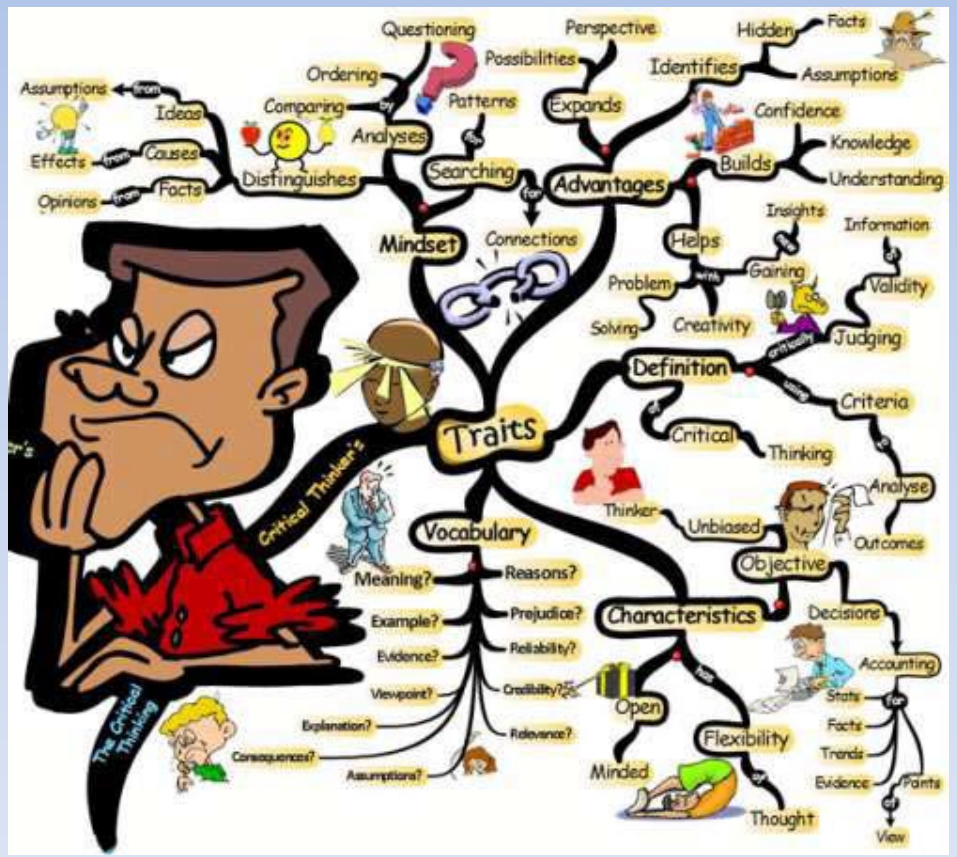
Pfahler et al JSES 2006
Kasten et al JBJS Br 2010
Martin et al JBJS 2002

Vergleich derselben TSA Prothesen vs Hemi

Pfahler JSES 2006 Mar-Apr;15(2), 154-163

In this retrospective study, we compared the results of 705 total shoulder arthroplasties (TSAs) with 469 hemiarthroplasties (HSAs), all having been performed with the Aequalis shoulder prosthesis.

Follow up 43 Monate !!



Quelle: Yian 2005

Complication	HSA	TSA
Humerus fracture	4	9
Infection	7	8
Subscapularis lesion	2	5
Supraspinatus lesion	5	11
Anterior instability	7	9
Posterior instability	3	7
Superior migration	8	12
Glenoid erosion	18	0
Prosthetic failure	1	19
Total	55	80

Pfahler JSES 2006

Postoperative Constant score with categories

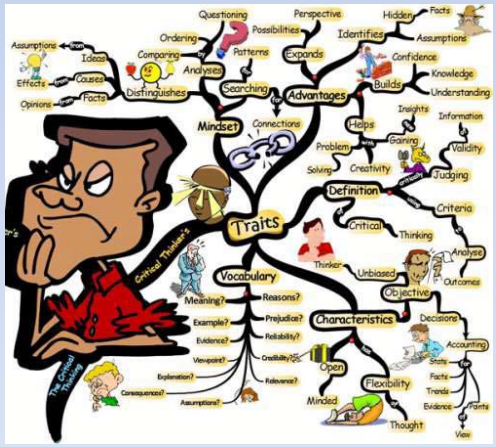
	HSA	TSA	Totalseries	Significance
Pain	11.4	12.5	12.1	*P 0.001*
Mobility	24	29.3	27.2	*P 0.001*
Activity Mean	13.9	16.2	15.3	*P 0.001*
Power Mean	6.8	7.8	7.4	*P 0.001*
Constant score Mean	56.3	65.7	62	*P 0.001*
Adjusted score Mean	74.3%	88.3%	82.8%	*P 0.001*

Pfahler JSES 2006

Postoperative subjective assessment assigned by patient to 1 of 4 categories

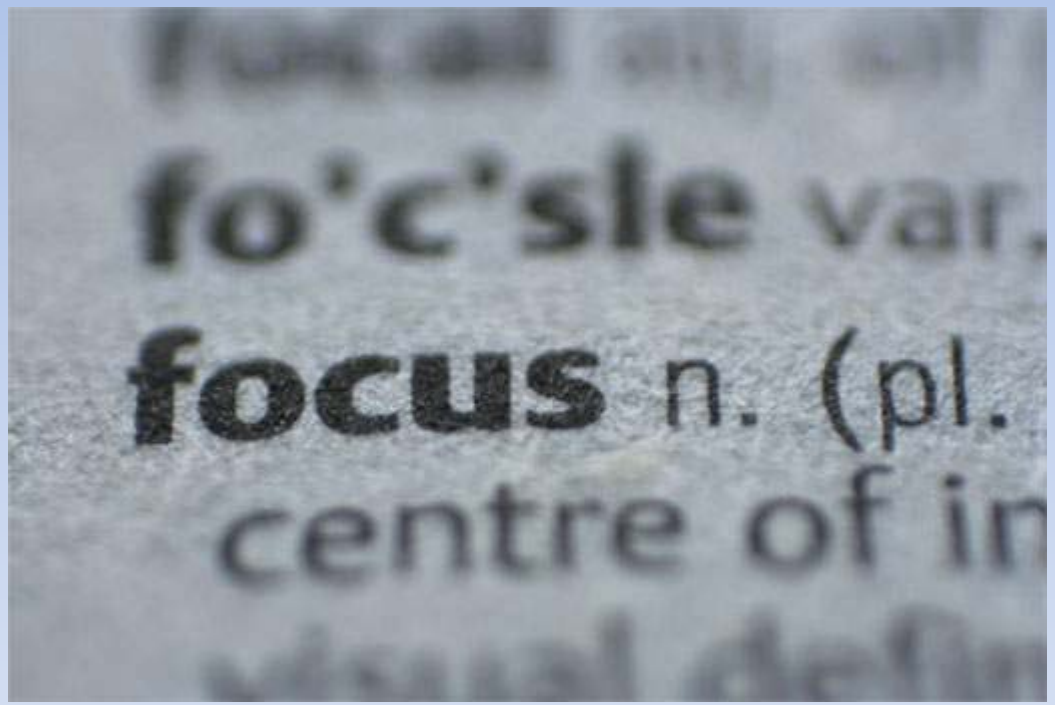
	Very satisfied	**Satisfied**	**Disappointed**	**Not satisf.**
HSA	47.3%	37.3%	13.1%	2.3%
TSA	66.5%	25.9%	7.4%	0.2%
Total	59%	30.4%	9.6%	1%

Aber: Follow up 43 Monate!!



Pfahler JSES 2006

Wie können die Totalendoprothesen verbessert werden?



Fehleranalyse

RM Insuffizienz mit Hochsteigen des Kopfes
(Franklin JBJS Am 1988)

zu geringer radial mismatch
(Walch JBJS Am 2002)

Abstemmen des Humerus gegen das Glenoid (Hertel J Arthroplastie 2003)

Fehlpositionierung des Humeruskopfes
(Ianotti JSES 2004)

Fehlerhafte Glenoidneigung
(Nyfeller JSES 2006)

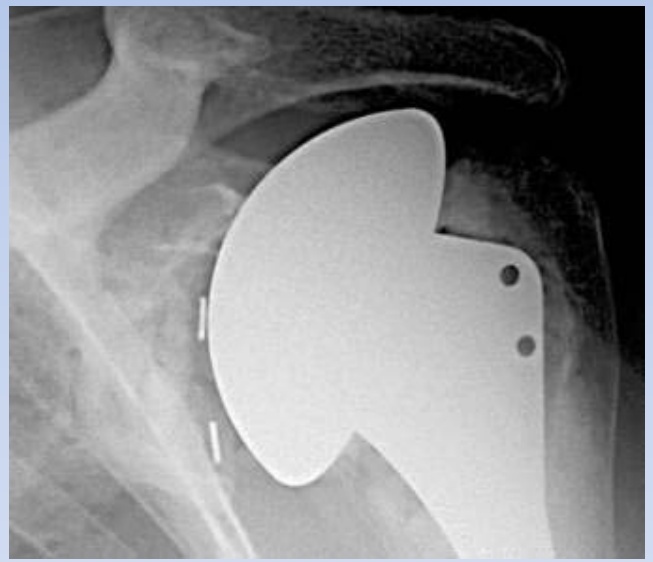
Weitere Faktoren die zur Lockerung beitragen

junges Patientenalter
hohe Patientenaktivität

schlechte Knochenqualität
Zementtechnik
Designparameter der Glenoide

Das perfekte Glenoidimplantat

kein PE Abrieb
kein Overstuffing
keine Komponentenentkoppelung
kein Bruch

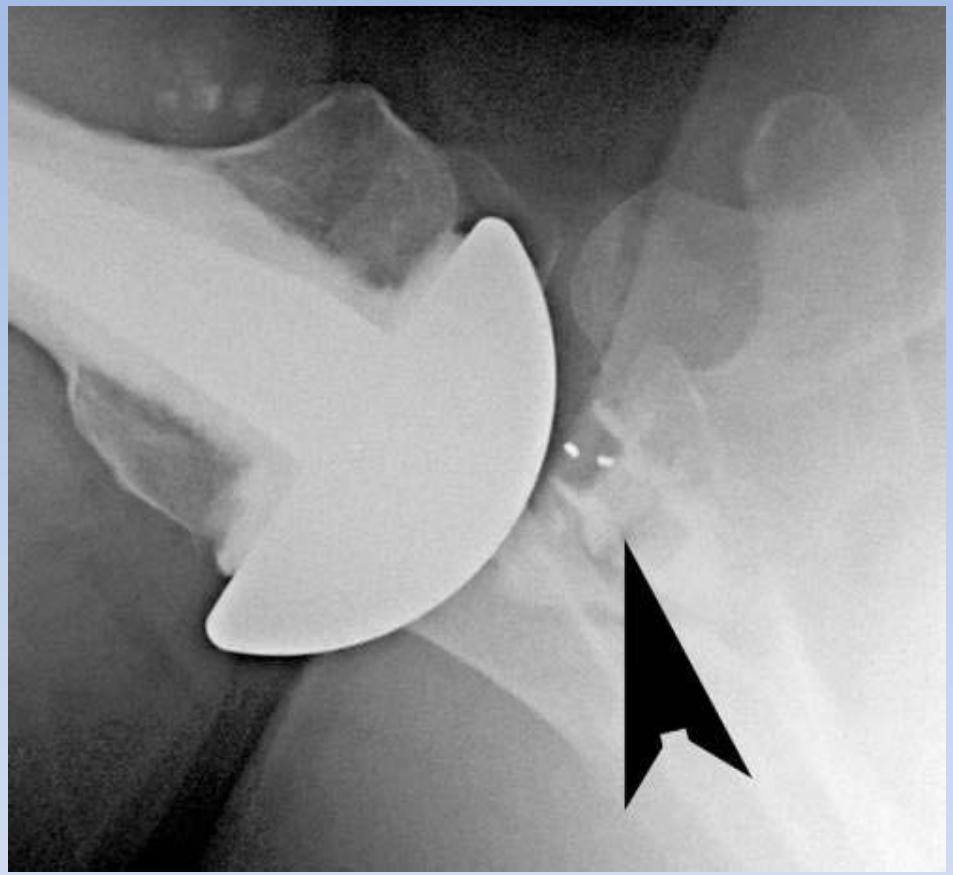


Thinning of polyethylene at the superior aspect of the component

Quelle: Matsen FA 3rd, JBJS Am. 2008

Gibt es noch nicht

Was kann man gegen radiolucent lines tun

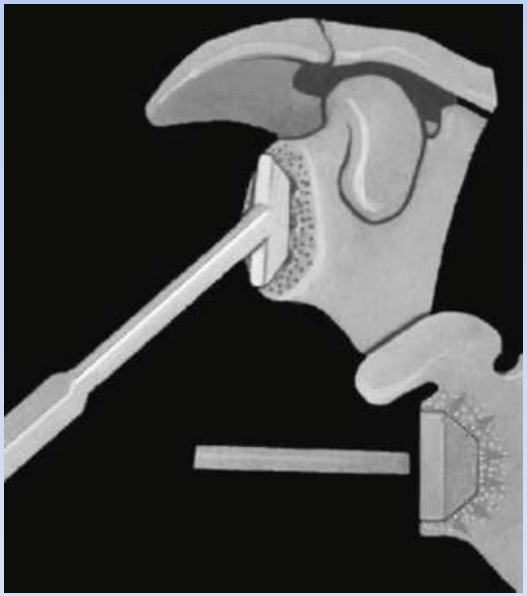


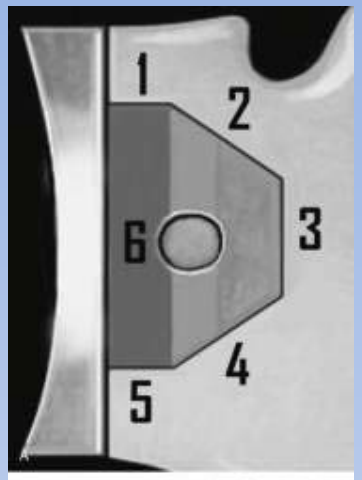
Quelle: Matsen FA 3rd, JBJS Am. 2008

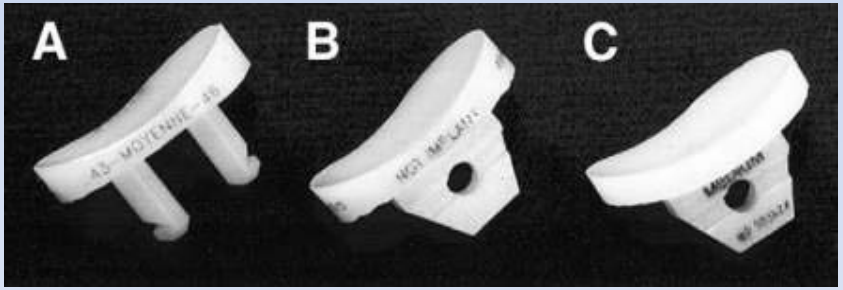
posterior subluxation of the humerus,
eccentric glenoid loading, and posterior wear of the component rim. The keel
of the glenoid component and the surrounding cement are fractured (arrow).

Radial mismatch
Moderne Zementiertechnik
Gekrümmte Glenoidrückseite

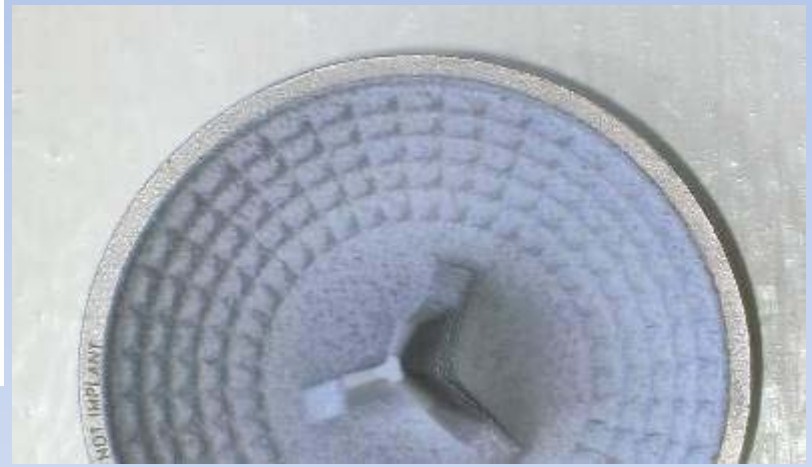
bringt signifikante Verbesserungen
im Molè Radiolucentline Score







Oder doch Hemi / Kappe ?



Die Befürworter argumentieren

Gründe für schmerzhafte Hemis
sind nur zum Teil die symptomatische Glenoid Erosion
sondern
- Impingement
-Rotatorenmanschettenrisse und Insuffizienezen
-AC gelenks Schmerz
Gelenkssteifigkeit

Tytherleigh-Strong GM
JSES 2002

Keine Korrelation zwischen Rö Stadium der Erosion und Schmerz und Funktion

die Glenoiderosion ist ein Co Faktor für Schmerz und ROM Verlust

Kircher et al Int Orthop 2010

Ohl et al Orthop Traumatol. Surg Res 2010

Pfahler et al JSES 2006

Könnten die schlechteren Ergebnisse der Hemiprothesen damit zusammenhängen daß kein ausreichender Weichteilrelease gemacht wird dadurch sogar die Glenoiderosion mitverursacht werden?

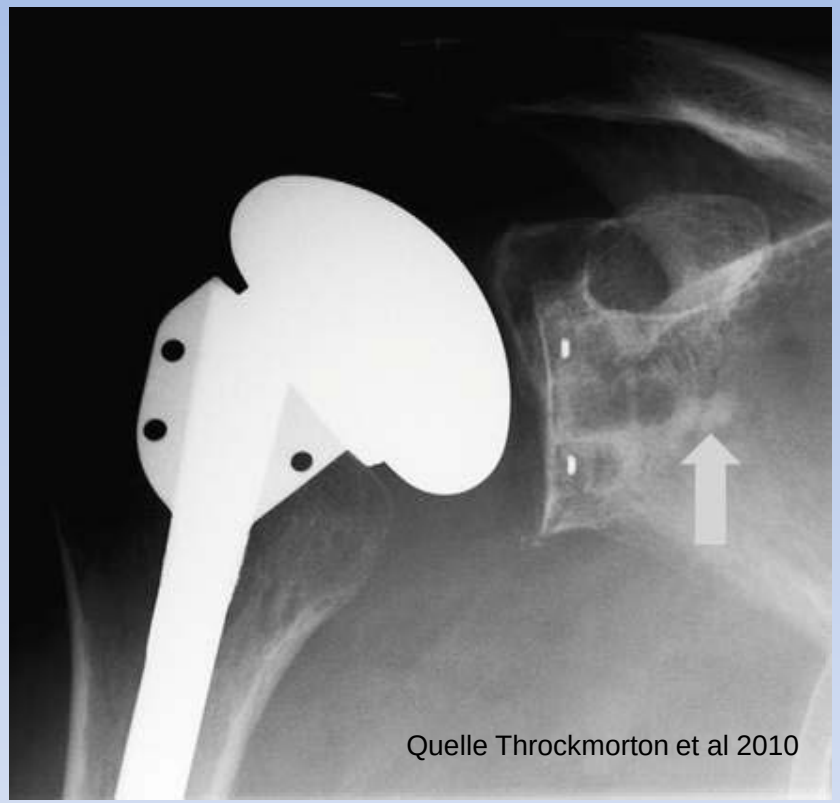
Fortbestehende Problembereiche

Pfahler et al JSES 2006 Multicenter study	769 TSA 469 Hemis	11% Glenoid Lockerung 4% Glenoiderosion
Sperling et al JSES 2004 Junge Patienten < 50 Jahre	36 TSA 78 Hemis	76% radiolucent lines 72% Glenoiderosion
Sperling et al JSES 2007 Rheumatoid Arthritis	195 Totals 108 Hemis	76% radiolucent lines 98% Glenoid erosion

Auch die Konversion von Hemiprothesen in eine TSA zeigt eine hohe Rate unbefriedigender Resultate

obwohl sich
Schmerz und Funktion verbessern

Ravenscroft et al Arch Orthop Trauma Surg 2009
Carroll et al JSES 2004 (47% unbefriedigend)
Sperling et al JBJS A 1998 (39% unbefriedigend)



Perforations of glenoid vault, recognized as extrusion of a small amount of cement

AAOS guideline für die Behandlung der glenohumeralen Omarthrose (Izquierdo et al 2010)

legt nur 2 level 2 Studien zugrunde

Gartsmann JBJS Am 2000;82(1), 26-34

Lo IK JBJS Am 2005;87(10),2178-2185

Quality-of-Life Outcome Following Hemiarthroplasty or Total Shoulder Arthroplasty in Patients with Osteoarthritis

A Prospective, Randomized Trial

By Ian K.Y. Lo, MD, FRCSC, Robert B. Litchfield, MD, FRCSC, Sharon Griffin, CSS, Ken Faber, MD, FRCSC, Stuart D. Patterson, MD, FRCSC, and Alexandra Kirkley, MD, FRCSC

Investigation performed at the Fowler Kennedy Sport Medicine Clinic, University of Western Ontario, London, Ontario, Canada

Methods: Forty-two patients with a diagnosis of osteoarthritis of the shoulder were randomized to receive a hemiarthroplasty or a total shoulder arthroplasty. One patient died, and all others were evaluated preoperatively and at six

Conclusions: Both total shoulder arthroplasty and hemiarthroplasty improve disease-specific and general quality-of-life measurements. With the small number of patients in our study, we found no significant differences in these measurements between the two treatment groups.

Level of Evidence: Therapeutic Level I. See Instructions to Authors for a complete description of levels of evidence.

TABLE I Preoperative Age, Gender, and Scores on the Questionnaires

	Hemiarthroplasty*	Total Shoulder Arthroplasty*	P Value
Age *(yr)*	70.3 ± 7.3	70.4 ± 9.0	0.89
Male:female *(no.)*	8:13	10:10	0.60
Score *(points)*			
McGill pain questionnaire	16.0 ± 10.6	12.5 ± 9.4	0.71
McGill pain visual analogue scale	65.2 ± 24.3	65.0 ± 20.9	0.85
Short Form-36 (SF-36) mental component scale	55.5 ± 11.8	51.4 ± 14.7	0.42
Short Form-36 (SF-36) physical component scale	29.5 ± 7.6	31.3 ± 8.4	0.45
Range of motion	13.7 ± 7.2	13.4 ± 9.5	0.97
American Shoulder and Elbow Surgeons (ASES) evaluation form	31.1 ± 16.6	30.7 ± 19.5	0.98
Constant score	30.7 ± 14.2	28.7 ± 16.4	0.77
University of California at Los Angeles (UCLA) shoulder rating scale	12.6 ± 3.5	13.2 ± 3.9	0.60
Western Ontario Osteoarthritis of the Shoulder (WOOS) index	33.5 ± 19.7	31.4 ± 17.7	0.95

*The values (except for gender) are given as the mean and one standard deviation.