

Lecba zlomenin proximalniho humeru – současne možnosti a trendy

Pelhrimovsky chirurgicky den 24.11.2017

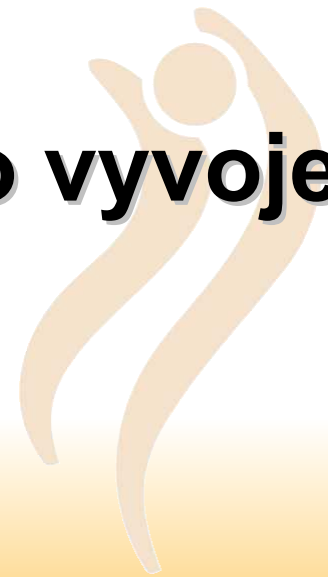
**Epidemiologie: 3. nejcastejsi
zlomenina starsi populace (70% starsi
60ti let), zeny - 75%**

**Incidence: Evropa 250/100.000 (Bell et
al.2011)**

**90% pad ze stoje nebo nizke
vysky(Court-Brown a Caesar 2006)**

**6% vseh diagnostikovanih
zlomenin**

**na podklade demografickeho vyvoje
je ocekavano do roku 2030
ztrojnasozeni incidence**

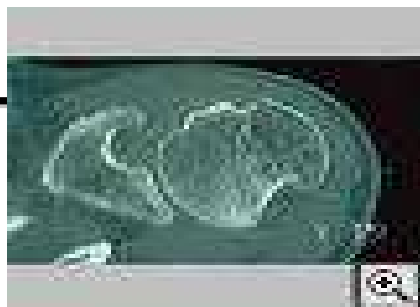


Diagnostika:

Röntgen



CT



CT s 3D Rekonstrukci



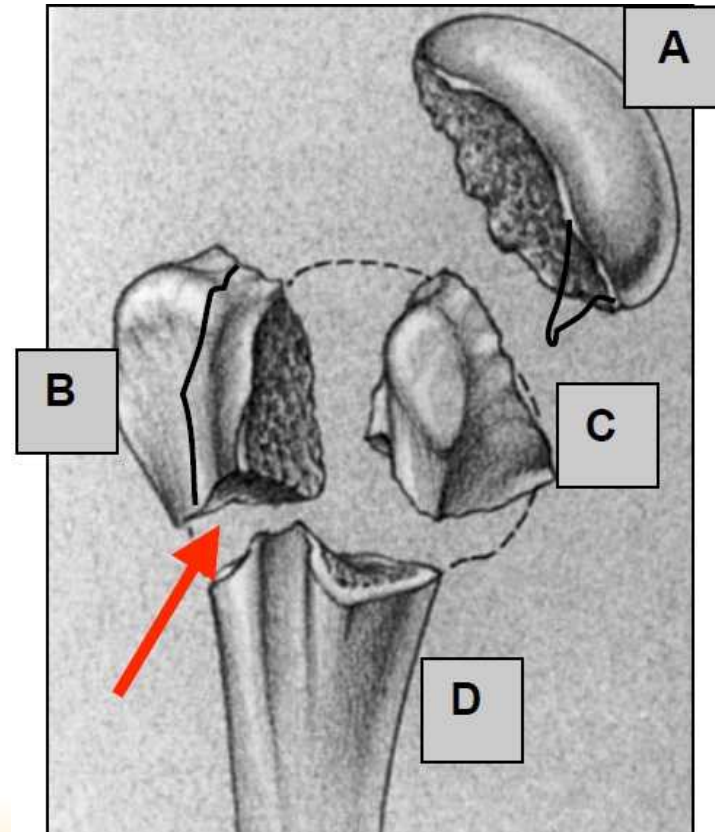
Klassifikation:

Codmann 1934

Neer 1970

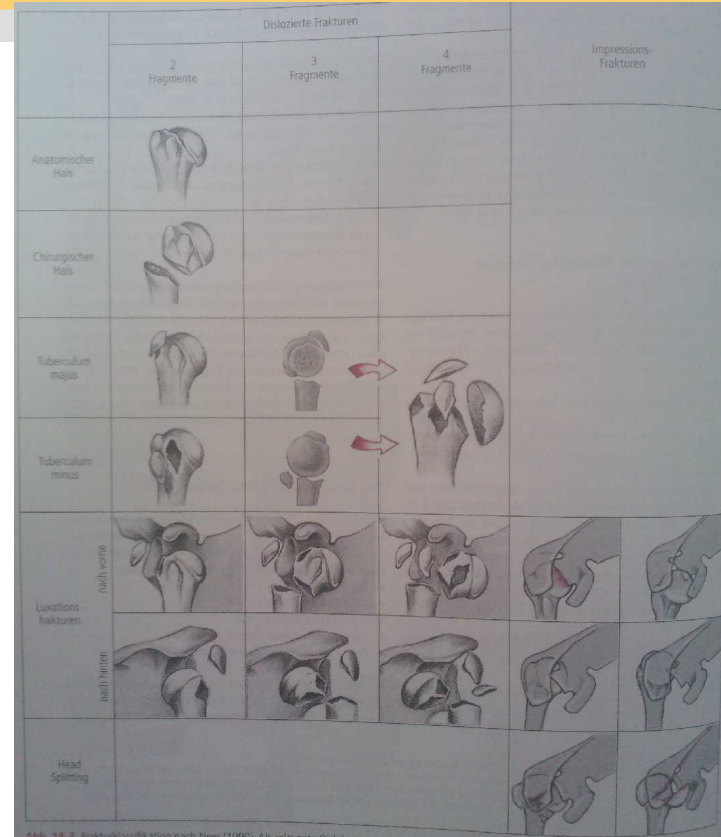
AO 1990

Habermeyer 1989, Hertel 2004



Neer: 1-6 Gruppen

- 1 nedislokovane (One-Part-Fractures)
- 2 Fragmenty
- 3 Fragmenty
- 4 Fragmenty
- Luxacni zlomeniny
- Splitt- und Impressni zlomeniny
(chybi valgicky impaktni zl. 20%, Head-Split zl.)

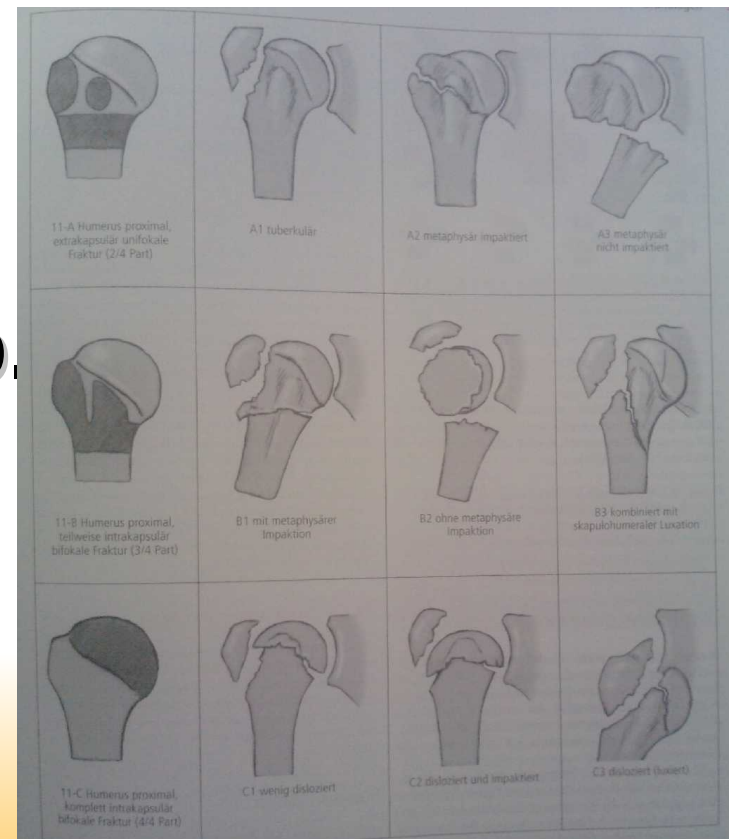


AO Klassifikation: 27 Untergruppen

A extrakapsularni

B castecne intrakap.

C intrakapsularni



Biomechanika:

typicka dislokace ulomku (tahem upinajicich se svalu)

Tub.majus - kranialne a dorsalne

Tub.minus - medialne

Telo humeru - ventralne a medialne

Hlavice humeru - dorsalne



Lecba:

1.konservativni

2.operativni



**Konservativni funkcni lecba podle
Poelchena (Esmarch&Boehler) – Sasko,
Drazdany- po tydnu fixace, pendlovani s 1,5Kg
promocni prace 1975-1995**

**$\frac{3}{4}$ Patienten spokojeno, $\frac{2}{3}$ bez bolesti, $\frac{3}{4}$
neomezeni v dennich aktivitach**



Konservativni lecba:

-minimalni dislokace - pod 5mm ad latus, pod 2mm Tub.majus, pod 20° odklopeni kaloty

-Schema: 4 tydny fixaxe

od 3.tydne pendlovani

od 4.tydne casna funkcní

mobilizace pasivne, pote

aktivne assistovane (vedena)

po 6ti tydne plna mobilizace



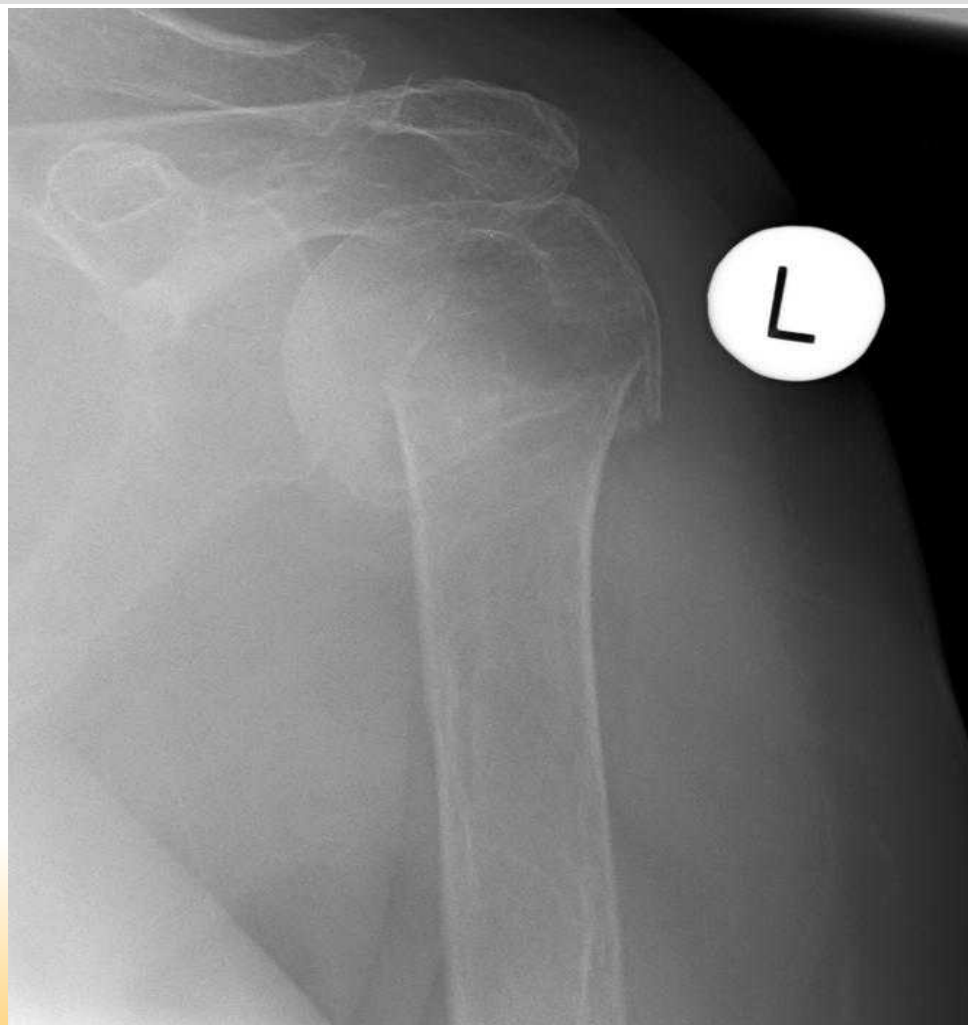
Lecba zlomenin proximalniho humeru



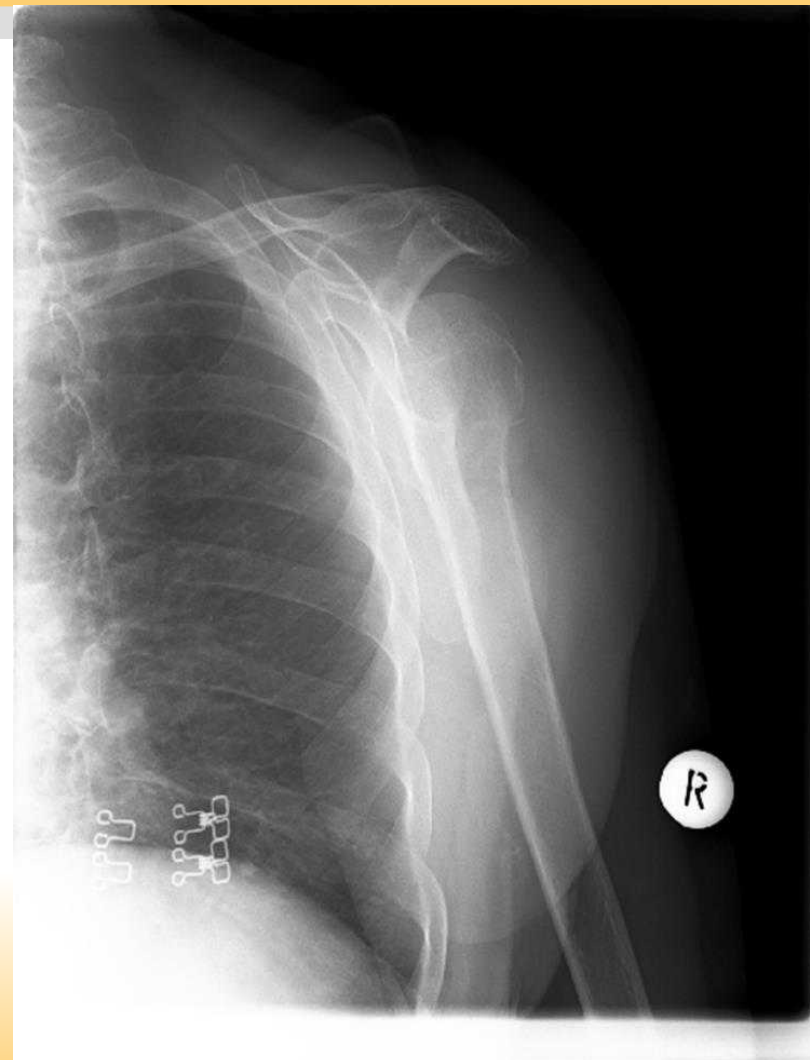
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Konservativni lecba

- **Nevyhody:** - sekundarni dislokace
- **Vyvoj „zlomeninove nemoci“:**
omezeni pohybu = **Atrofie** svalu a kosti
- **Nekrosa hlavice humeru**
- **Ztuhnuti kloubu**
- Thrombosa, Embolie
- Tlakove poskozeni nervu, kuze a dalsich mekkych casti
- Prodlouzene hojeni = **pseudartrosa**)
- **Morbus Sudeck** (CRPS)– bolestiva dystrofie, poskozeni vyzivy, atrofie



Operacni lecba:



Operacni lecba:

Indikace:

- dislokace tuberculum majus nad 2mm, popr.kostni vytrzni RM
- dislokace Collum chirurgicum nad 5mm ad laterus, odklopeni nad 20°
- metafyzarni tristicna zona
- zlomeniny Collum anatomicum
- Head-split zlomeniny
- Luxacni zlomeniny
- poraneni nervu nebo cev



Lecba zlomenin proximalniho humeru



- **Cile:**
- Spravna repozice
- Stabilni osteosynteza
- Casna mobilizace a zatez
- Prevence komplikaci



Lecba zlomenin proximalniho humeru



**1)minimalne invazivni postupy –
zavrena repozice a osteosynteza**

2)Hreb

3)Dlaha

4)Proteza

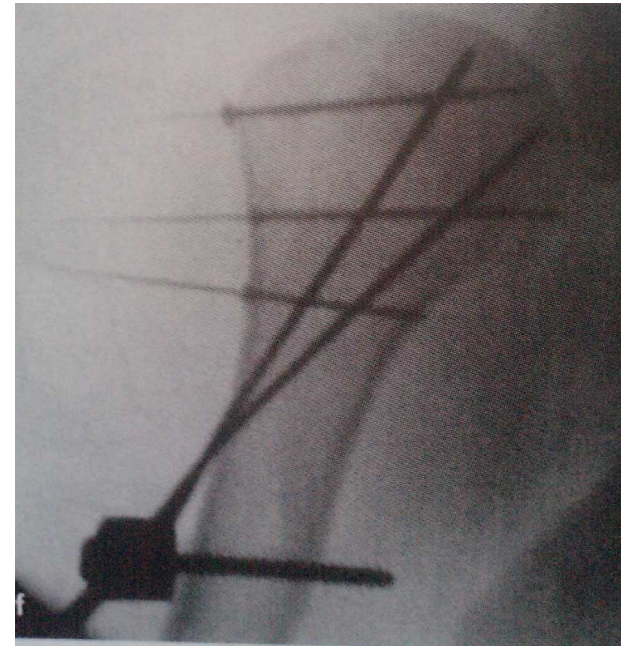
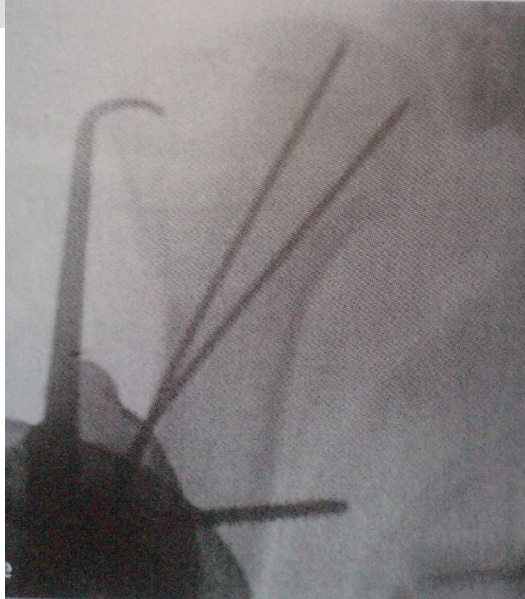


Repozice a perkutanni stabilizace:

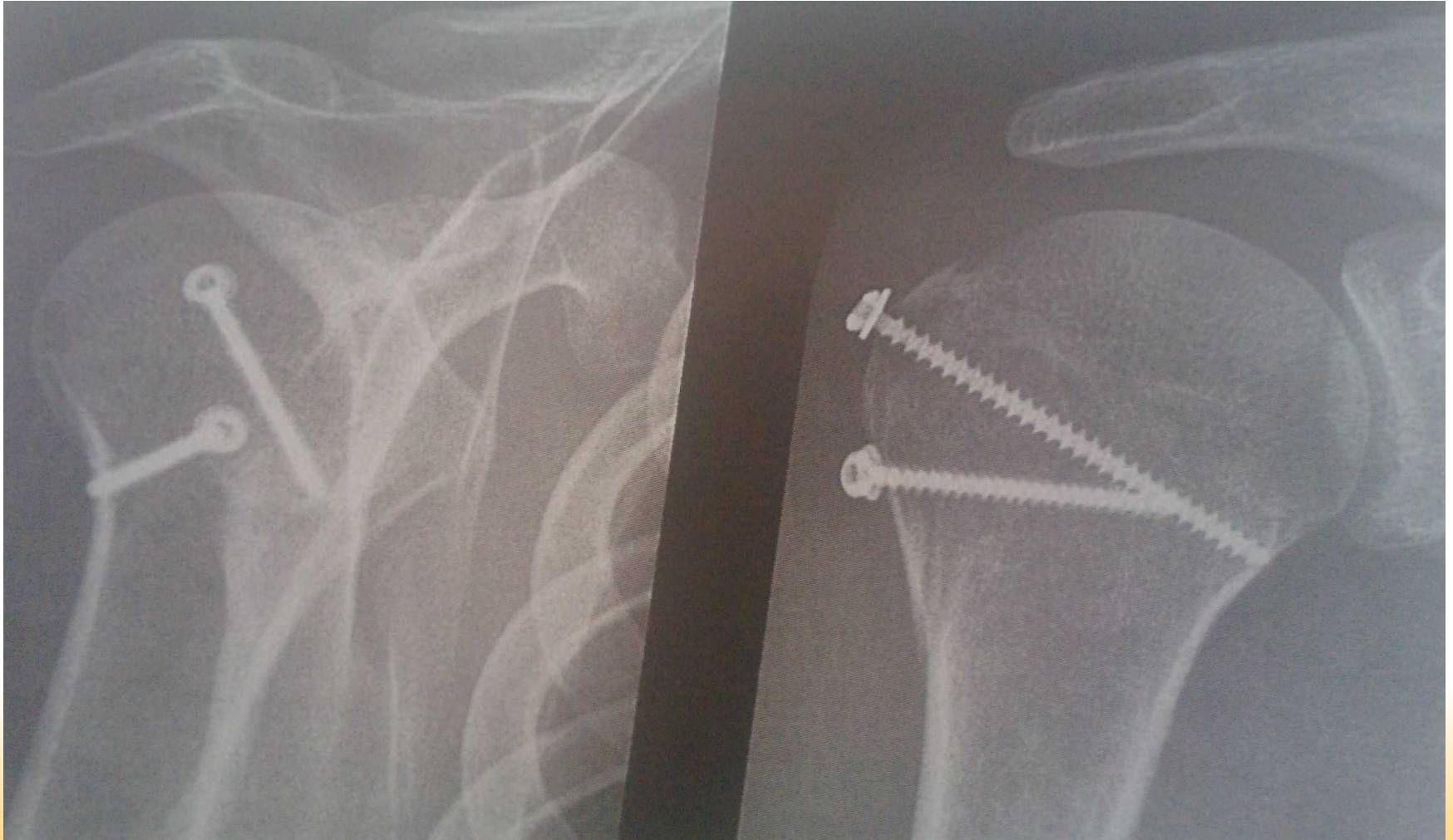


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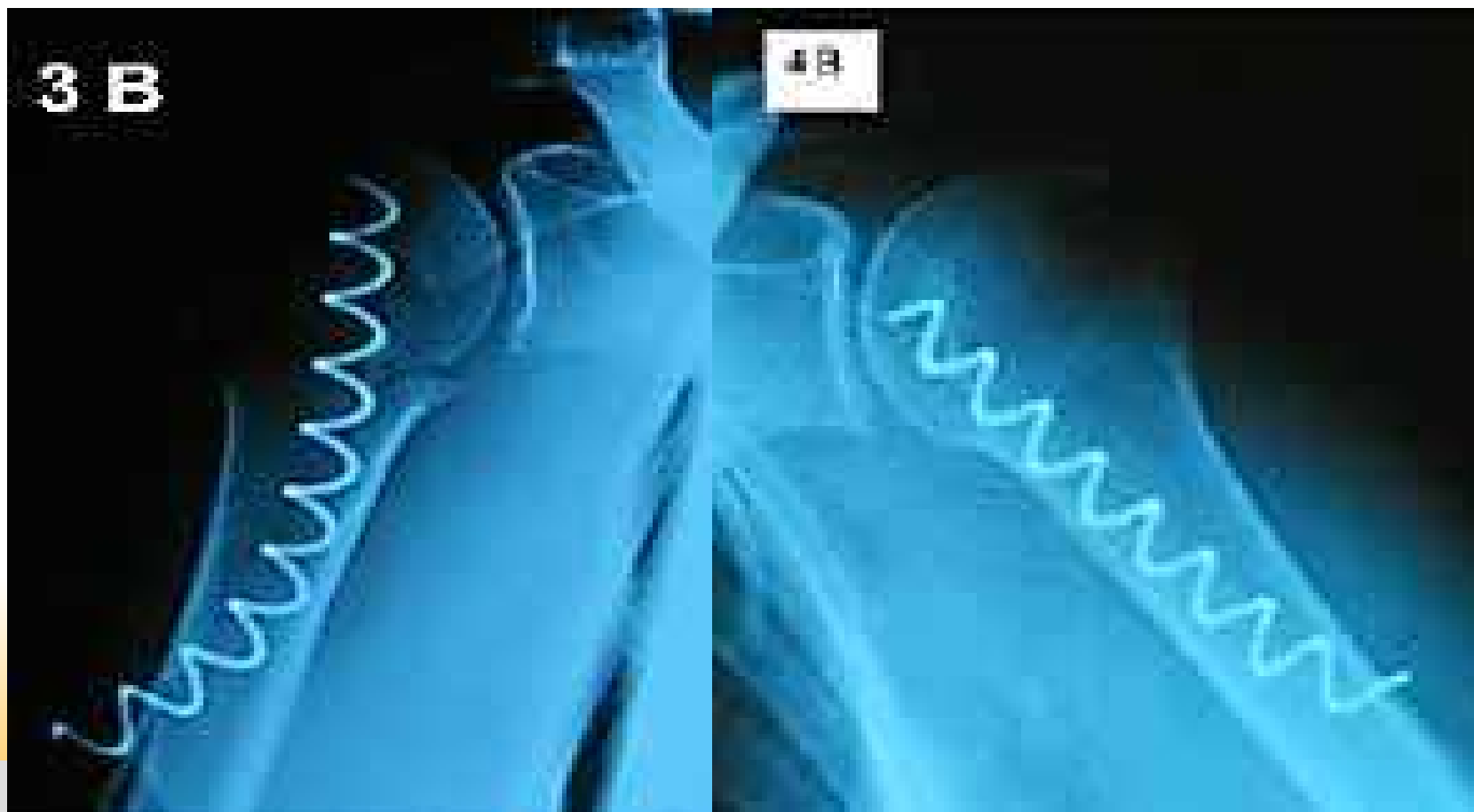
Resch - Humerusblock



Lecba zlomenin proximalniho humeru



Intramedularni Titanhelix

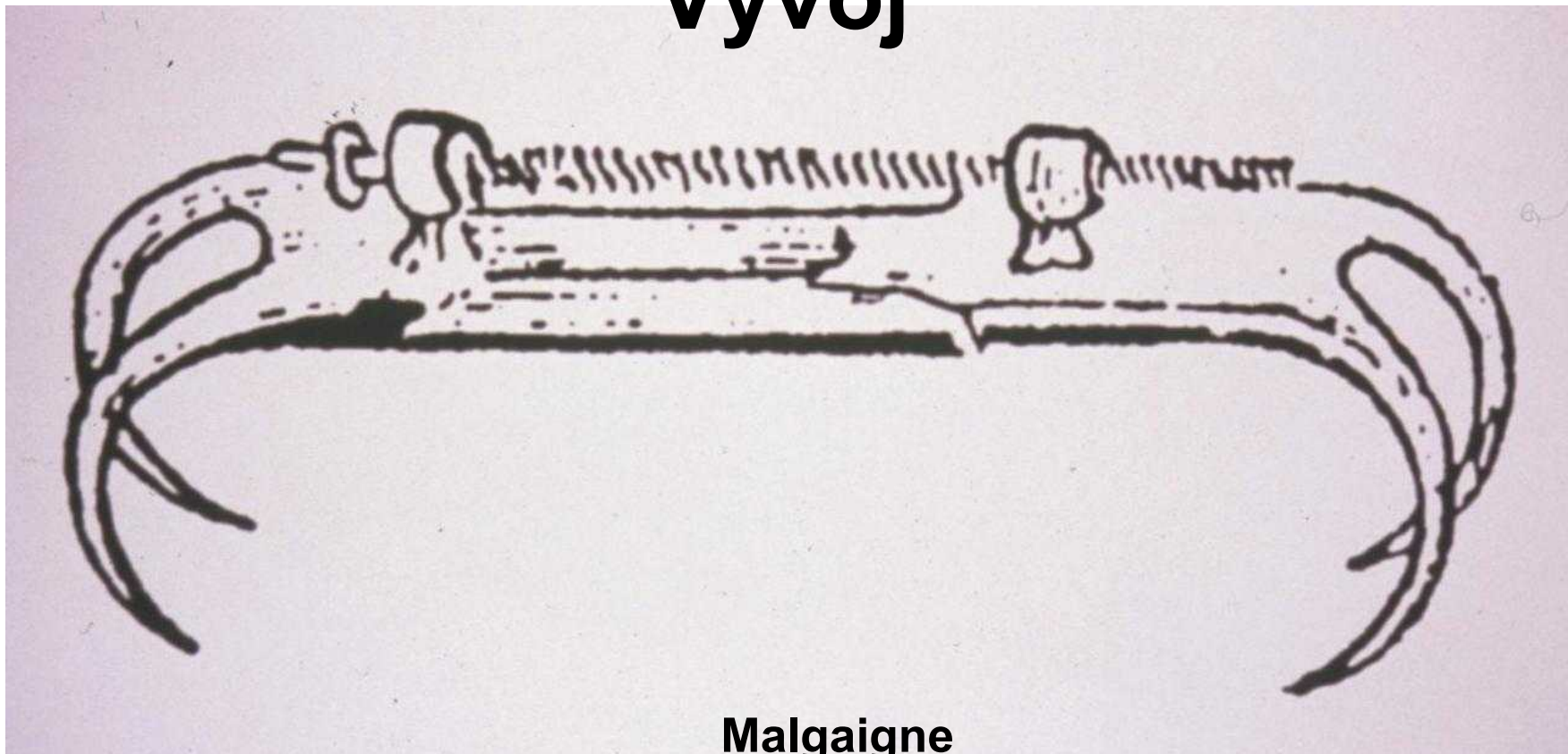


Dlaha – indikace:

- vsechny dislokovane 2 und vice fragmentove zlomeniny
- korekturni osteosynthesy
- revize, psedoarthrosa

vyhody: anatomicky deltoideopektoralni pristup, otevrena repozice, universalni implantat pro mlade a stare, kompletni odstraneni materialu mozne

Vyvoj



Malgaigne
1853

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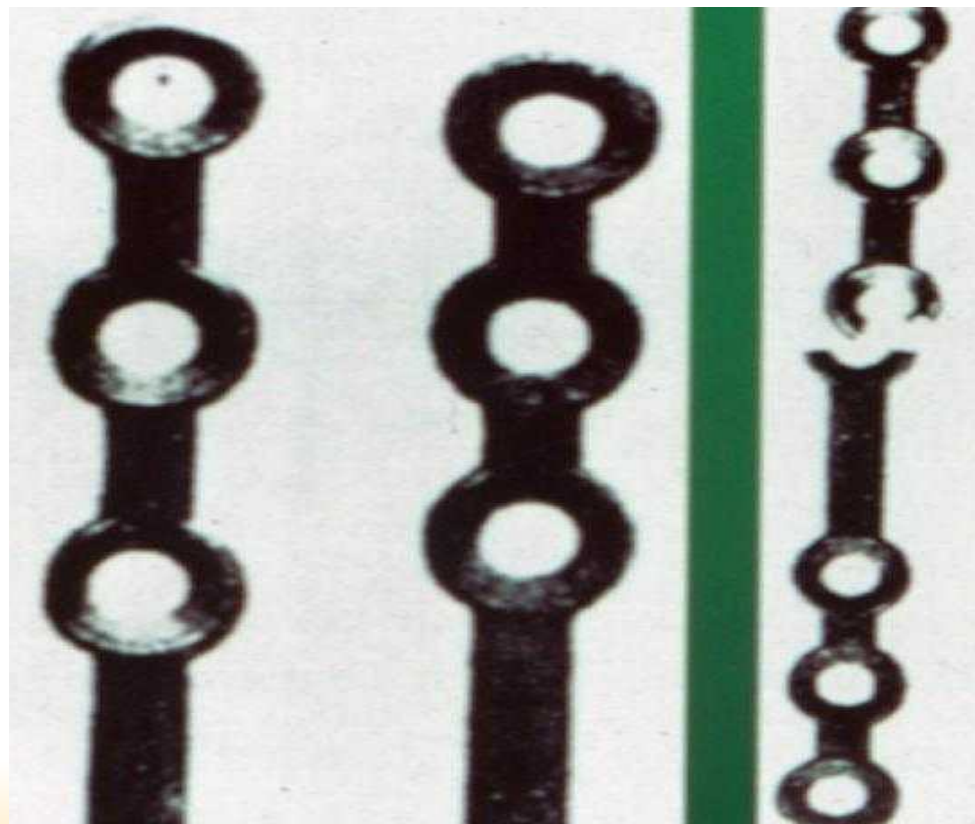




Fig. 3.2.2-12: Anatomically shaped plates (4.5 system):
a) Condylar plate 95° to stabilize fractures of the proximal and distal femur.
b) Angled blade plate 120° for valgization osteotomy of the femur.
c) Condylar buttress plate for the distal femur (left and right).
d) T-plate 4.5 for proximal humerus and proximal tibia.
e) Lateral tibial head buttress plates.
f) Tibial head buttress plate (right and left).
g) Cobra head plate for arthrodesis of the hip.
h) Angled blade plate for varization of the femur.
i) Dynamic condylar screw for proximal and distal femur (side plate and screw separate).
j) T-plate 3.5 (oblique angled) for distal radial fractures.

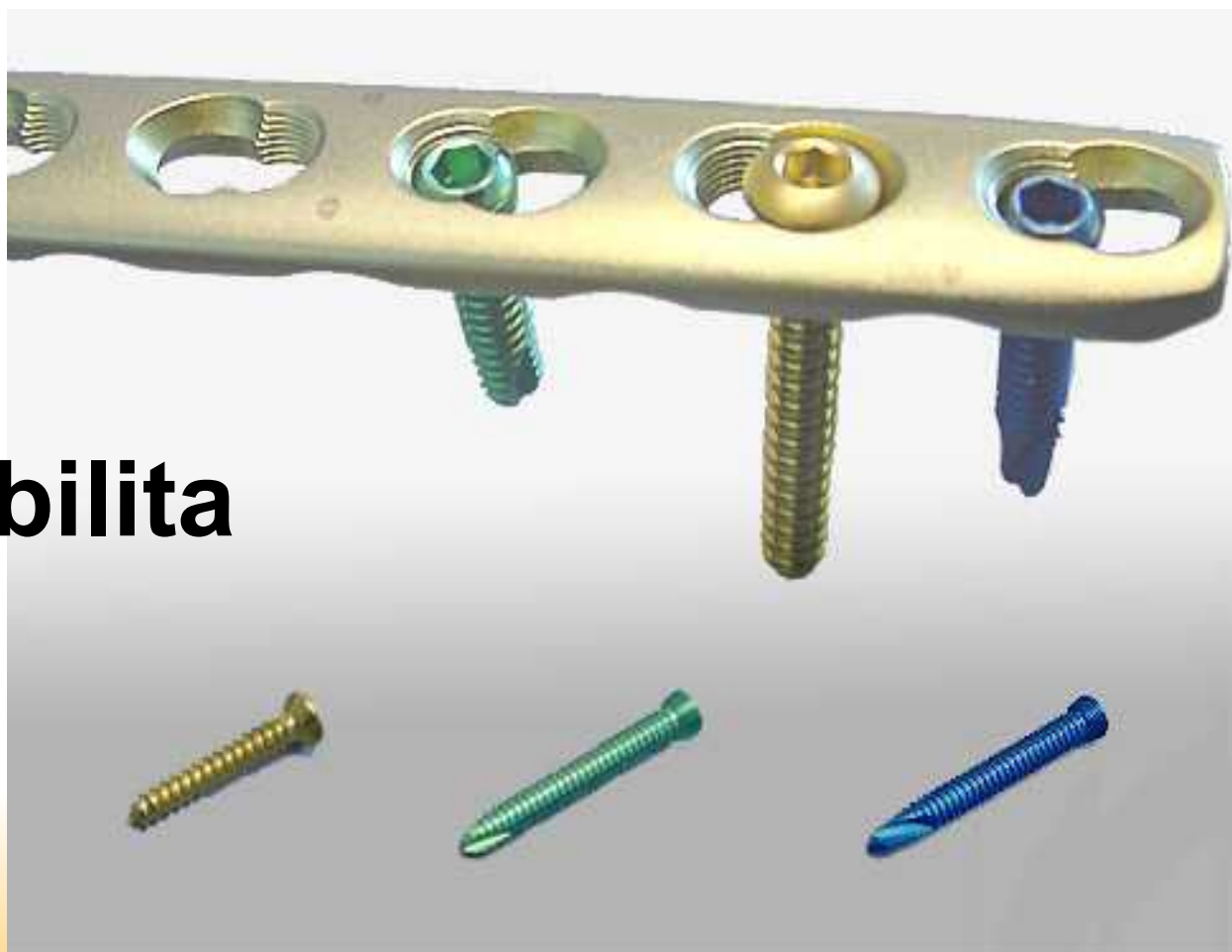
“preformovane dlahy”
pasujici k anatomii
urcite casti skeletu

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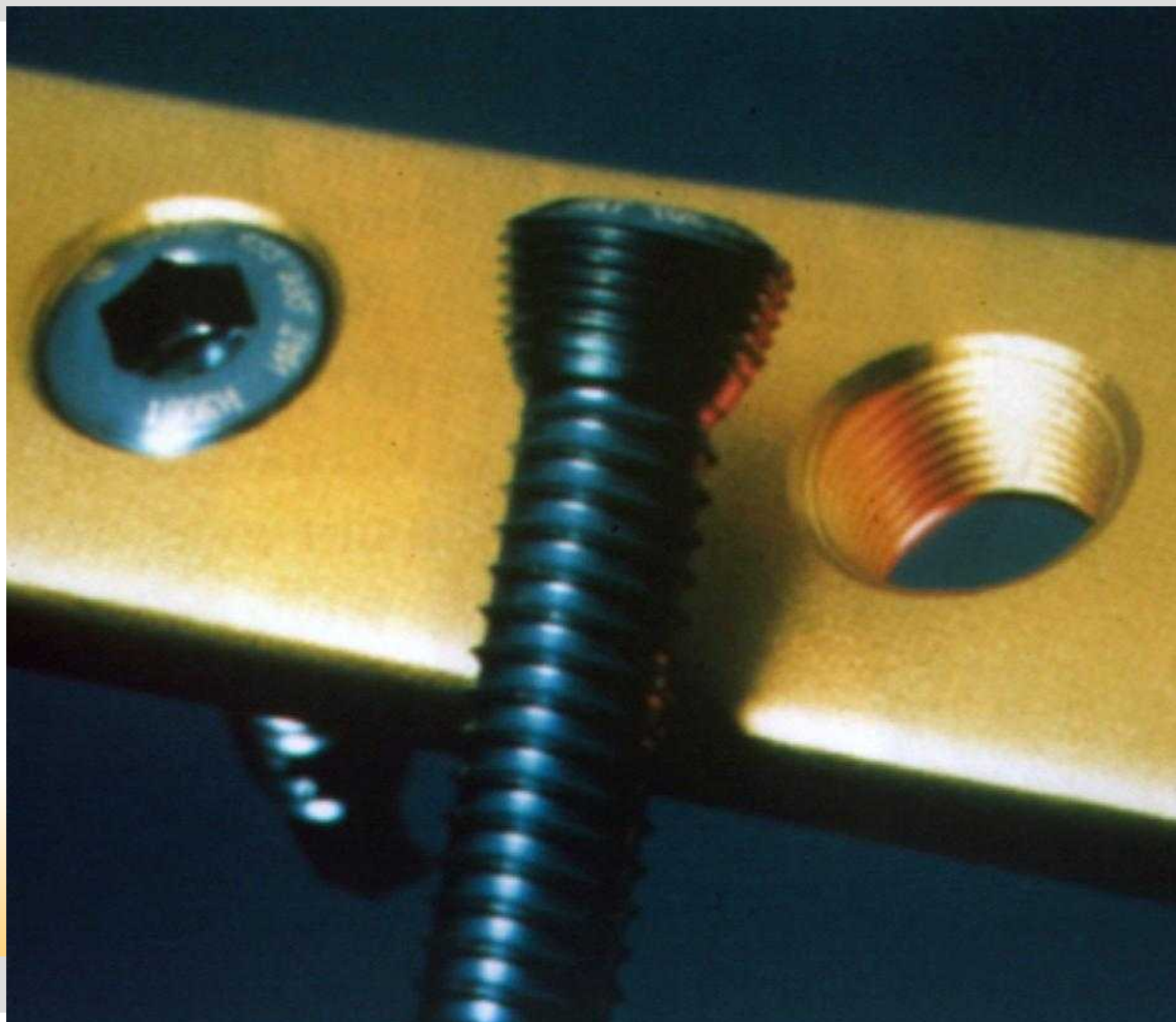


Neustale nove napady

Uhlova stabilita



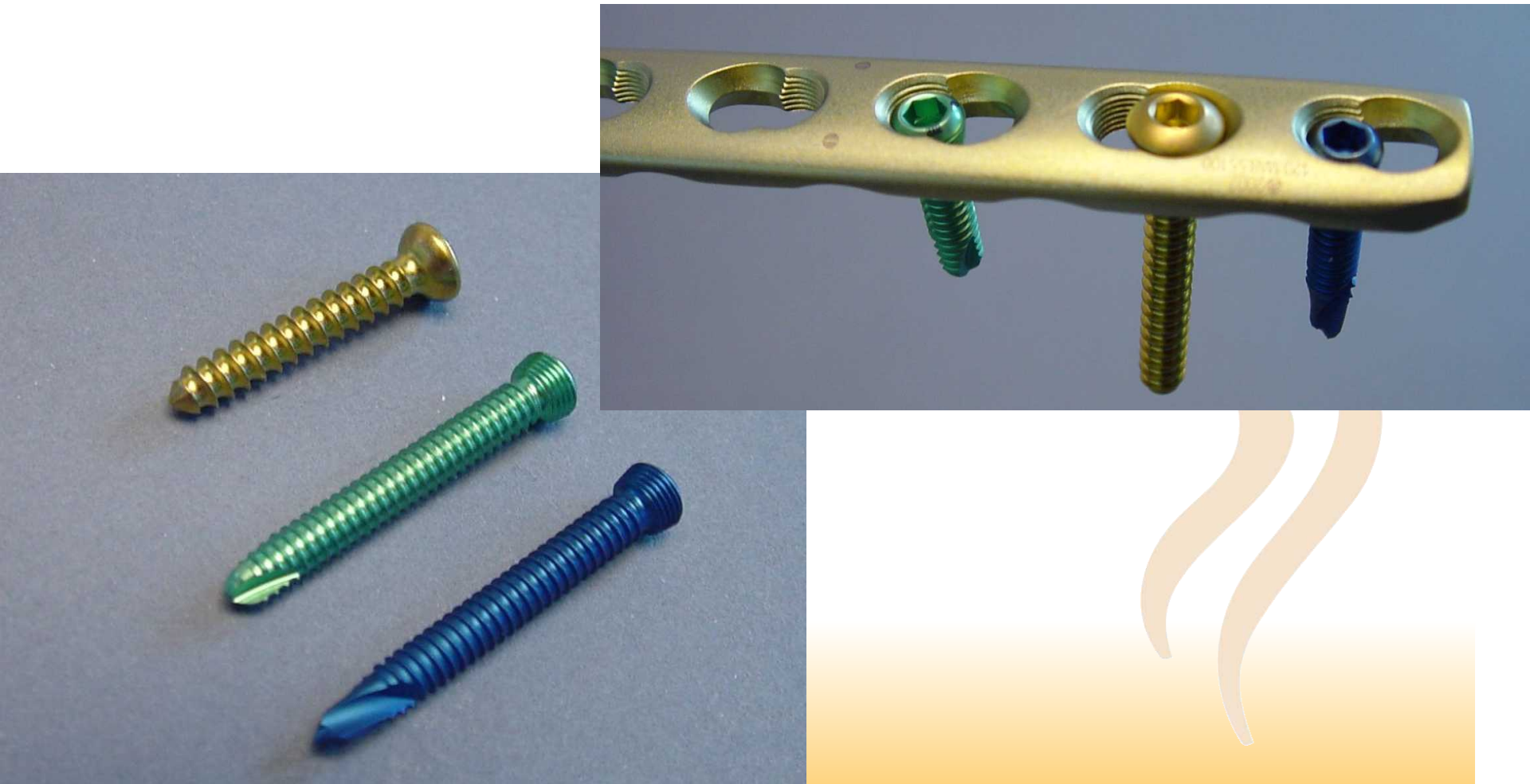
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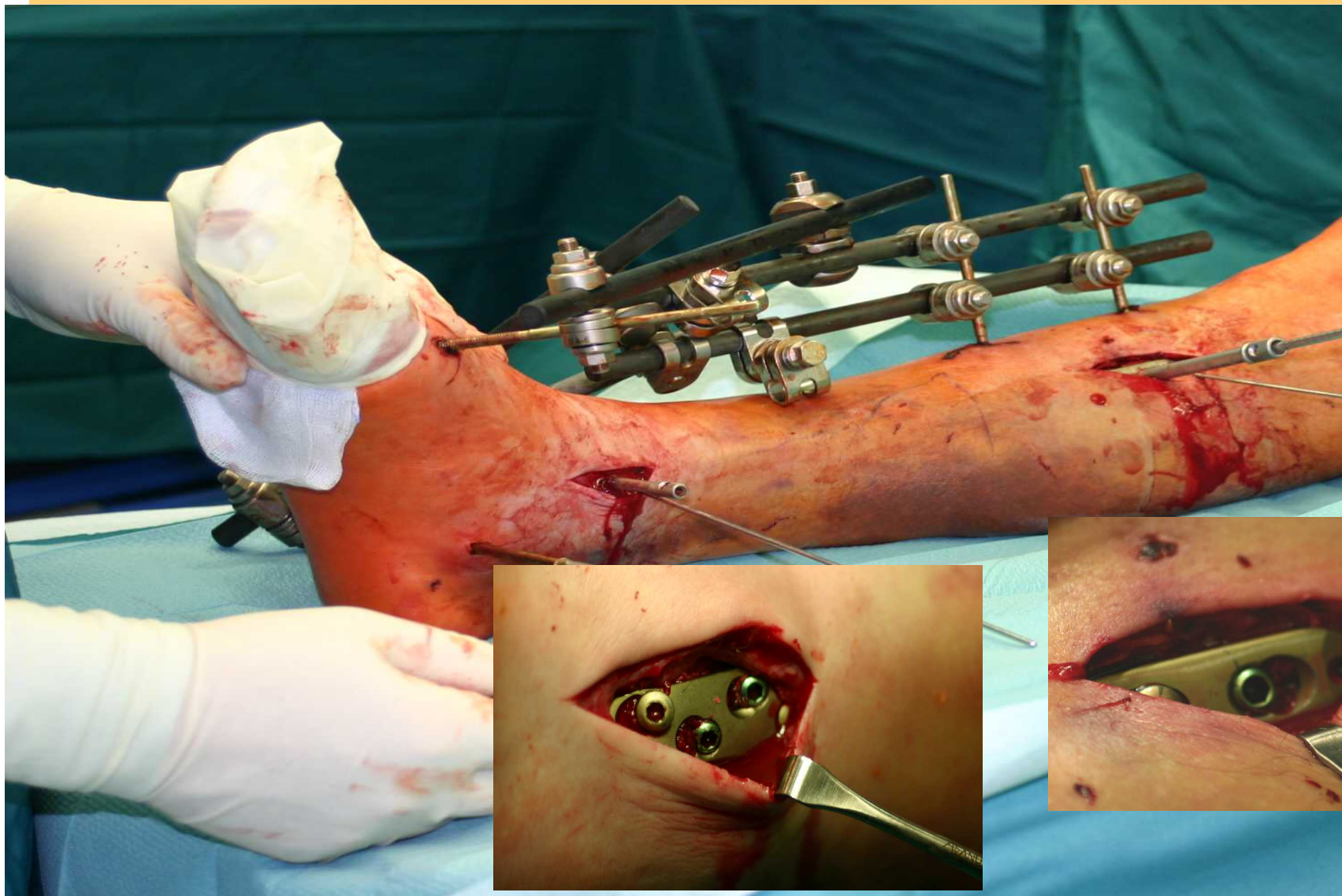
Moderne Optionen der Behandlung der Frakturen des proximalen Humerus



Minimalne invazivni = operace klicovou dirkou



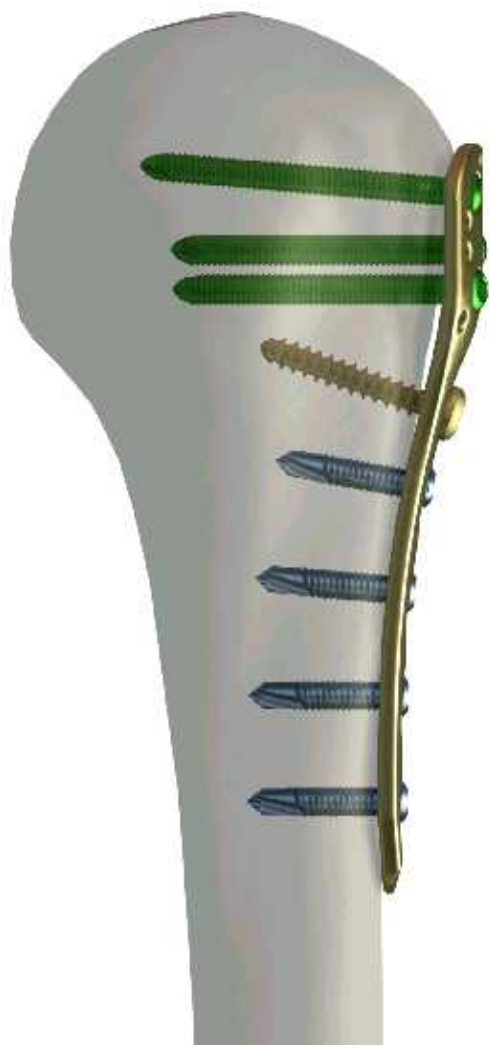
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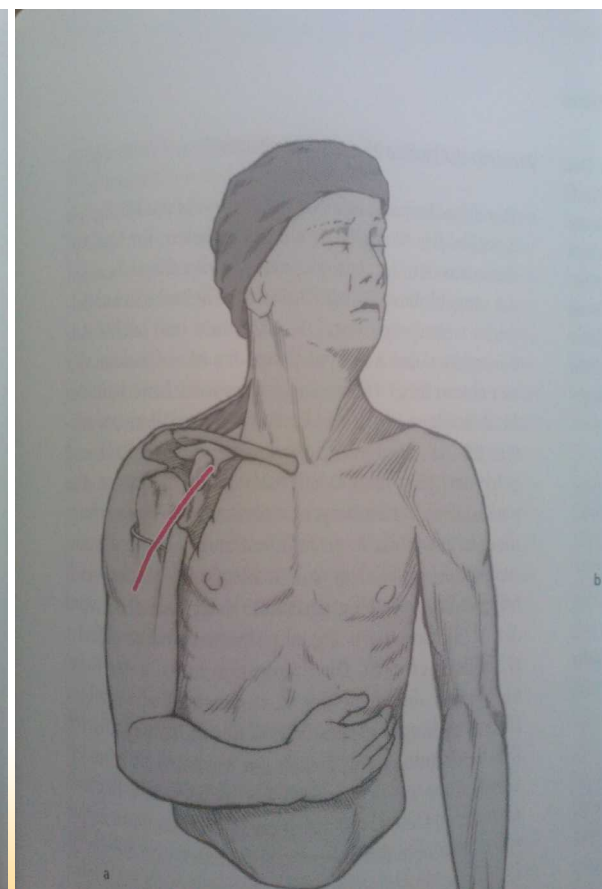
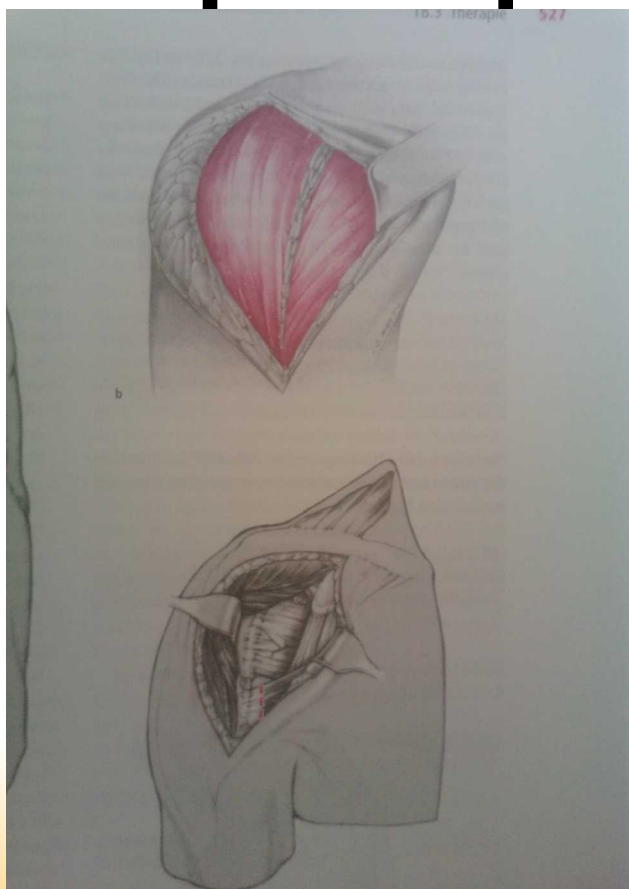
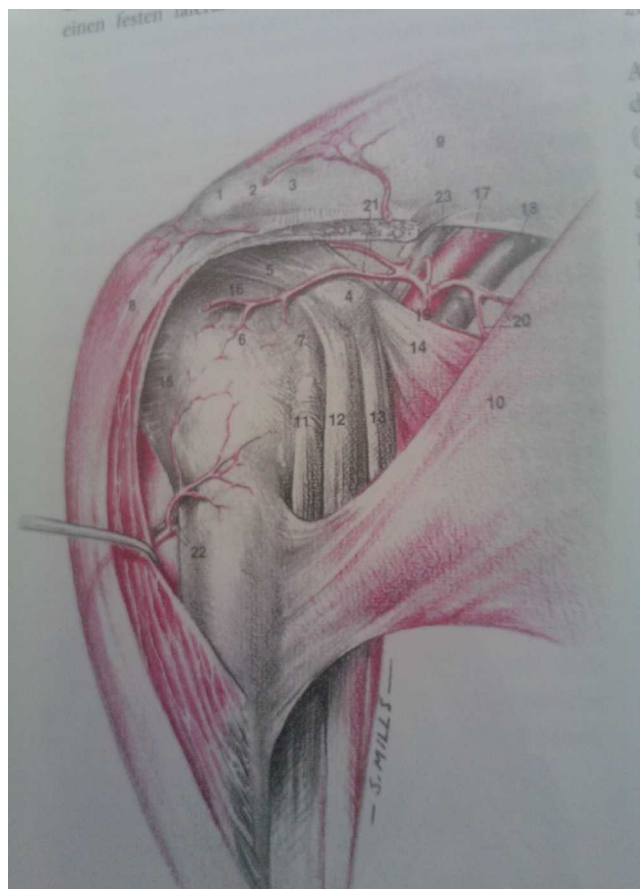


Moderne Optionen der Behandlung der Frakturen des proximalen Humerus

Polohovani



OP - pristup



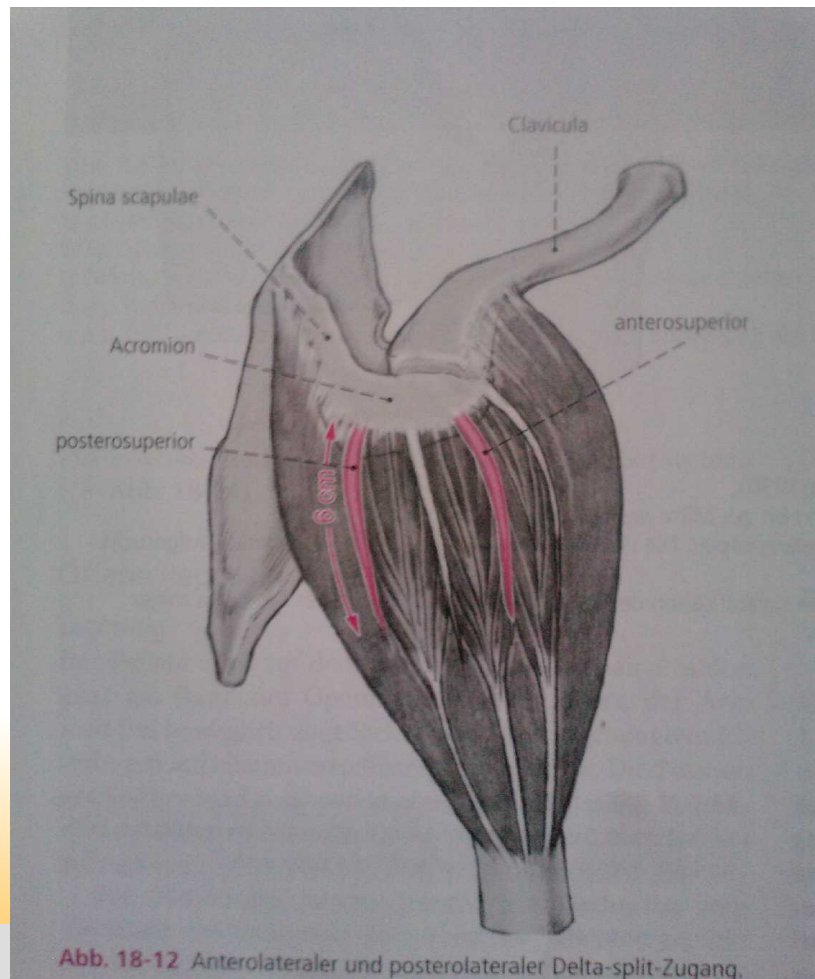
OP - pristup



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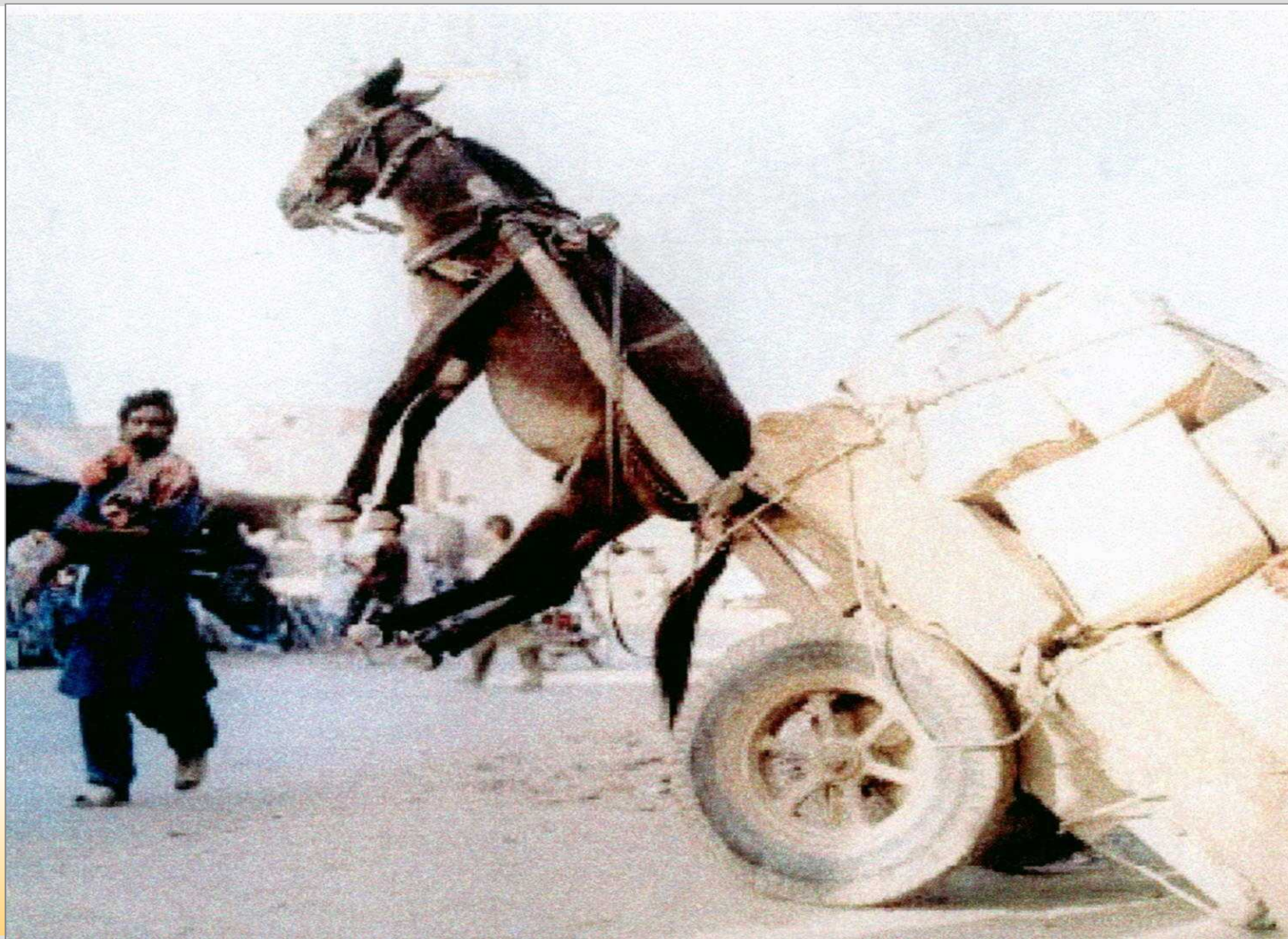
OP- pristup alternativy



- Uspešna operace neznamena, ze je zlomenina zahojena
- Dulezita je spoluprace pacienta



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Versagen ?



Lecba zlomenin proximalniho humeru



Komplikace:

- primarni chybná poloha implantátu (pod 22%)**
- sekundarni chybná poloha implantátu skrze
Dislokation osteoporoticke kosti (pod 26%)**
- chybné postavení kosti**
- poruchy hojení (nekroza hlavice 13%,
pseudoartrosa 3%, infekce 6%, heterotopní
osifikace)**



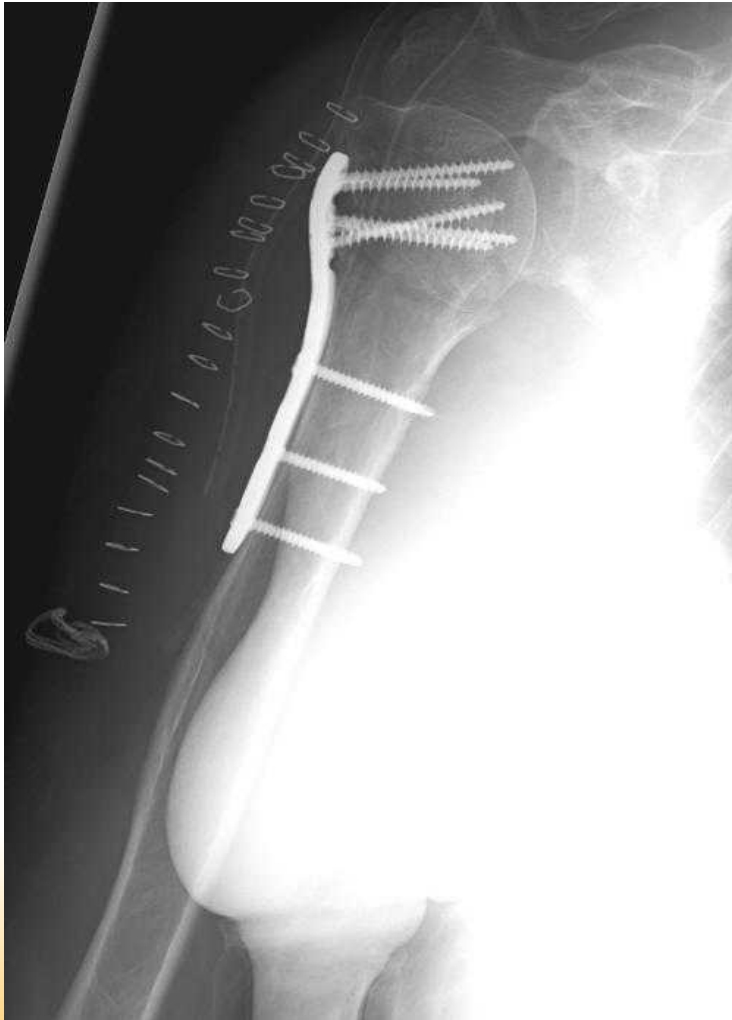
Poraneni nervu



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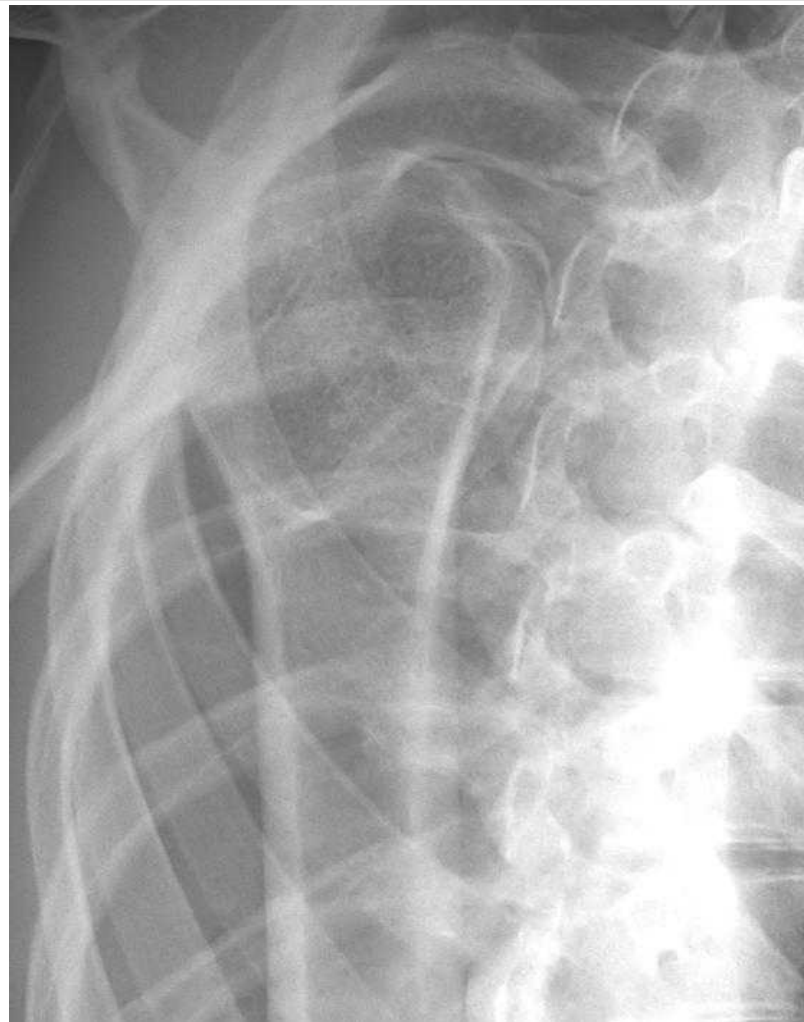
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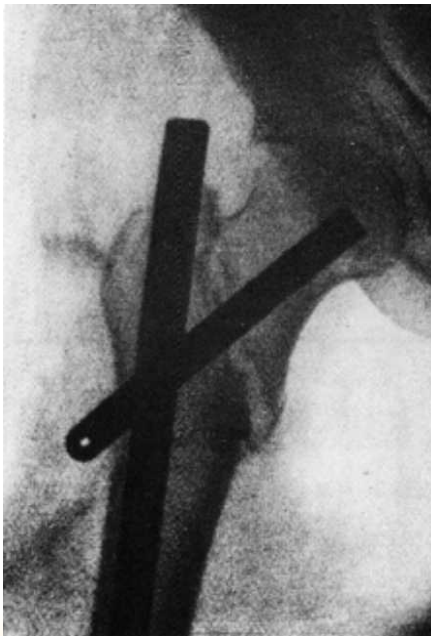
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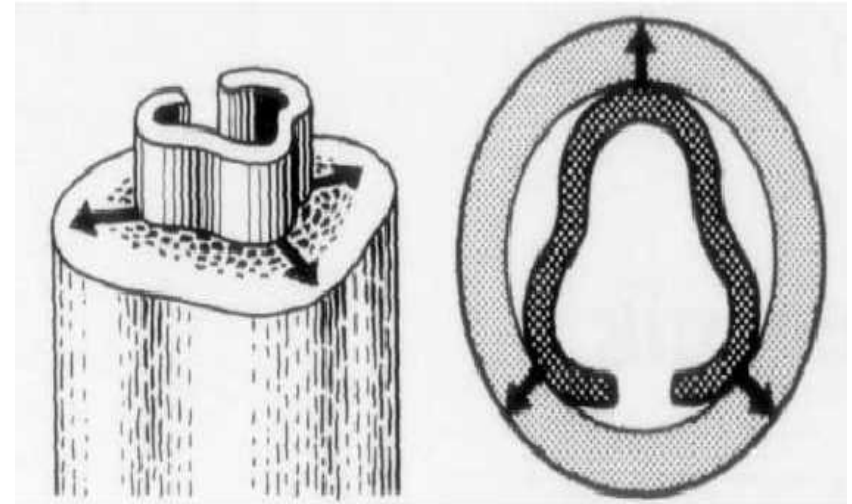
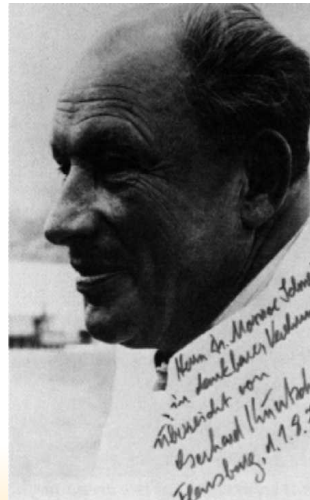
Hreb



Hrebovani



09.11.1939



Gerhard Küntscher
(1900-1972)

“Y-Nagelung” hrebovani proximalniho femoru

Prevot hreb u deti



Prevotnagel bei einem Kind



Anatomicky preformovane hreby



PHN Synthes



T2 Stryker Howmedica



**Targon PHN (Fa Aesculap) – spezielni srouby
- design proti vycestovani sroubu (backing out)**

**Polarus Nagel (Fa Acumed) uhlove stabilni
uchyceni sroubu**

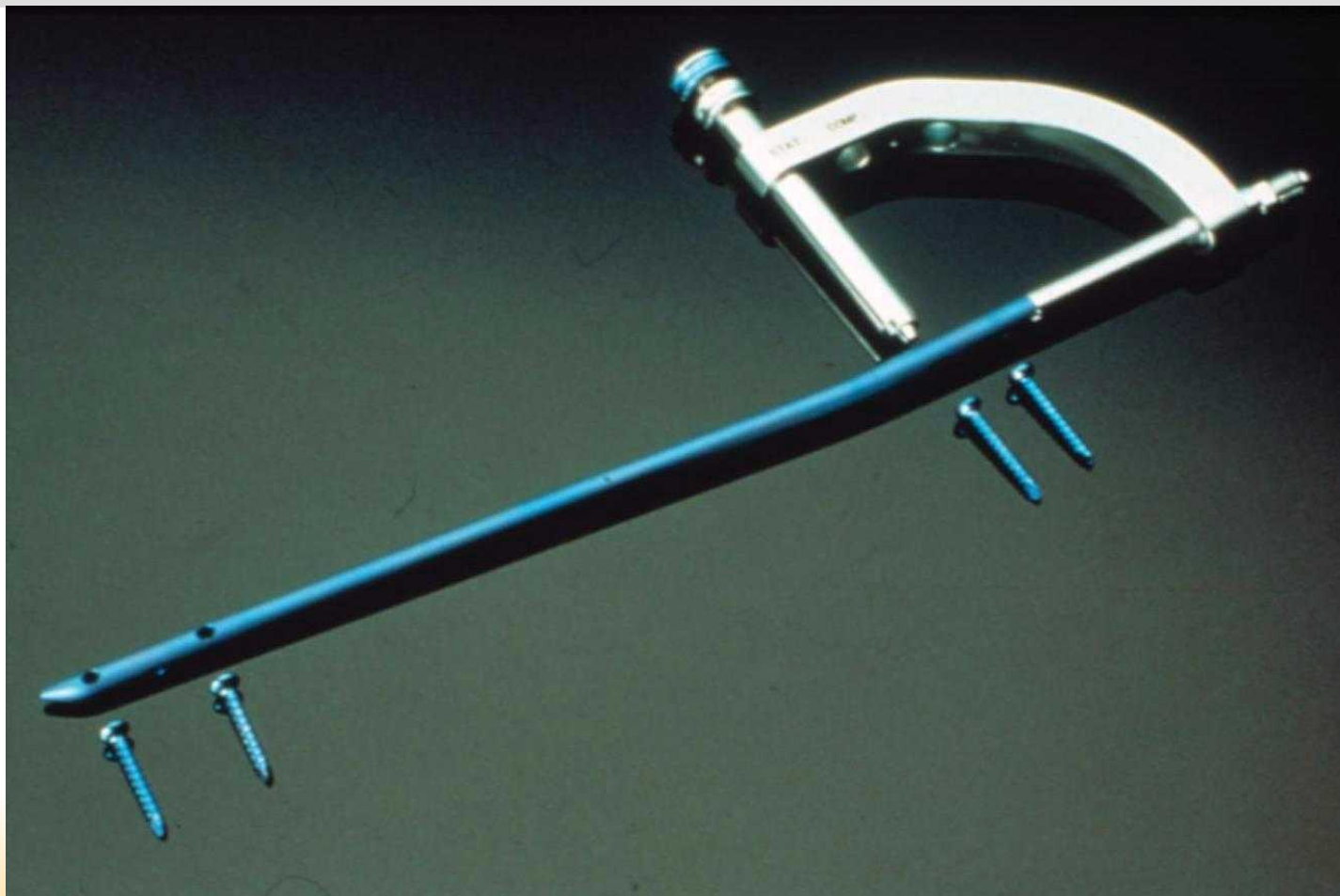
Telegraph Nagel – Metz, Francie

**Trigen proximal Straight- und Bent Hreb
(Fa Smith&Nephew)**

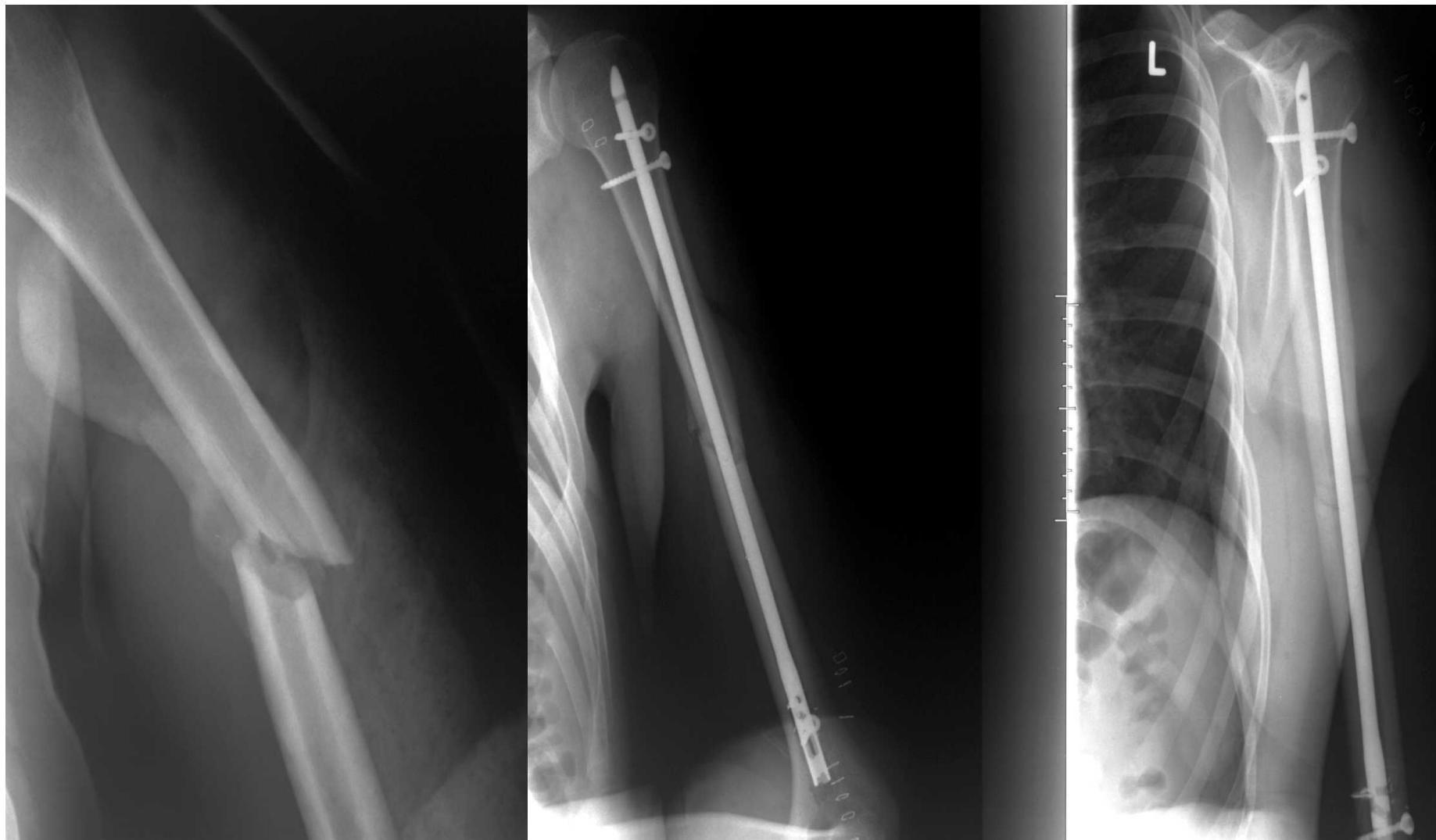
Sirusnagel (Fa Zimmer)



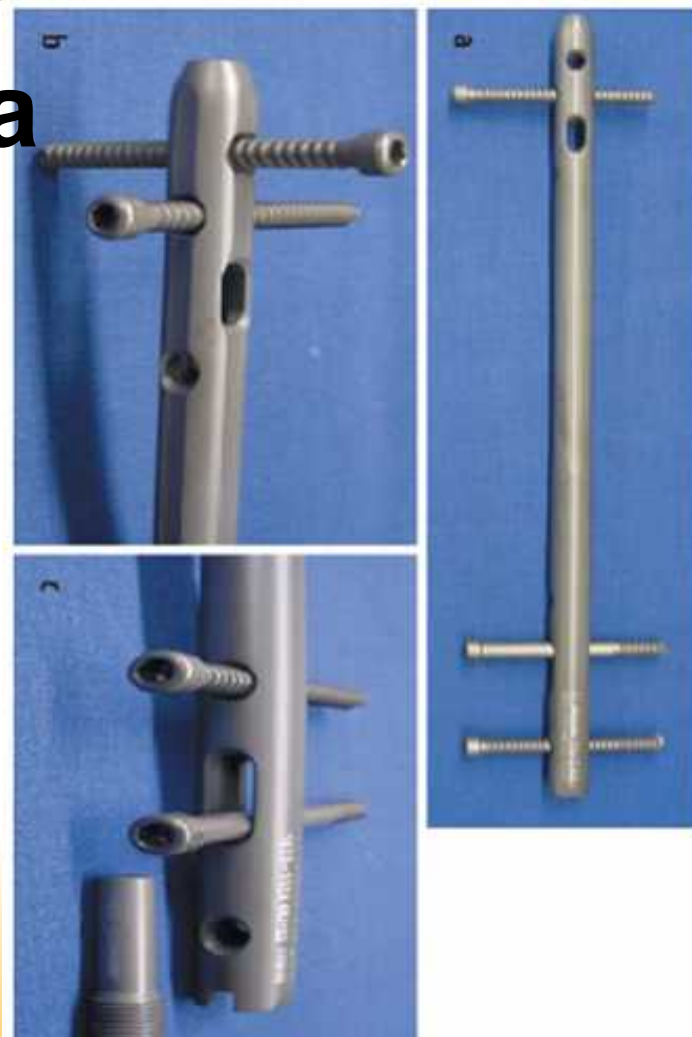
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Nove – Titan, uhlova stabilita



Lecba zlomenin proximalniho humeru

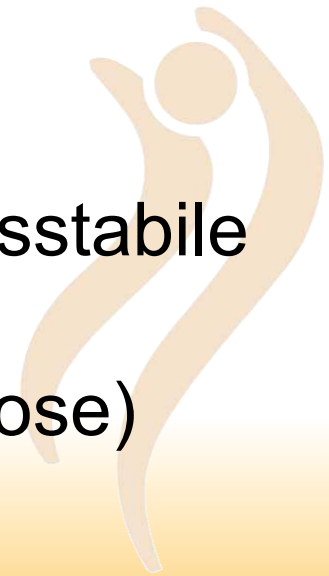


Indikation:

- idealni – 2 fragmenty
- Podminene 3-4 fragmenty
- rozsahla subkapitalni tristiva zona
- Zlomeniny zasahujici do tela pazni kosti
- Etazove zlomeniny



- **Vorteile:**
- Minimal invasive Implantation (Schlüssellochchirurgie)
- Biologische Osteosynthese (Fraktur bleibt unberührt)
- Intramedulläre Implantatlage
- Übungs- und in aller Regel belastungsstabile Osteosynthese
- bei verzögerter Heilung (Pseudoarthrose)



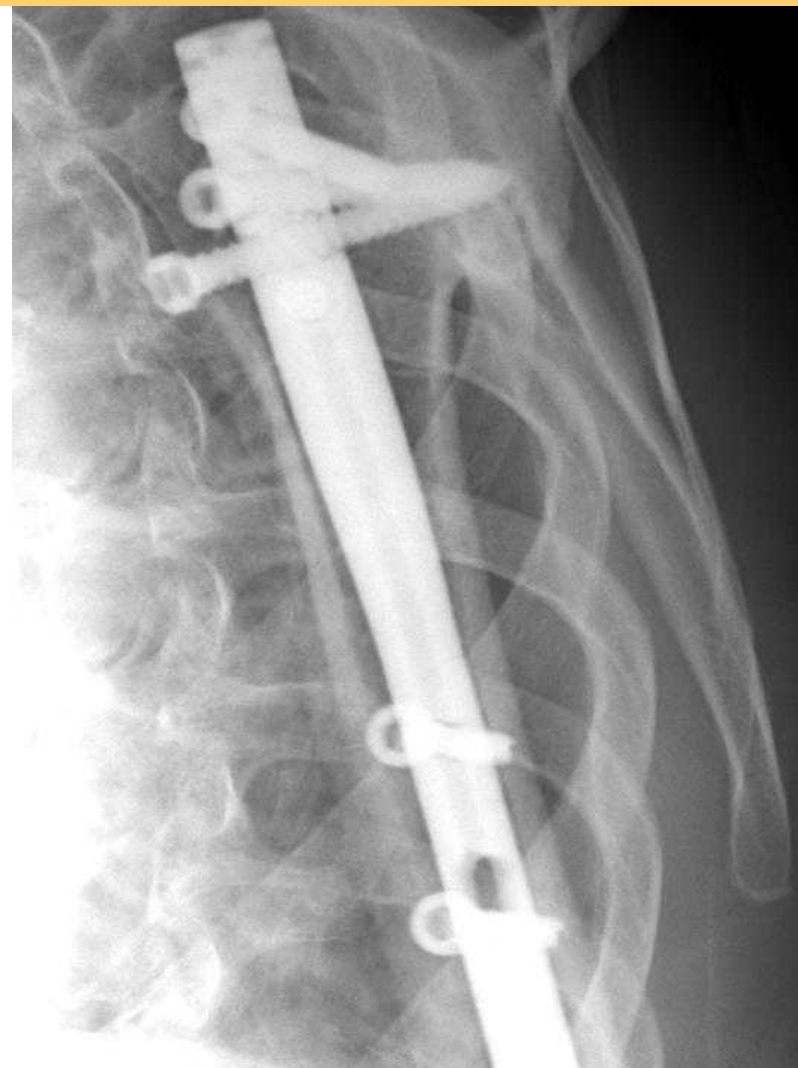
- **Nevyhody:**
- Kompromitace rotatorove manzety
- zavrena (nepresna) repozice
- Intramedularni poloha implantatu
- neanatomicky Delta-split-pristup
- Nevhodny pro vicefragmentove zlomeniny



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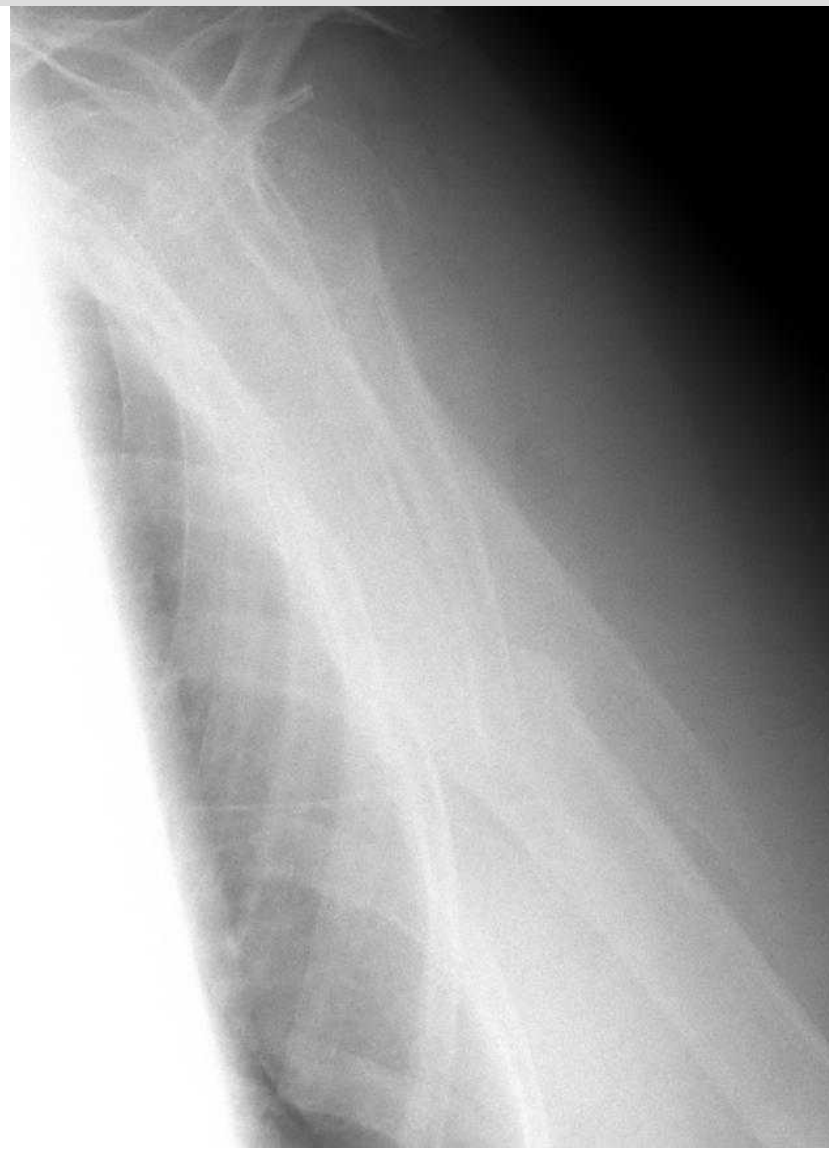
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Trauma proteza – Indikace:

- **Nerekonstruovatelné nebo nereponovatelné zlomeniny**
- **Malý slupkový fragment kaloty**
- **Zadná nebo minimální mediální opora**
- **Head-split zlomeniny**
- **Impresivní zlomeniny**
- **Zaháklé luxační zlomeniny**
- **Zastaralé dislokovane zlomeniny**
- **Selhání osteosyntesy hřebem, dlahou atd.**



Komplikationen:

intraoperacni

- poraneni nervu
- iatrogenni zlomeniny
- chybné postavení

casne pooperacni

- Dislok.Tubercul, subakromiales Impingement
- kloubní nehybnost, Instabilita, Infekce

pozdejsi pooperacni

- aróze glenoidu, arthrosa, pseudoarthrosa Tubercul
- Heterotopní ossifikace, Leze rotátorové manžety
- uvolnění protezy, periprotetická zlomenina



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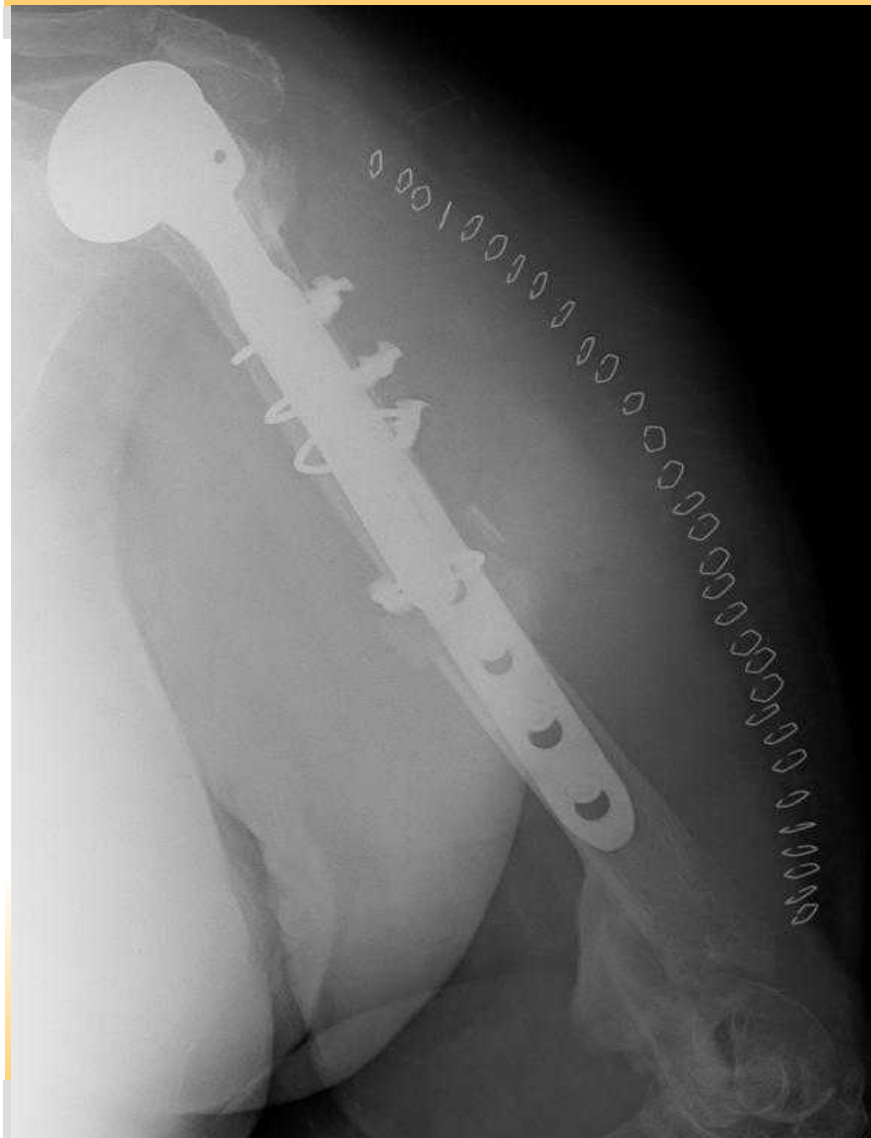
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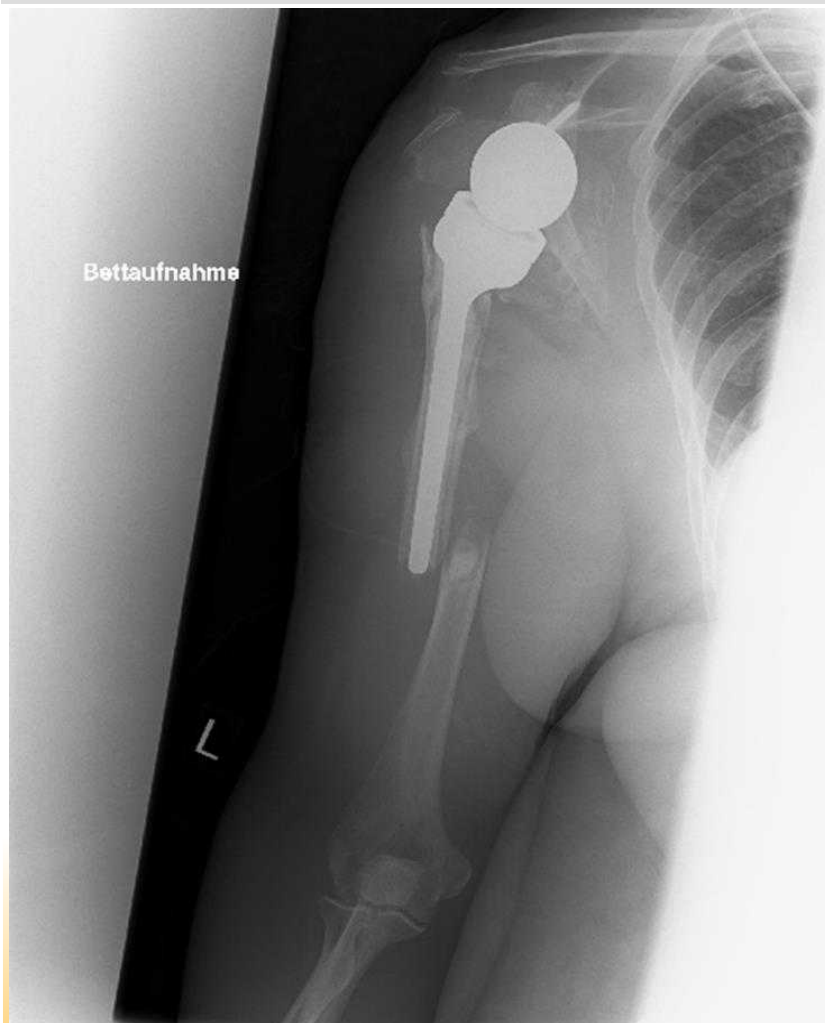
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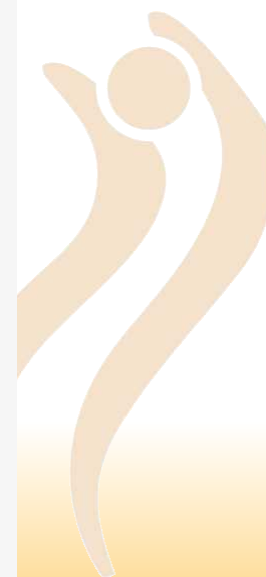
Augmentace – zement – Traumacem V+ (Kalciumsulfat, bzw.fosfat)

- kostni stepy**
- spongiosa**

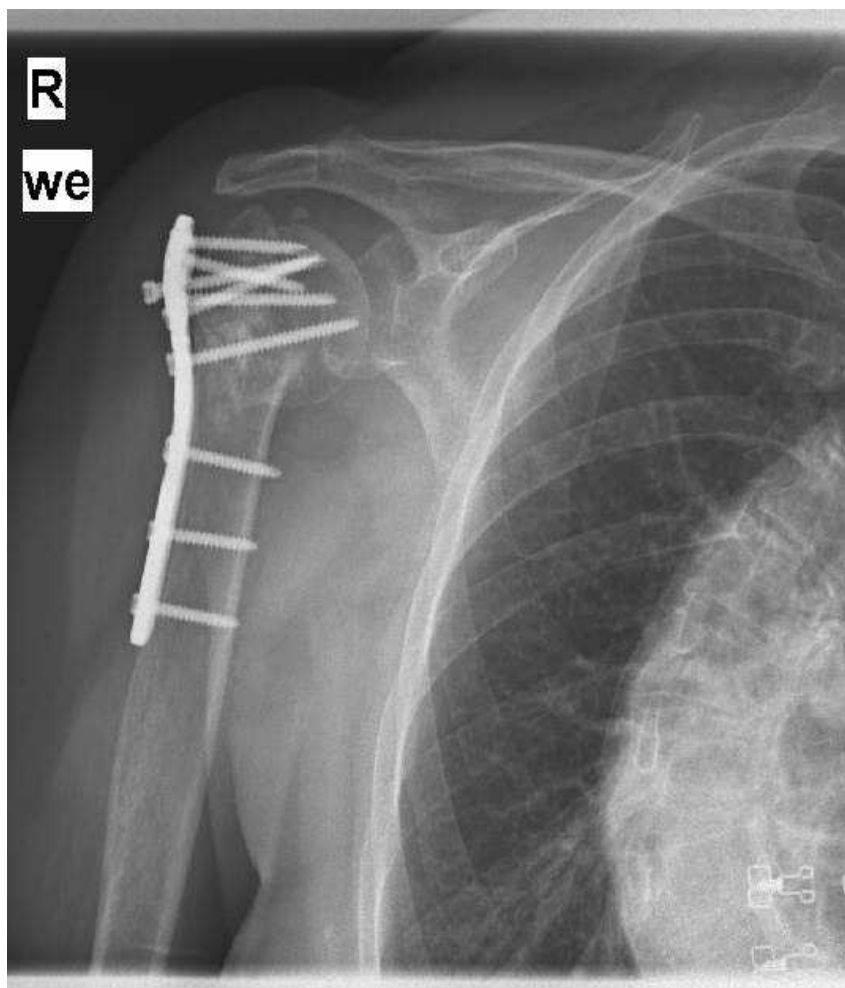
**Tloustka a objem trabekul je
nejvyssi dorsale, kraniale a
medialne a nejnizsi
anteroproximalne**



Lecba zlomenin proximalniho humeru



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Lecba zlomenin proximalniho humeru

Depuy Synthes



Ltd.OA Dr.Binder Z., ChA Dr.Fischer N., Krankenhaus Tirschenreuth

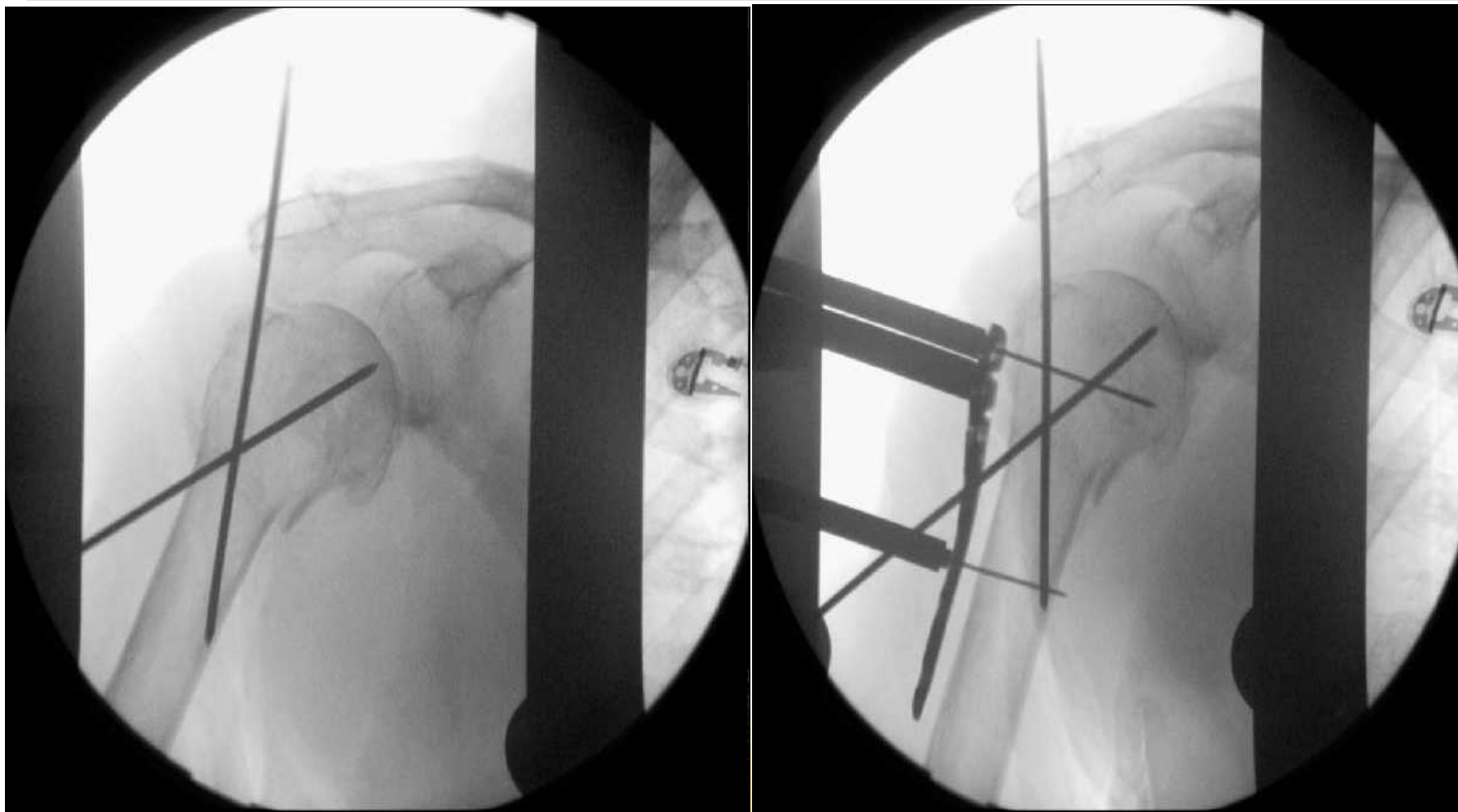
Minimalne invazivni metoda – VaWiKo dlaha - Firma Königsee



**Minimalne invazivni metoda
– VaWiKo dlaha -
Firma Königsee**



Lecba zlomenin proximalniho humeru



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**Minimalne invazivni metoda
– VaWiKo dlaha -
Firma Königsee**



TESE 2018



Zaverem:

- nadale ca.50%konservativne
- Trend – OP lecba
- „zlaty standart“ – uhlove stabilni dlaha
- Minimalne invazivni postupy – pouziti stoupa
- Augmentace – cement, kostni stepy
- Optionalne – Traumaprothesa, popr.inverzni proteza
- cil – casna mobilizace, dobra funkce, spokojeny pacient

Moderne Optionen der Behandlung der Frakturen des proximalen Humerus



Literatur:

Zeitschr.Trauma und Berufskrankheit 1/2008

Autoren Kantonspital Frauenfeld

OP-Journal 10/2010

Zeitschr.Othopädie und Unfallchirurgie 3/2010

Frakturen und Luxationen – Lutz von Laer

Schulterchirurgie – Habermeyer

Praxis der Orthopädie und Unfallchirurgie – Wirth, Mutschler

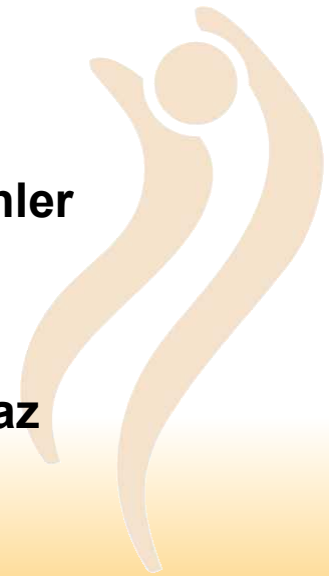
Die proximale Humerusfraktur – Helmut Lill

Spezielle Unfallochirurgie – Marzi, Phlemann

OP Journal Kveten 2017, Prim.Dr.med.Michael Plecko, Graz

Der Unfallchirurg September 2015

atd.



Srdecne dekuji za pozornost !



