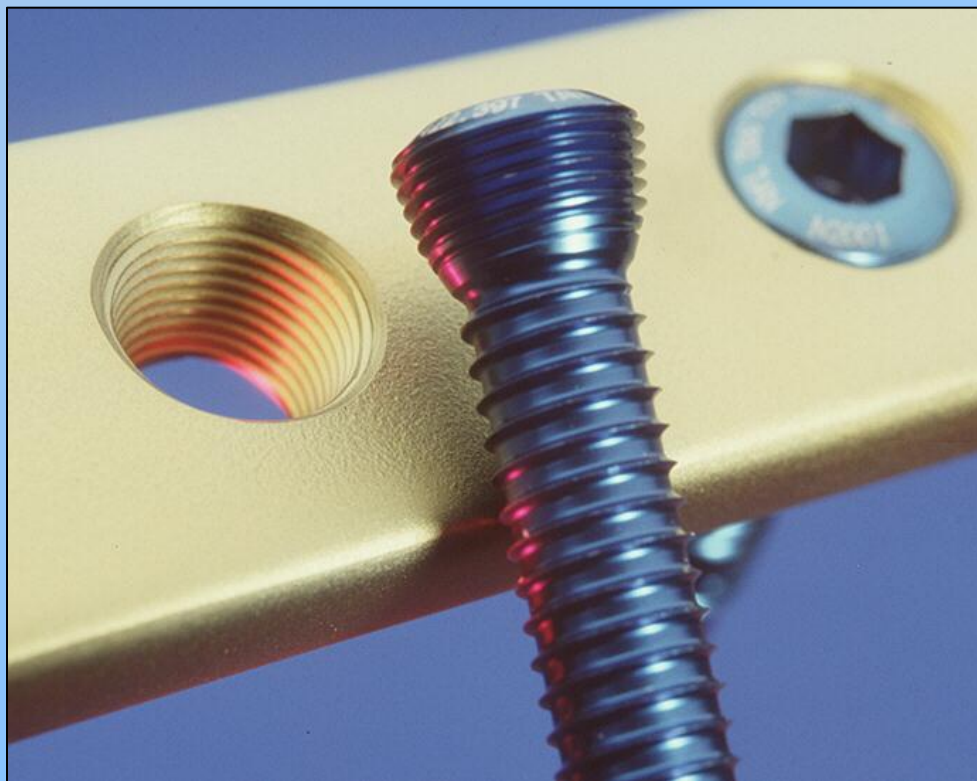


# Úhlově stabilní implantáty u zlomenin pánve a acetabula

Šrám J, Lukáš R., Taller S., Harcuba R. Křivohlávek M.  
Traumatologicko- ortopedické centrum, Krajská nemocnice Liberec a.s.



# LCP dlahy – vnitřní fixater – dlahová revoluce 90. let



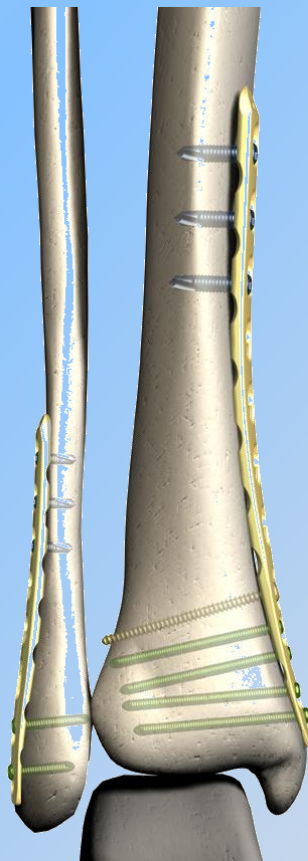


# Vnitřní fixatéry LCP - relativní stabilita - absolutní stabilita

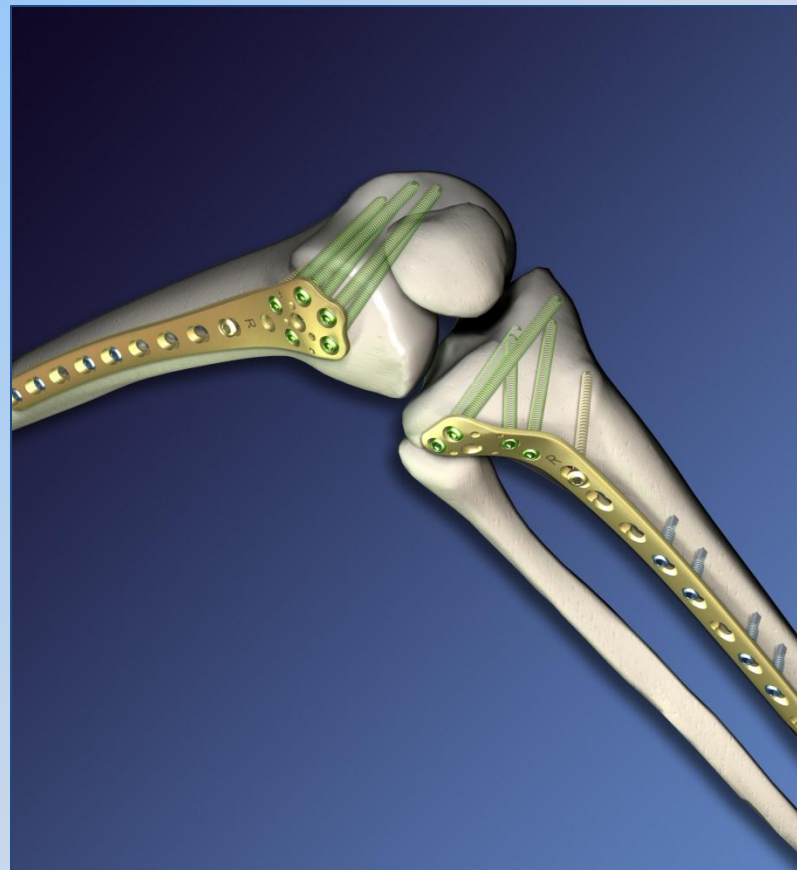
Philos



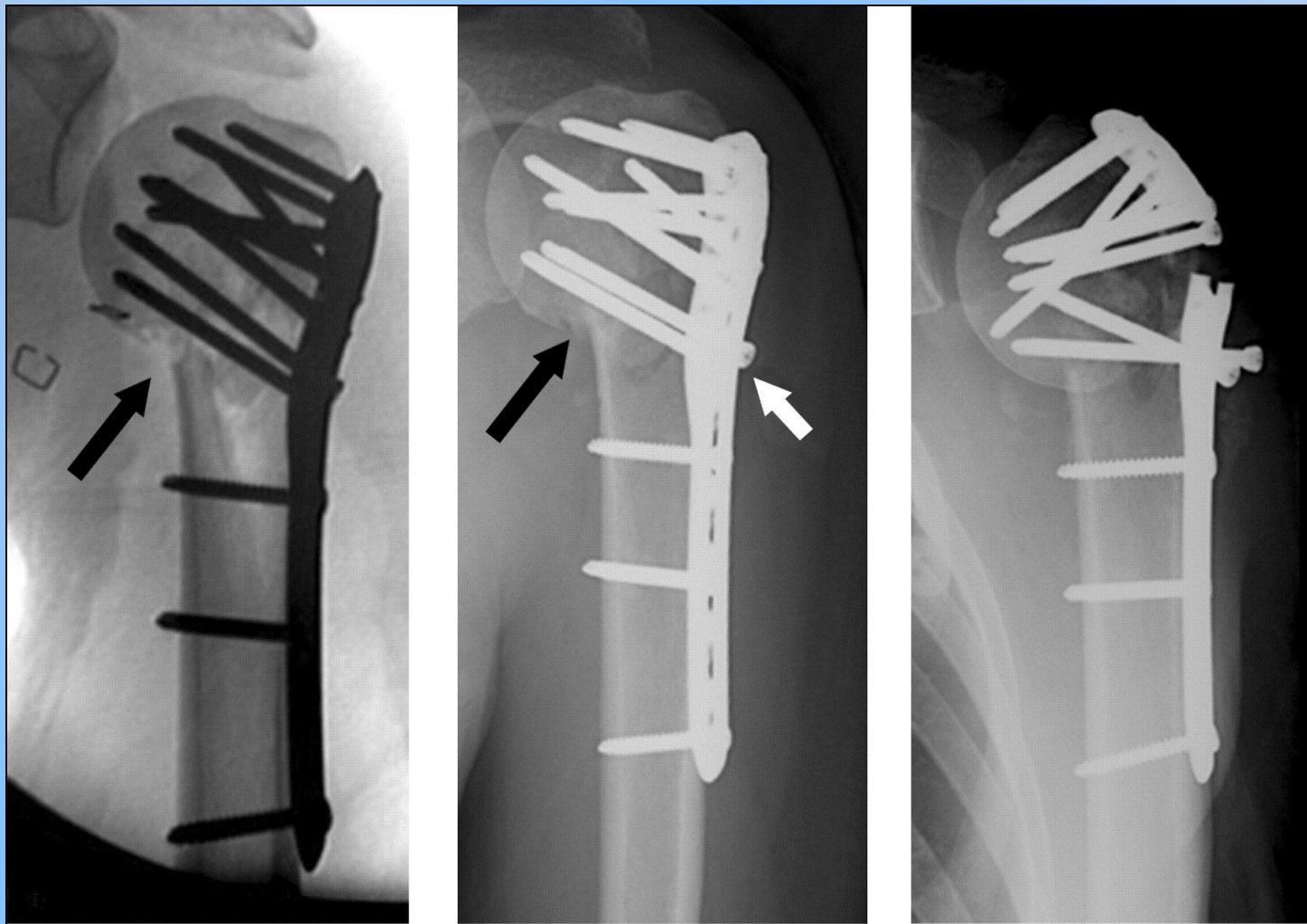
LCP Metaphyseal Plate



LCP PLT & DF



# LCP dlahy – vnitřní fixater – dlahová revoluce 90. let Komplikace



When locking plates fail. Maureen Leahy / AAOS Now/

# LCP dlahy – vnitřní fixater – dlahová revoluce 90. let

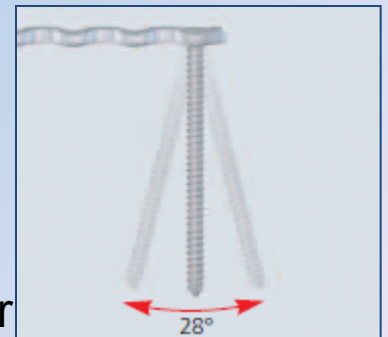
## Komplikace



# Pánevní set Synthes 3,5mm

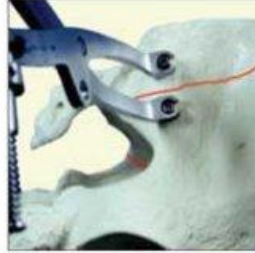


variabilita nabídky  
low profile  
lockované dlahy  
nenabízí volitelný směr  
/+15 -15/



# Pánevní set Turecko

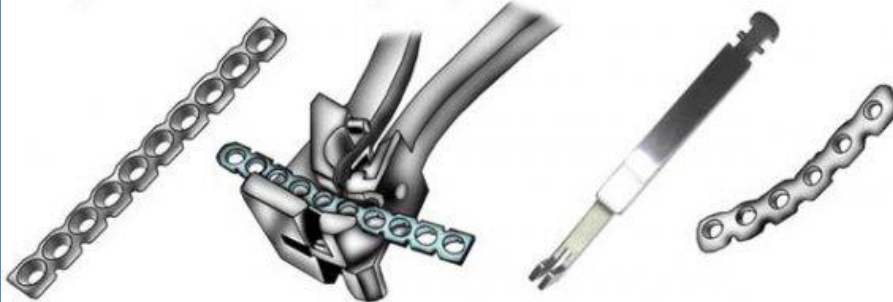
**Reduction Forceps with Screw;** Kırık bölgesinin karşı tarafına yerleştirilen kortikal vidalar ile üç yönlü planda reduksiyon ve maniplasyon amaçlı kullanılabilir.



**Farabeuf Forcep;** Çok yönlü kullanılabilen bu forcep ile iliak kanat tutularak çeşitli maniplasyonlar için kullanılabileceği gibi geçici kortikal vida tespitleri arcılığı ile reduksiyon forcepsleri olarakta kullanılabilir.



Düz ve Eğri plaklar eşsiz tasarımı ve özel plak bükücüleri sayesinde pelvis-acetabulum yüzey eğimine uygun şekil verilerek kullanılabilir.. Bu sayede operasyon esnasında; plak-vida yerleştirmeleri ile kırık fragmanlarının tespitinde görülebilecek pozisyon değişimleri önlenmiş ve istenilen kırık stabilitesi sağlanmış olur.



## Instruments

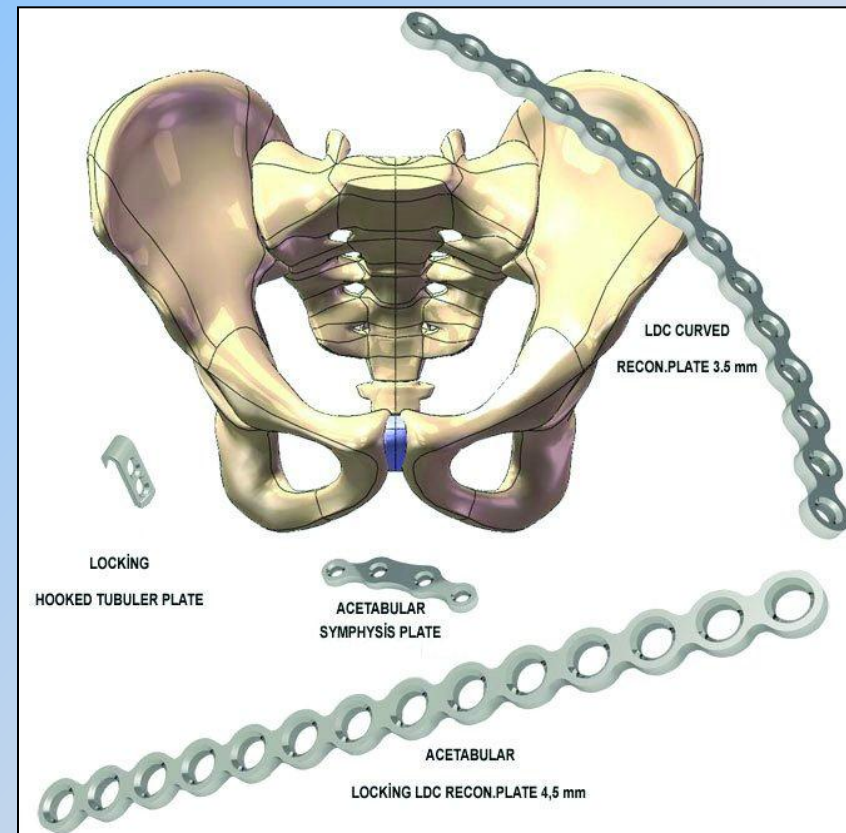
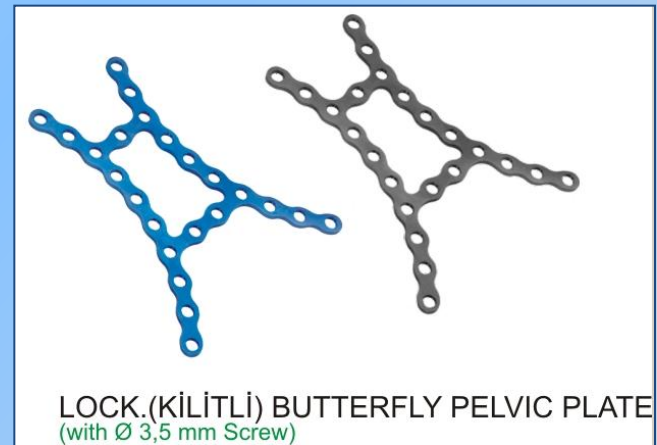
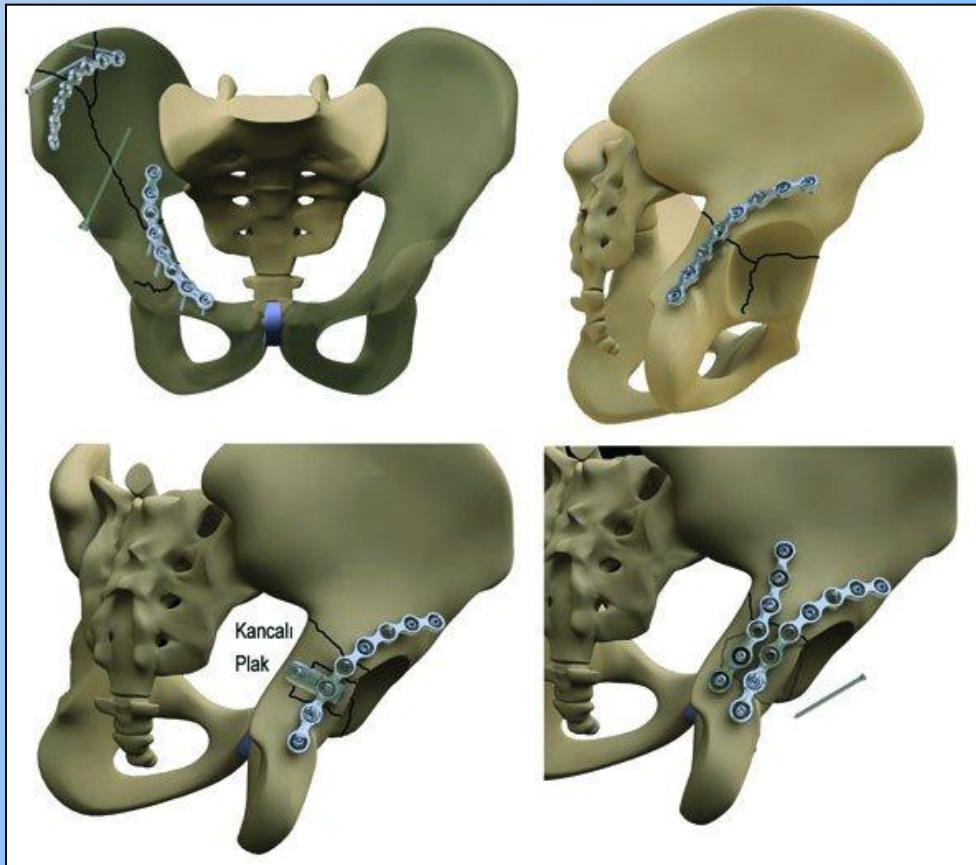


## Instruments

- 00223125130 QUICK DRILL 2.5X130 MM
- 00223125130 QUICK DRILL 3.2X130 MM
- 00223345000 QUICK DRILL CANNULATED 5X130 MM
- 03110000013 QUICK SCHANZ CORTICAL FOR REDUCTION 5X200 MM
- 03110000017 QUICK SCHANZ CORTICAL FOR REDUCTION 5X220 MM
- 020201010205 SOFT SCREW DRIVER QUICK (TORNAVIDA) SMALL
- 02010101001 CANNULATED SCREW DRIVER Ø 6.5 mm
- 080220000110 QUICK SOFT T HANDLE
- 23410250120 KIRSCHNER WIRE TROCAR POINT 2X250 MM
- 02005001450 L SLEEVE 4.5 MM
- 02005700250 SLEEVE LOCKING 2.5 MM
- 02205735250 DOUBLE UNIVERSAL SLEEVE 2.5 MM / 3.5 MM
- 03110000001 PELVIC BONE HOOK T HANDLE
- 03110000012 PELVIC WIRE-PLATE CUTTER
- 03110000002 PELVIC REDUCTION FORCEPS 2 POINTED TIP
- 03110000003 PELVIC REDUCTION FORCEPS 3 POINTED TIP
- 03110000004 PELVIC REDUCTION FORCEPS ASYMMETRIC TIP
- 03110000005 PELVIC REDUCTION FORCEPS 250 MM
- 03110000006 PELVIC REDUCTION FORCEPS W POINT 250 MM
- 03110000007 PELVIC FARABEUF FORCEPS
- 03110000008 PELVIC REDUCTION FORCEPS WITH SCREW
- 03110000009 PELVIC CHISEL 300 MM
- 03110000010 PELVIC BENDING
- 03110000011 PELVIC PLIERS
- 03110000018 PELVIC BENDING TEMPLATES
- 03110000014 Hohmann Retractor - Small
- 03110000015 Hohmann Retractor - Medium
- 03110000016 Hohmann Retractor - Large



# Pánevní set Turecko



indikace LCP osteosyntesy ? manuály



specifika pánve - nepravidelná kost i variabilita zlomenin

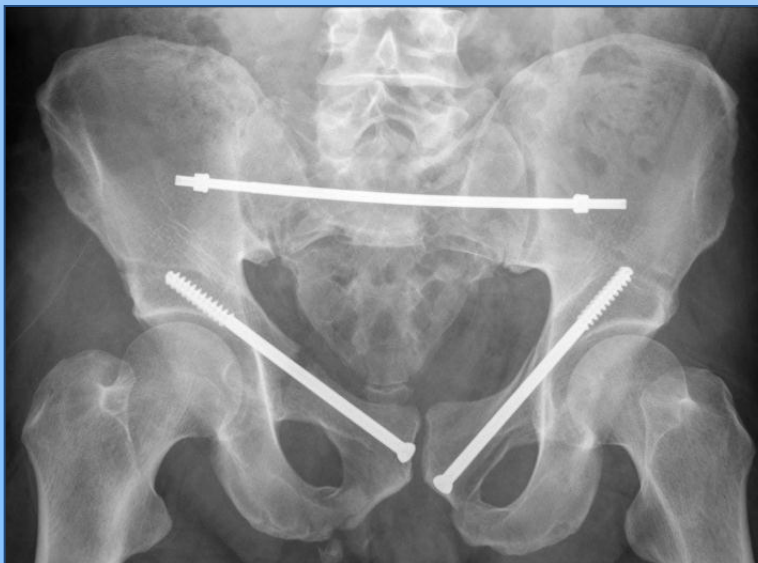
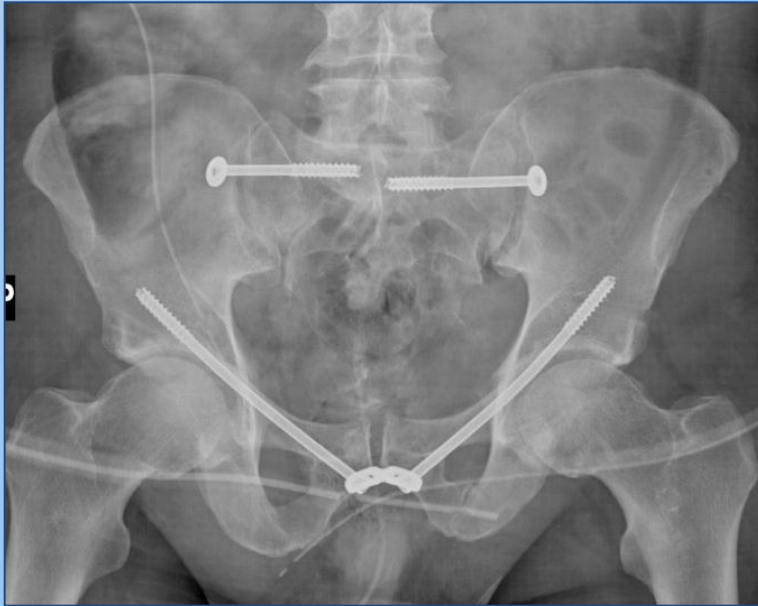
dobré hojení

mnoho lokalit s pevnou fixací šroubů /40 -60mm/

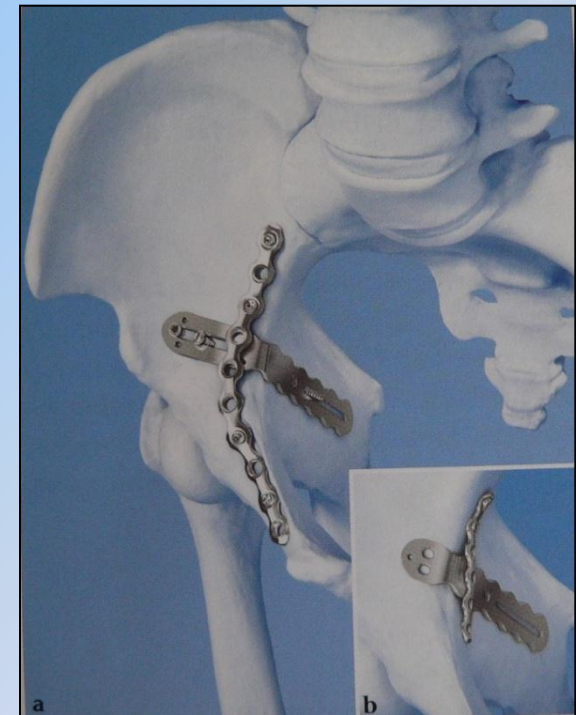
komplikace vyplývající spíše z nedostatečné reposice /acetabulum/,  
neošetření jednoho ze segmentů / pánevní kruh/



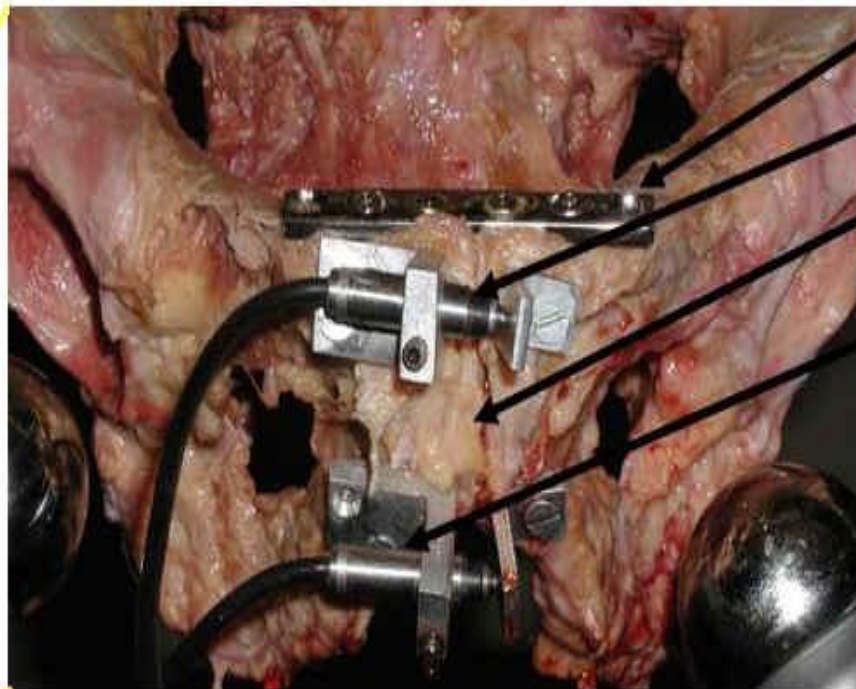
Trendy – navigace, miniinvazivita,  
nové dlahy



3,5 mm Quadrilateral surface plate



## Kadaverozní studie



**Biomechanical comparison of different acetabular plate systems and constructs – The role of an infra-acetabular screw placement and use of locking plates**  
**Ivan Marintshev, Florian Grass, Christof E. Schwarz, Tim Pohlemann, etc.**

**Injury Volume 43, Issue 4, Pages 470 – 474, April 2012**

The study was supported by the AO-Foundation, German Chapter, Grant No.: 10/2008.

**Biomechanical comparison of different acetabular plate systems and constructs –  
The role of an infra-acetabular screw placement and use of locking plates**

[Ivan Marintschev](#) , [Florian Gras](#) , [Christoph E. Schwarz](#) , [Tim Pohlemann](#)  
, [Gunther Hofmann](#), [Ulf Culemann](#)

**Injury**

[Volume 43, Issue 4](#) , Pages 470-474, April 2012

**A biomechanical study of conventional acetabular internal fracture fixation versus locking plate fixation**

Ramin Mehin, MD,\* Bryn Jones, MD,† Qingan Zhu, PhD,‡ and Henry Broekhuiyse, MD§  
Can J Surg. 2009 June; 52(3): 221–228.

Techniques in Orthopaedics:

March 2011 - Volume 26 - Issue 1 - p 50–52

**Posterior Acetabular Fracture Fixation Using Locking Reconstruction Plates: New  
Technique Developed on Synthetic Models**

**Tadros, Ayman M.A. FRCSI, FRCS (Glasg)**

**Single column locking plate fixation is inadequate in two column acetabular  
fractures. A biomechanical analysis.**

[Khajavi K](#), [Lee AT](#), [Lindsey DP](#), [Leucht P](#), [Bellino MJ](#), [Giori NJ](#).

**Source**

Department of Orthopaedic Surgery, Stanford University School of Medicine, 300 Pasteur  
Drive, Stanford, CA 94305, USA

ESTES 2012

# Lockované dlahy u zlomenin pánve a acetabula 1 poster

## Double locking plate fixation of Denis II/III type sacral fractures in unstable pelvic C-type fractures – results of 28 cases

Acklin YP, Germann M, Sommer C

Department of Surgery, Trauma Unit, Kantonsspital Graubünden, Switzerland

### Objective

In vertical unstable AO C-type fractures with associated Denis type II/III fractures of the sacrum, dorsal pelvic ring fixation is crucial and several operative methods exist. We describe a method with dorsal double plating technique.

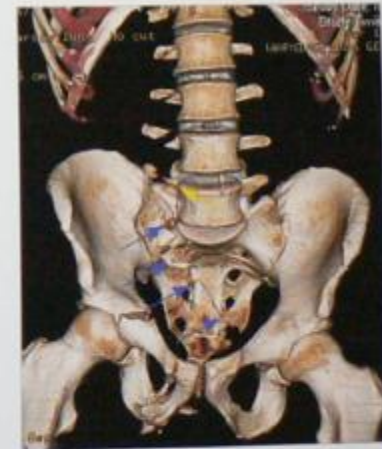
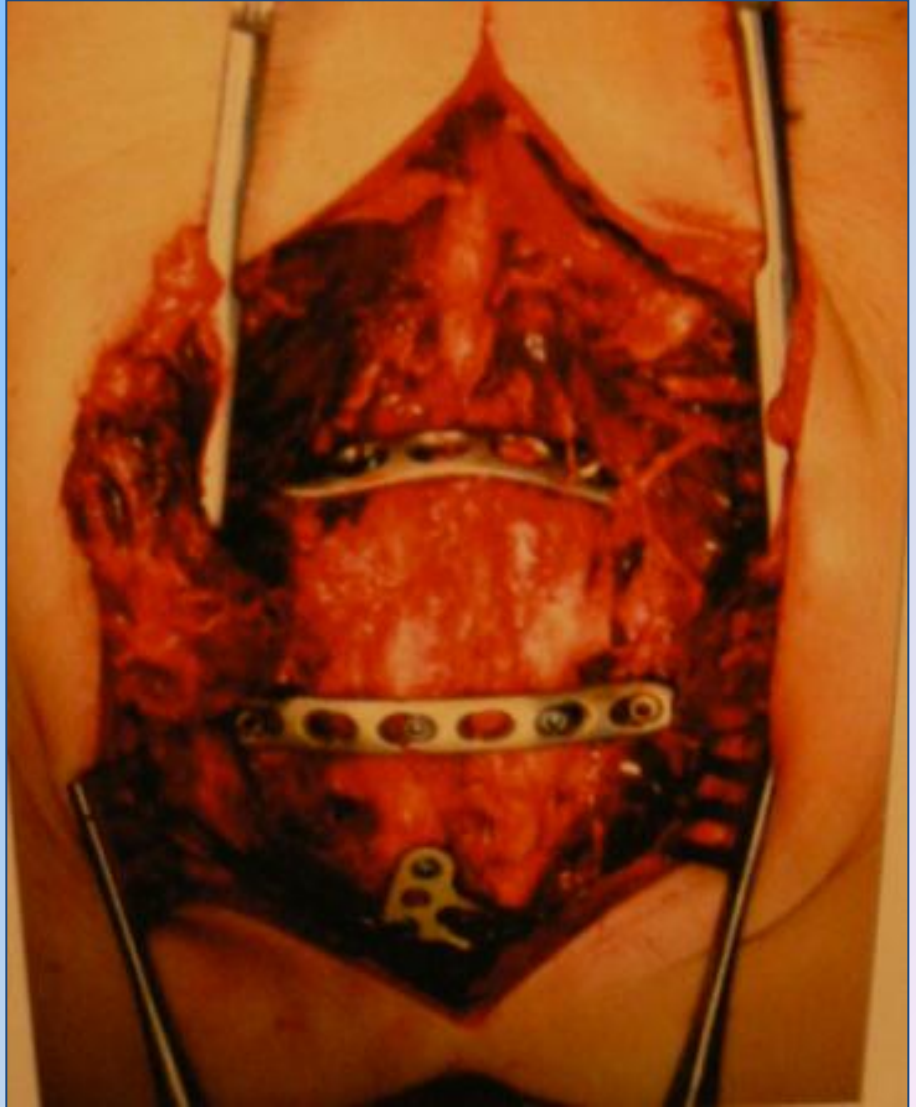
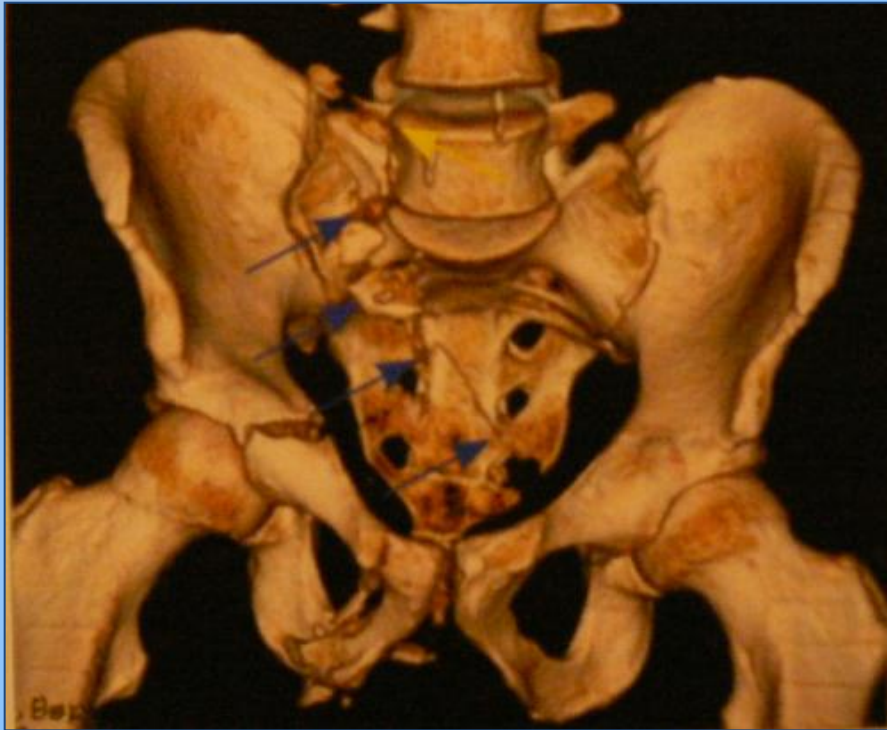


Fig 1 Preoperative X- ray (a) and 3D- CT- reconstruction images (b/c) showing an AO- C1- type fracture (blue arrow) and the fifth lumbar vertebra (yellow arrow) indicative for unstable pelvic fracture

Double locking plate fixation of Denis II/III type sacral fractures in unstable pelvic C- type fractures – results of 28 cases





Double locking plate fixation of Denis II/III type sacral fractures in unstable pelvic C-type fractures – results of 28 cases



Možná úskalí

Modelace dlah – narušení závitů v otvorech

Daný směr nemusí vždy vyhovovat

Obtížnost zavedení cílícího pouzdra přes měkké tkáně

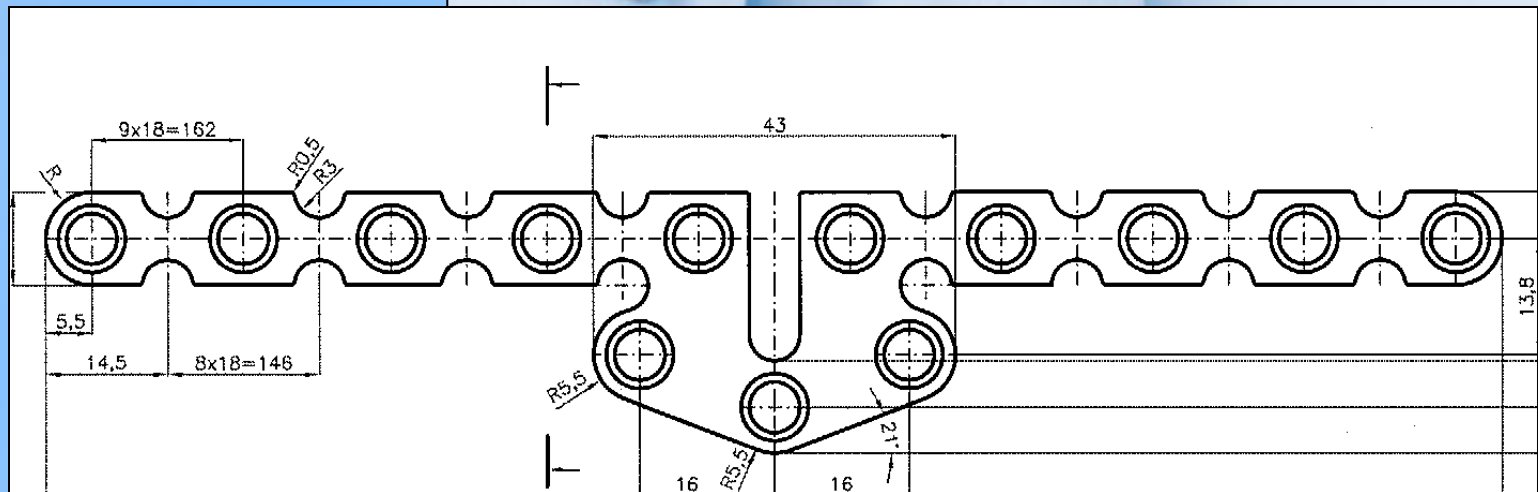
Možná pozitiva

Pevnější fixace - určité lokality a porotická kost

Některé specifické lokality – zadní stěna acetabula



Spring plate

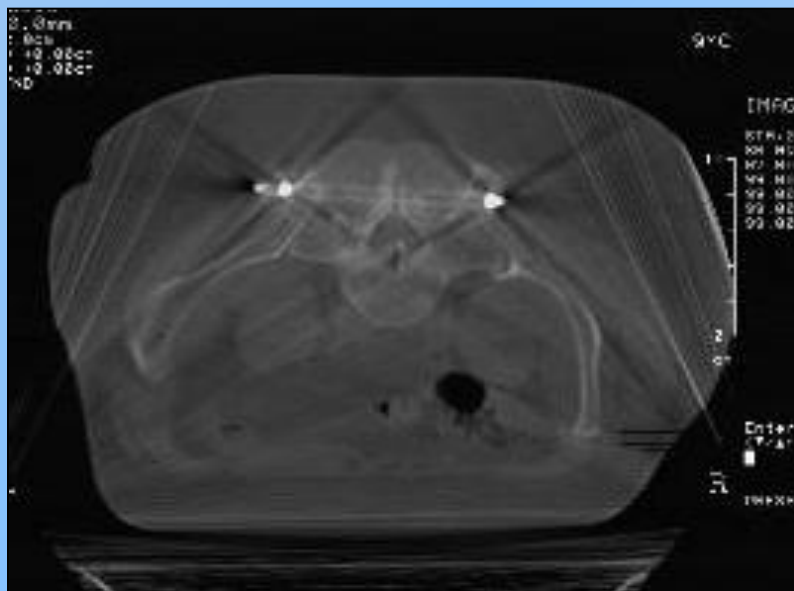
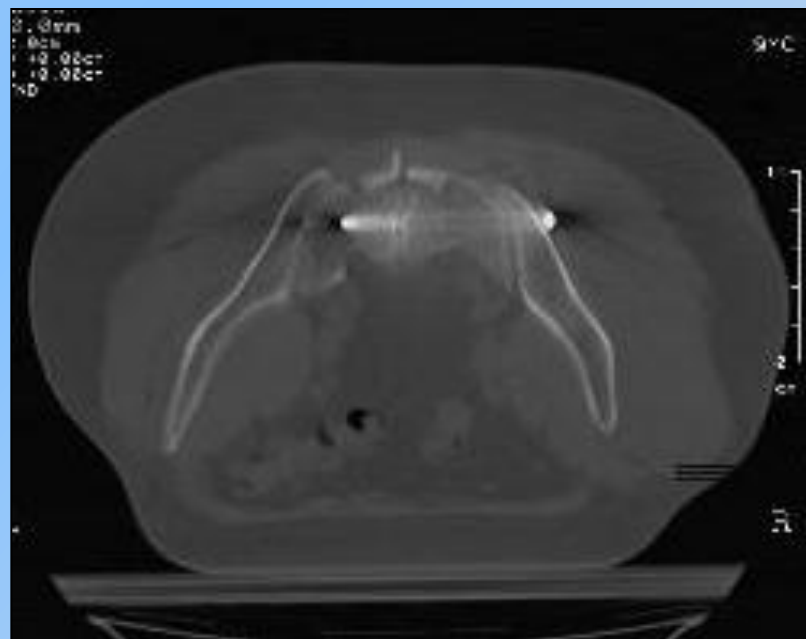


Ani LCP dlaha není všemocná



midline zlomenina sakra  
symphyseolysa  
ošetření LCP dlahou - přední segment  
pakloub sakra

## Ani LCP dlaha není všemocná



## Ani LCP dlaha není všemocná



extrakce dlahy i šroubů – přes pohybový segment  
dlaha přes symphysu zcela volná – osteolýza kolem šroubů

# Závěr

Málo zkušeností, kadaverozní studie ukazují perspektivní směr

Je nutné podpořit srovnávací studie, multicentrické / čísla !!/

Neopomenout zásady ošetření zlomenin pánevního kruhu a acetabula





Se vzpomínkou na letní dovolenou - Děkuji za pozornost