# *Approach to patient with pelvic ring injury*

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# Learning outcome

- Discuss option of hemodynamic instability assessment and management in pelvic fracture patients.
- How to do proper image assessment in pelvic fractures
- Definitive fixation, when and how.

# Case scenario

- 58-year-old man
- Hay farmer
- Previously healthy
- Elevated BMI
- Horse spooked and he is bucked off

# Trauma Bay

- Awake and responsive

- Airway: normal
- Breathing: normal
- Circulation:
  - Heart Rate: 130
  - BP: 90/50

- FAST: Negative

- **Discussion points**

1. Is the patient in shock
2. What investigation to do
3. Discuss pelvic instability assessment ?

# Clinical assessment, Pelvic instability testing

- Gentle, manual pelvic exam.
- Associated with risk of pelvic bleeding.
- Miss more than 65% of radiographically unstable fractures.
- **Without therapeutic relevance.**

Eur J Trauma Emerg Surg
DOI 10.1007/s00068-017-0860-0

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ORIGINAL ARTICLE

**Diagnostics and early treatment in prehospital and emergency-room phase in suspicious pelvic ring fractures**

*Conclusion* Testing of mechanical stability of the pelvic ring was carried out less often and with lower consequences for the actual management than expected. It seems worthwhile to rather put on a pelvic binder at earliest occasion based on trauma mechanism or clinical findings to reduce the risk of serious pelvic bleeding.

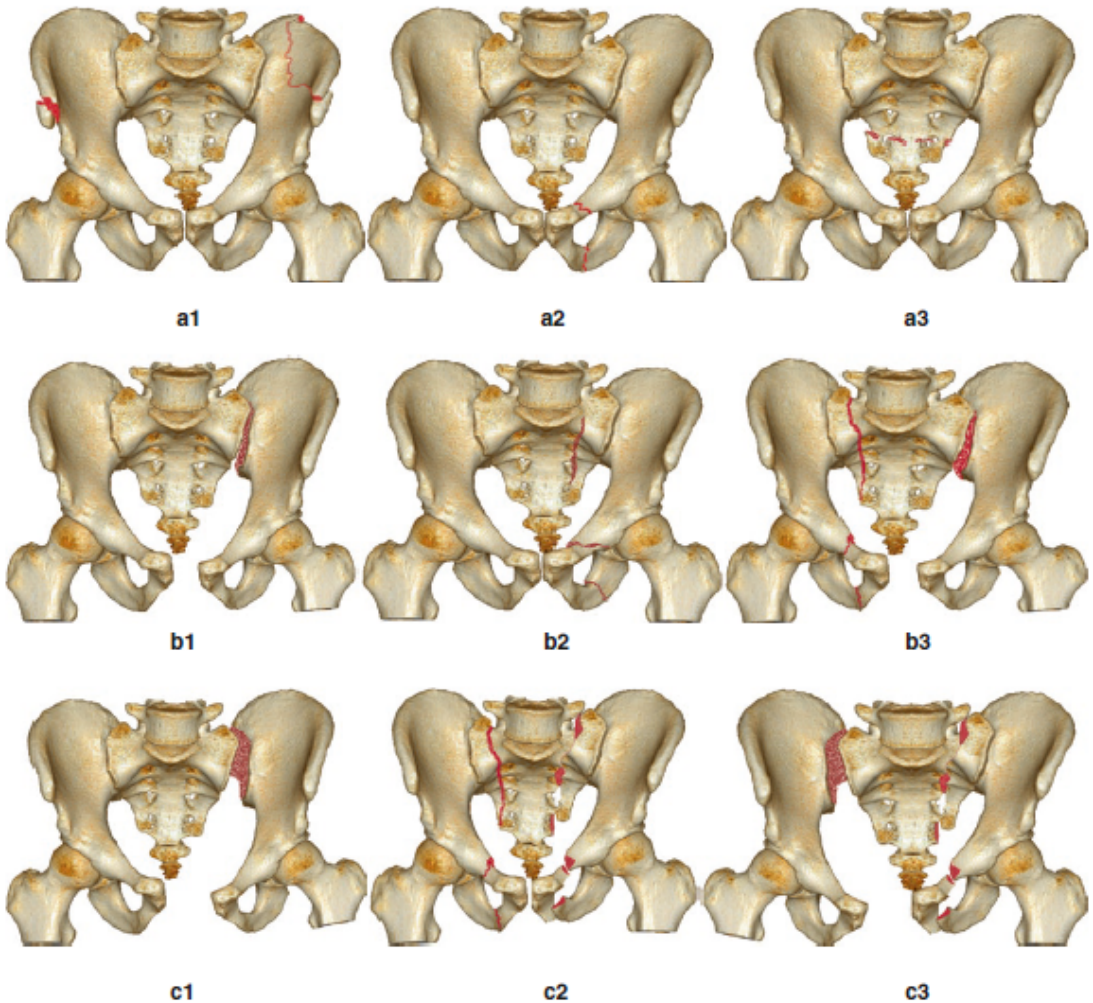

- **Discussion points**

1. Is this x ray adequate
2. Discuss x ray findings
3. Classification.

# Tile classification

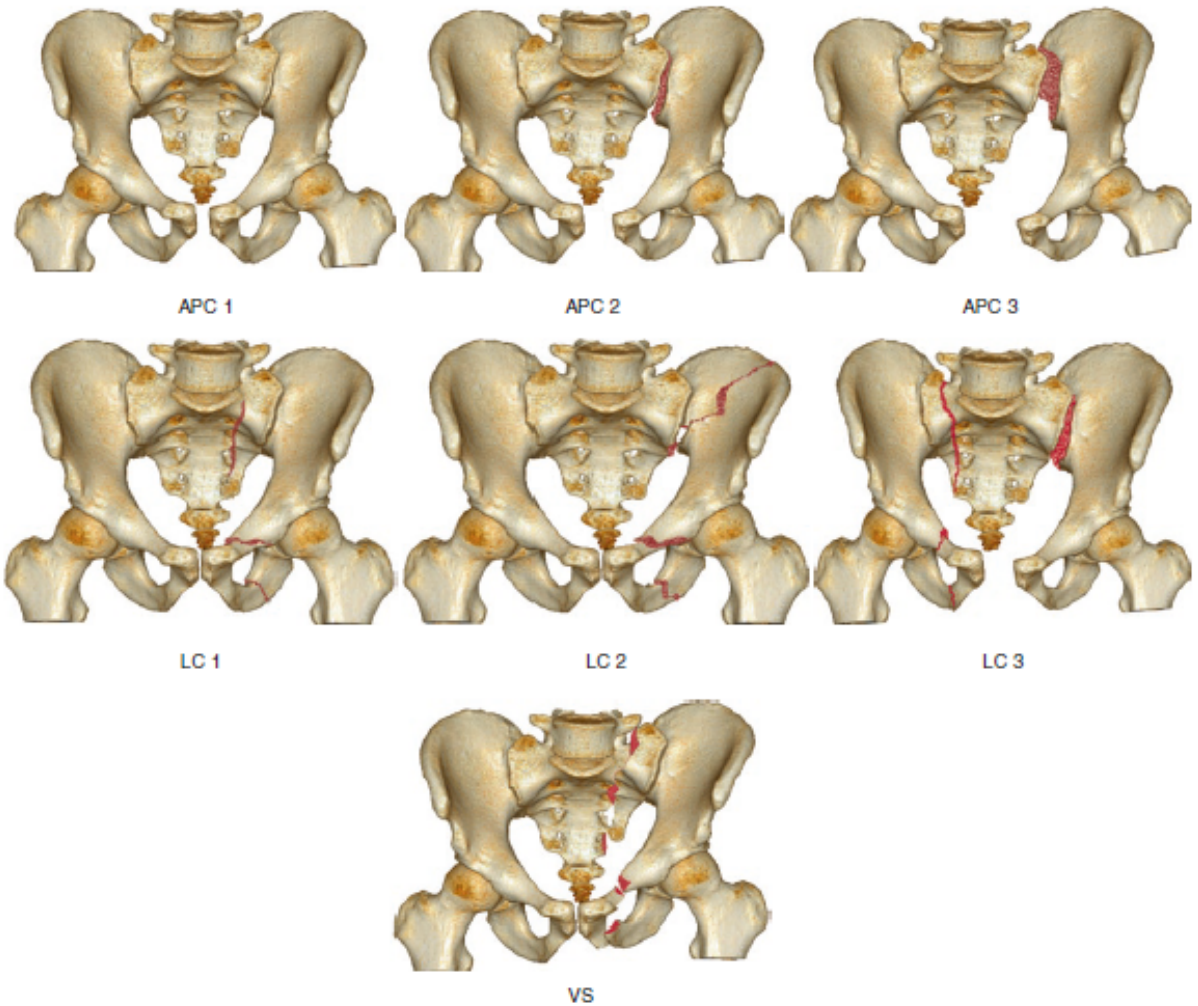
- Stability based classification

- Based mainly on posterior structure integrity



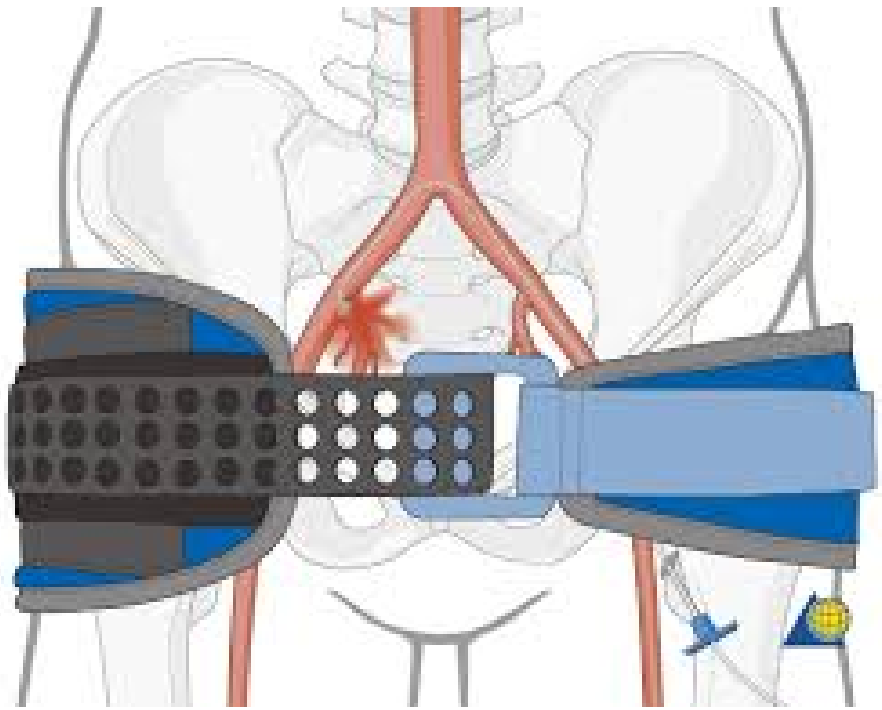
# Young Burgess

- **Based on direction of force, APC, LC, VS, CM.**



# *What to do now ?*

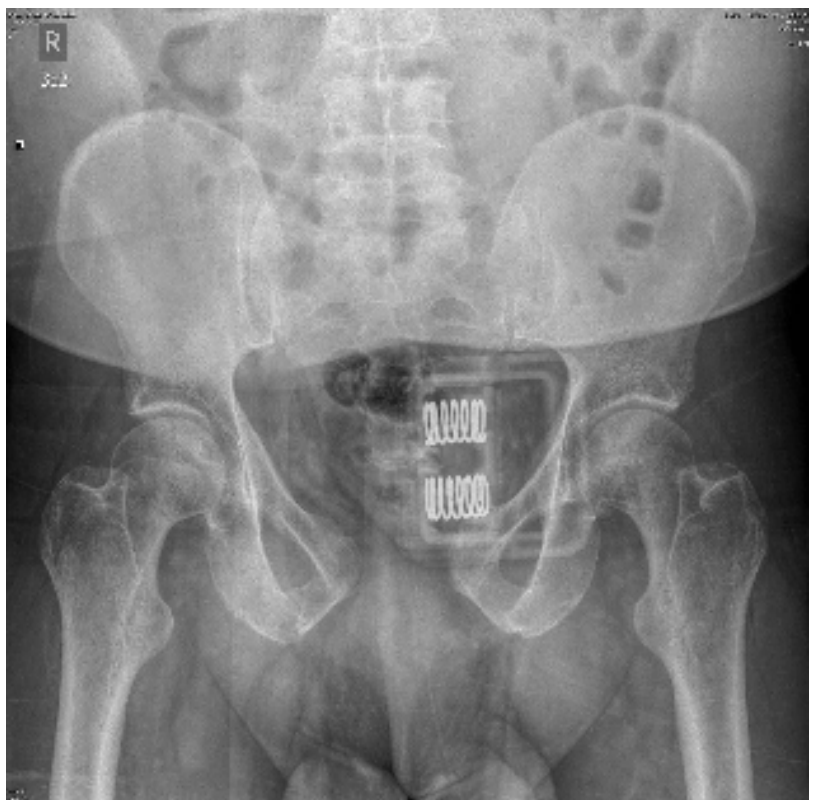
# Pelvic Binders



- **Discussion points**

1. Discuss proper binder application.

2. Effect of binder on hemostasis and subsequent radiographic studies.



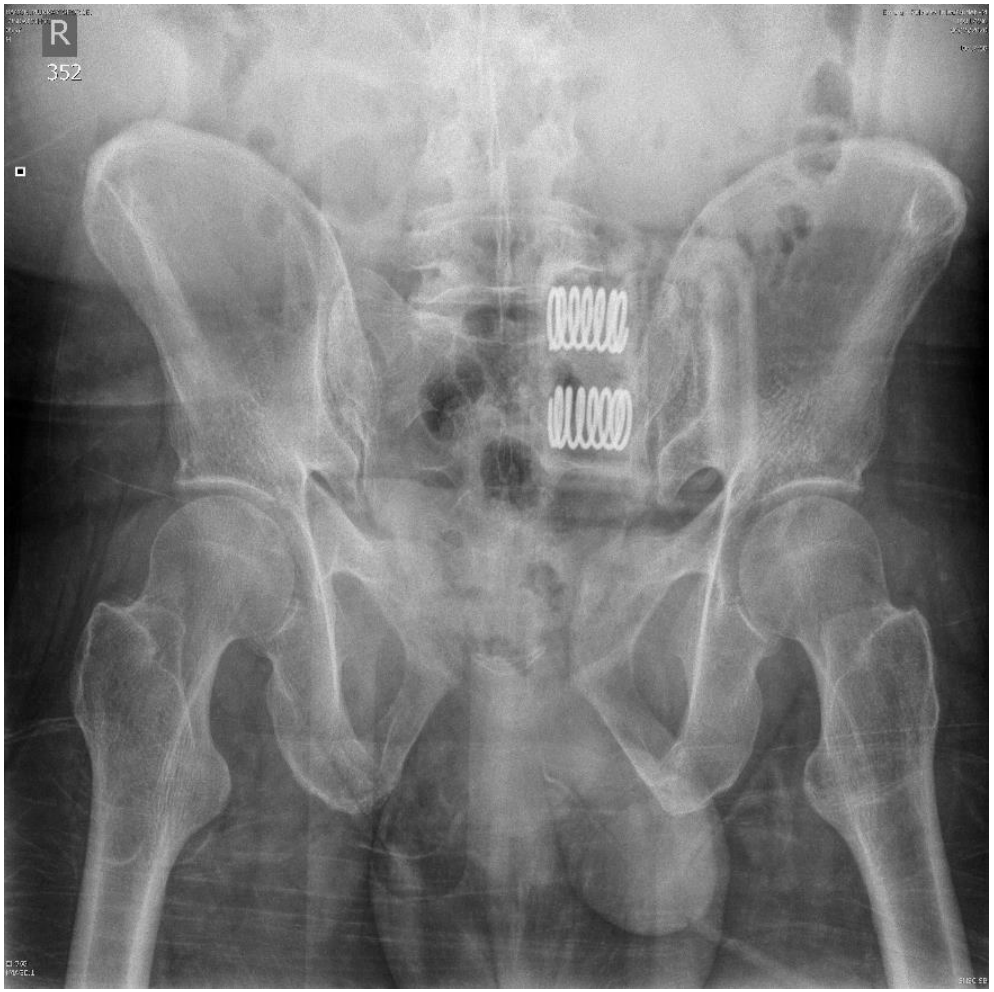

- **Discussion points**

1. Post binder,

   what's your expectation regarding vital signs.

   What's about x ray

2. Misleading finding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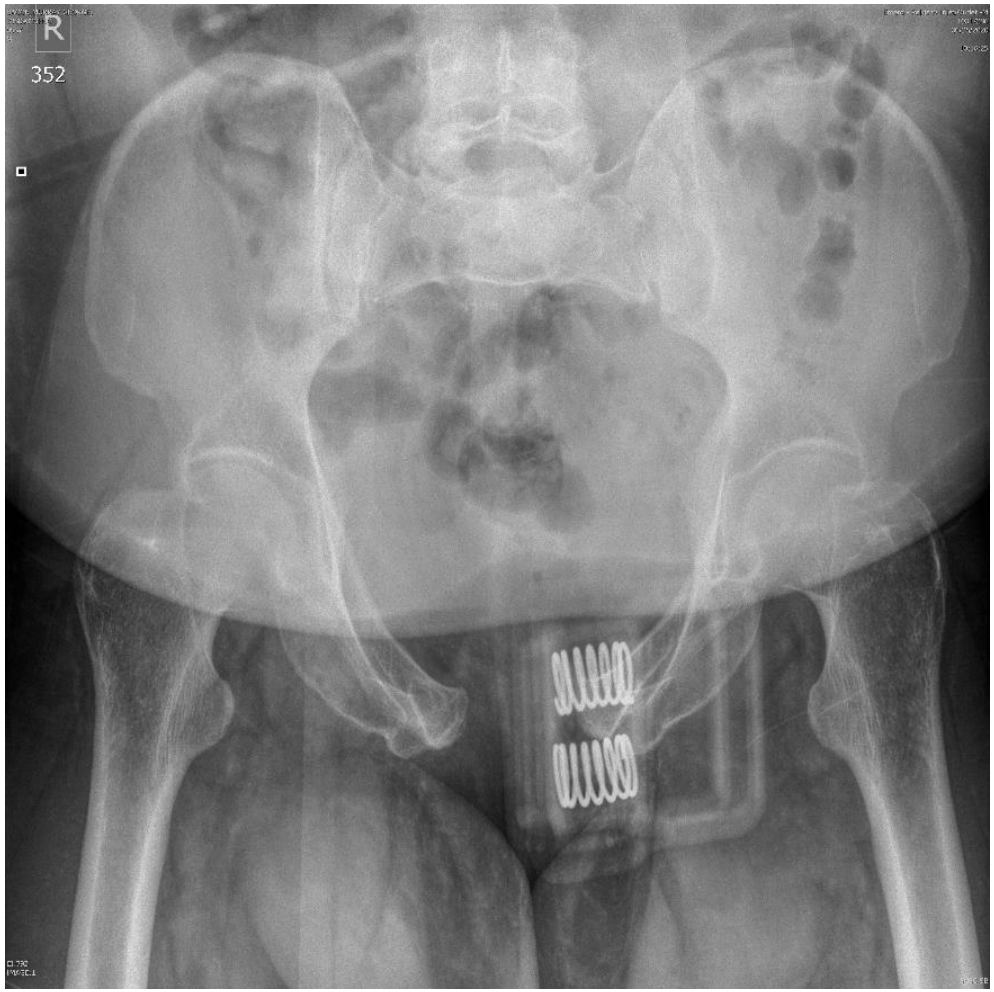
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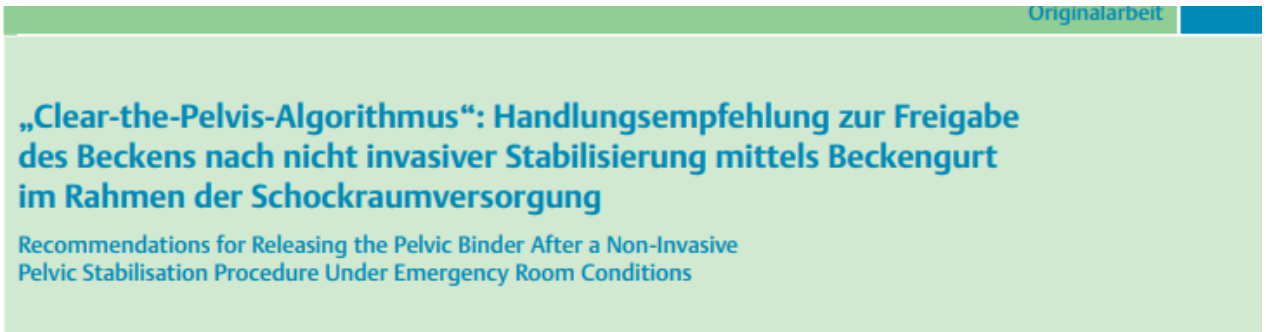
# Pelvic binder

- Ideal position to be applied over the GT.
- Improper application lead to delayed hmg control.
- Uncritical use should be avoided.
- Binder effect on radiographic study.



Originalarbeit

„Clear-the-Pelvis-Algorithmus“: Handlungsempfehlung zur Freigabe des Beckens nach nicht invasiver Stabilisierung mittels Beckengurt im Rahmen der Schockraumversorgung

Recommendations for Releasing the Pelvic Binder After a Non-Invasive Pelvic Stabilisation Procedure Under Emergency Room Conditions

Injury, Int. J. Care Injured 49 (2018) 284–289

Contents lists available at ScienceDirect

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The value of ‘binder-off’ imaging to identify occult and unexpected pelvic ring injuries

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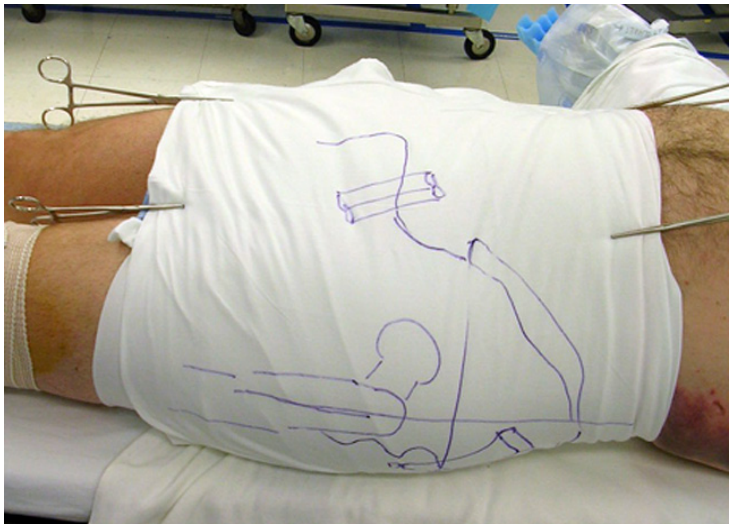
# The value of 'binder-off' imaging to identify occult and unexpected pelvic ring injuries

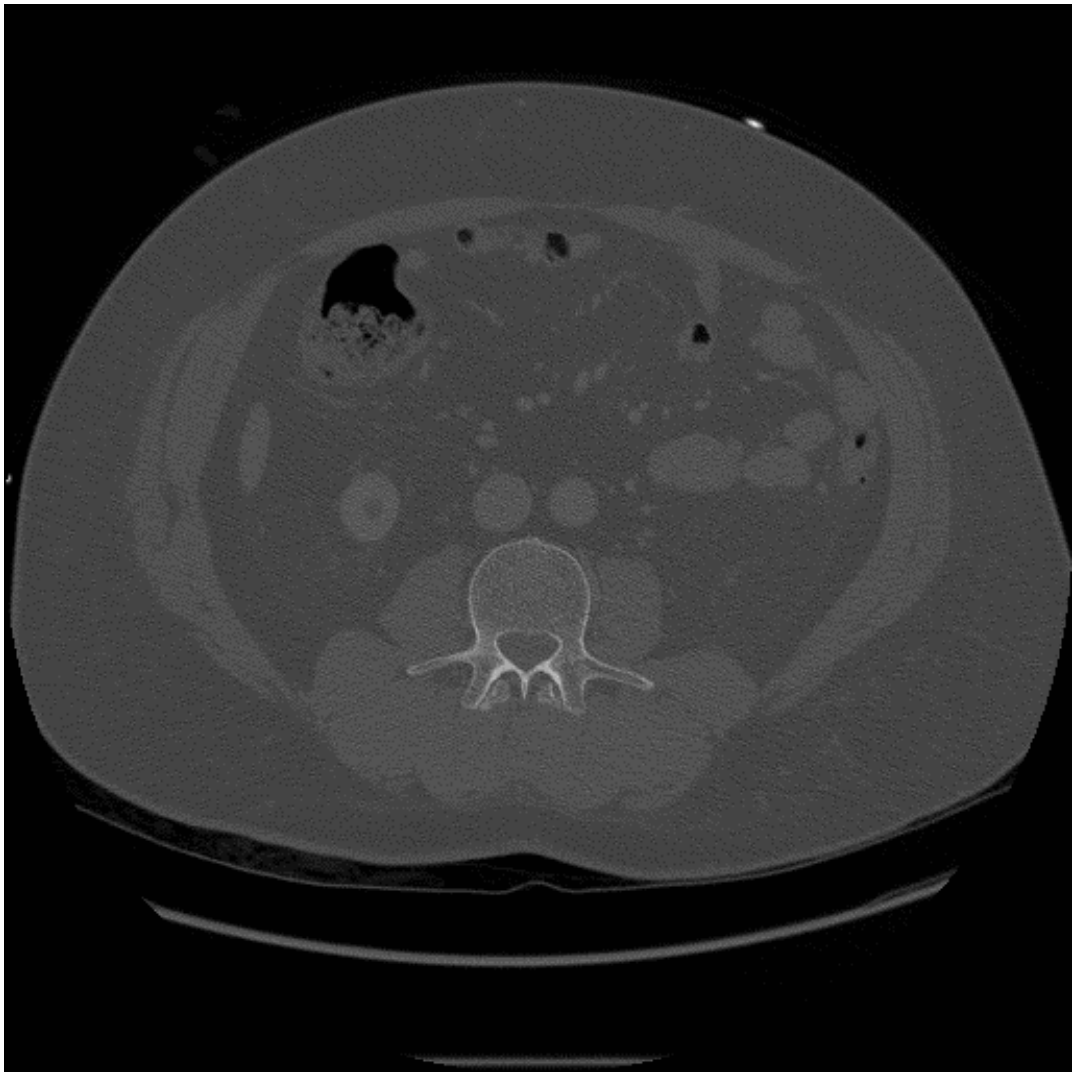
*Conclusions:* Trauma CT imaging of the pelvis with a pelvic binder in place is inadequate at excluding unstable pelvic ring injuries, and, based on the original findings in this paper, we recommend additional plain film 'binder-off' radiographs, when there is any clinical concern.

# Pelvic binder/ sheet



- Responds to pelvic Binder and Blood transfusion

- HR: 90
- BP: 135/90



# Other option for achieving pelvic stability

- **Mechanical stabilization of pelvic ring**

1. Pelvic c clamp
2. Pelvic external fixators

- For better hemodynamic stabilization

- **Stop the bleed.**

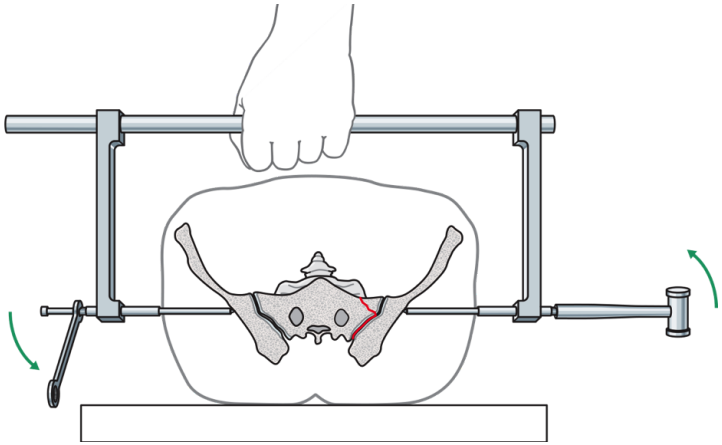
1. Pelvic packing.
2. Angioembolization.

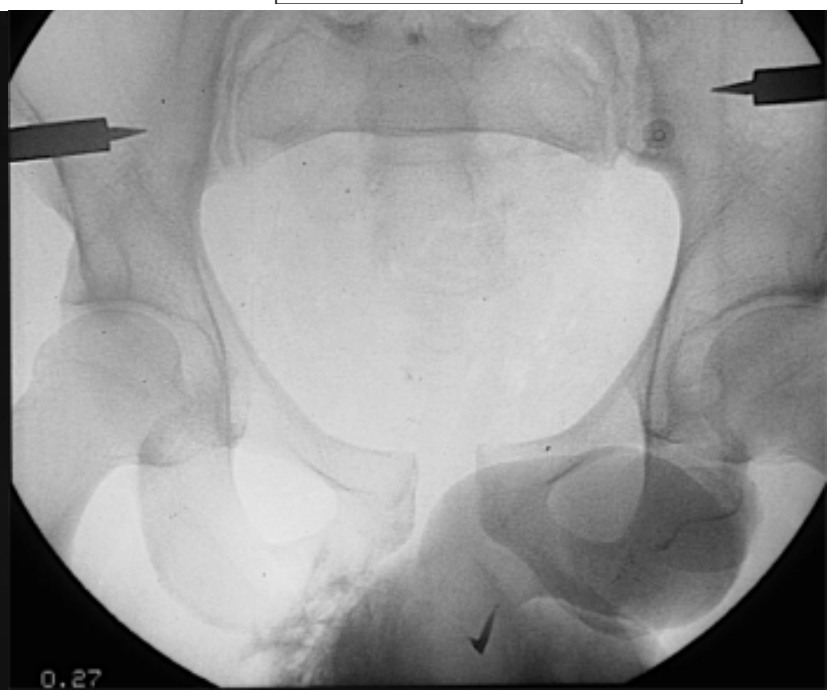
# Pelvic C clamp

- The World Society of Emergency Surgery recommendation 2017.
- Recommended in patient in **Extremis** and those who need pelvic packing
- Need experience.
- Some modification of its application to GT or Supraacetabular area.

# Pelvic C clamp

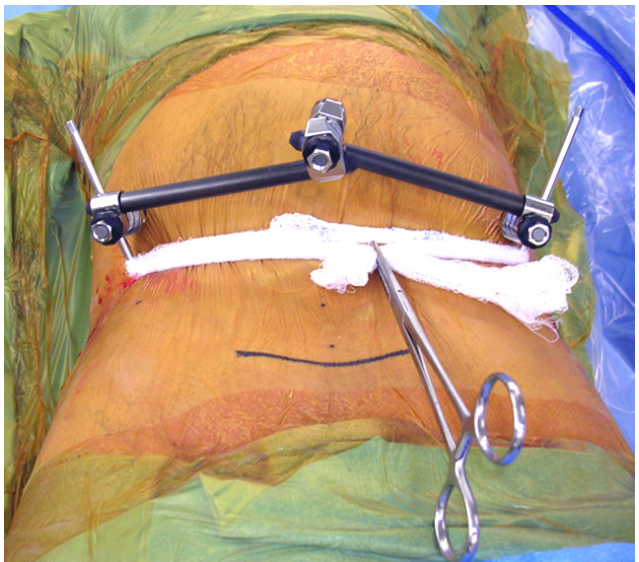
- Sheet reduction first
- Posterior iliac access



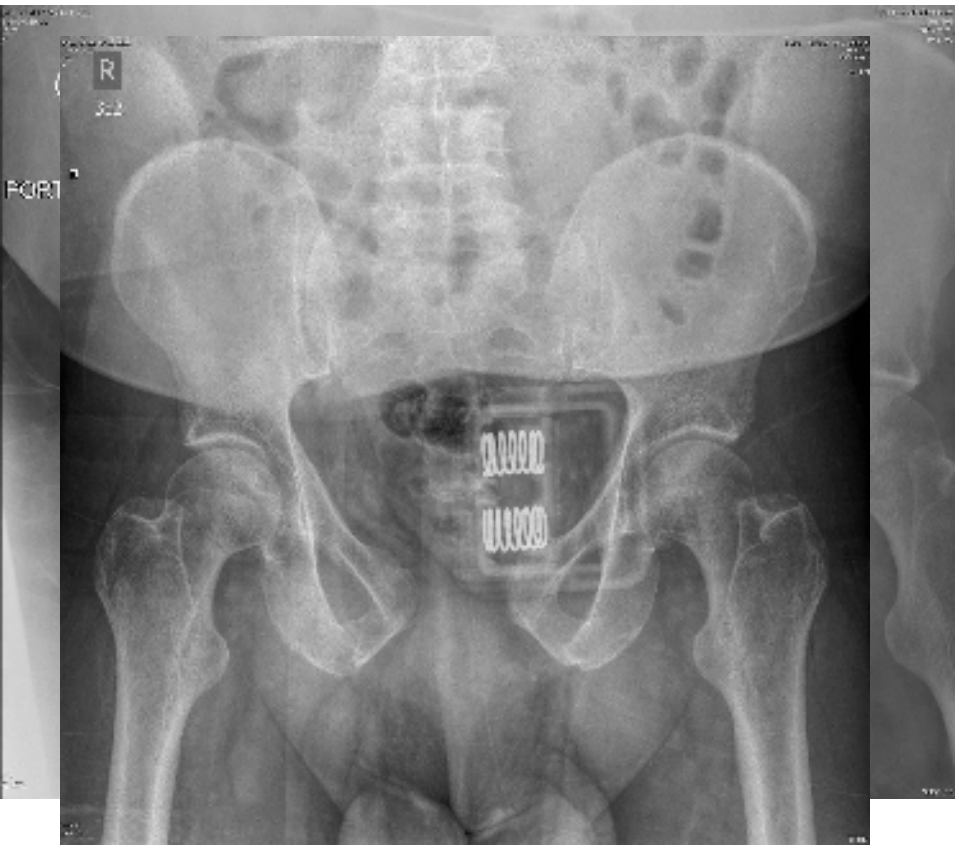



# Anterior pelvic external fixation

- Iliac crest pins
- Supraacetabular pins
- Simple construct



# *Back to our case*




- **Discussion points**

1. When to do surgery?

2. Surgical treatment options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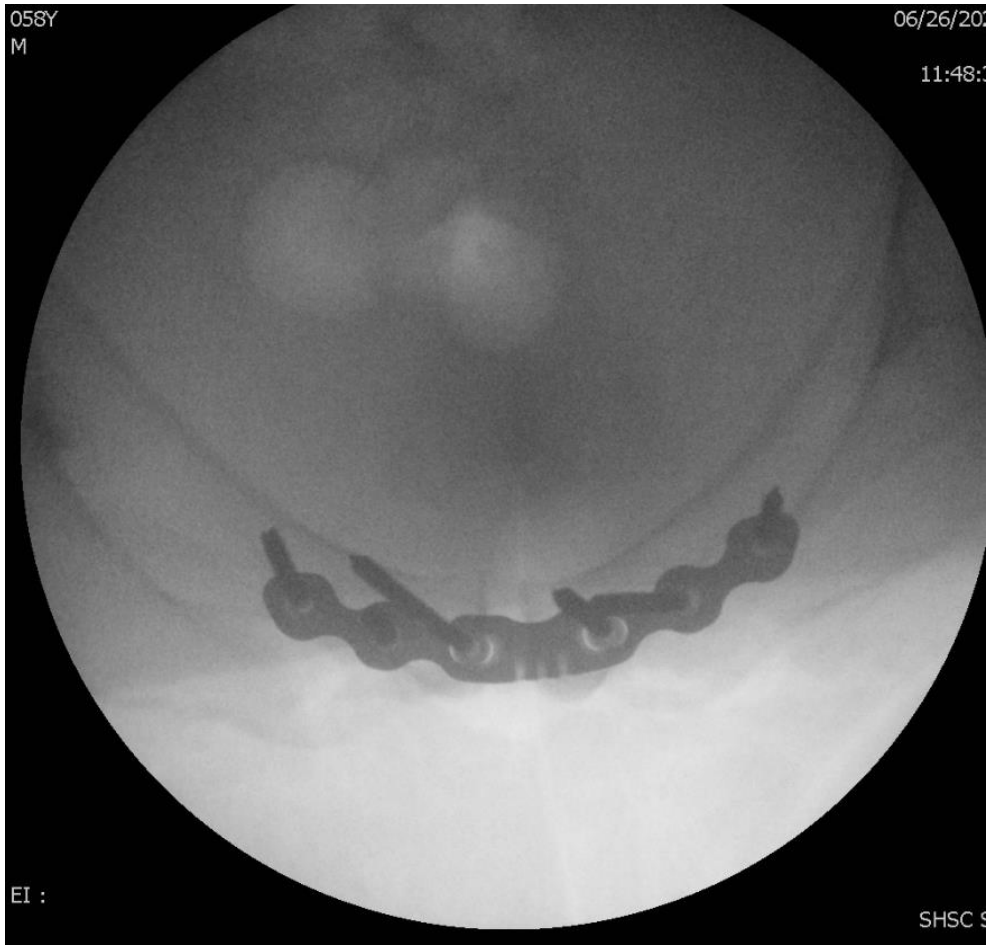
EI :
SHSC SB


M
11:40:33
EI :
SHSC SB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EI :


M
EI :

# Posterior Fixation of APC-2 Pelvic Ring Injuries Decreases Rates of Anterior Plate Failure and Malunion

Frank R. Avilucea, MD, Paul S. Whiting, MD, and Hassan Mir, MD, MBA

*Investigation performed at the Trauma Division, Vanderbilt Orthopaedic Institute, Nashville, Tennessee*

**J Bone Joint Surg Am.** 2016;98:944-51

- 134 patients with APC 2 injuries.
- 69% anterior and posterior fixation vs. 31% anterior only fixation
- 40% failure rate in anterior only fixation vs 5% with combined fixation ($p<0.001$)
- 36% malunion rate in anterior only vs. 1% with combined fixation ($p<0.001$)


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EI :
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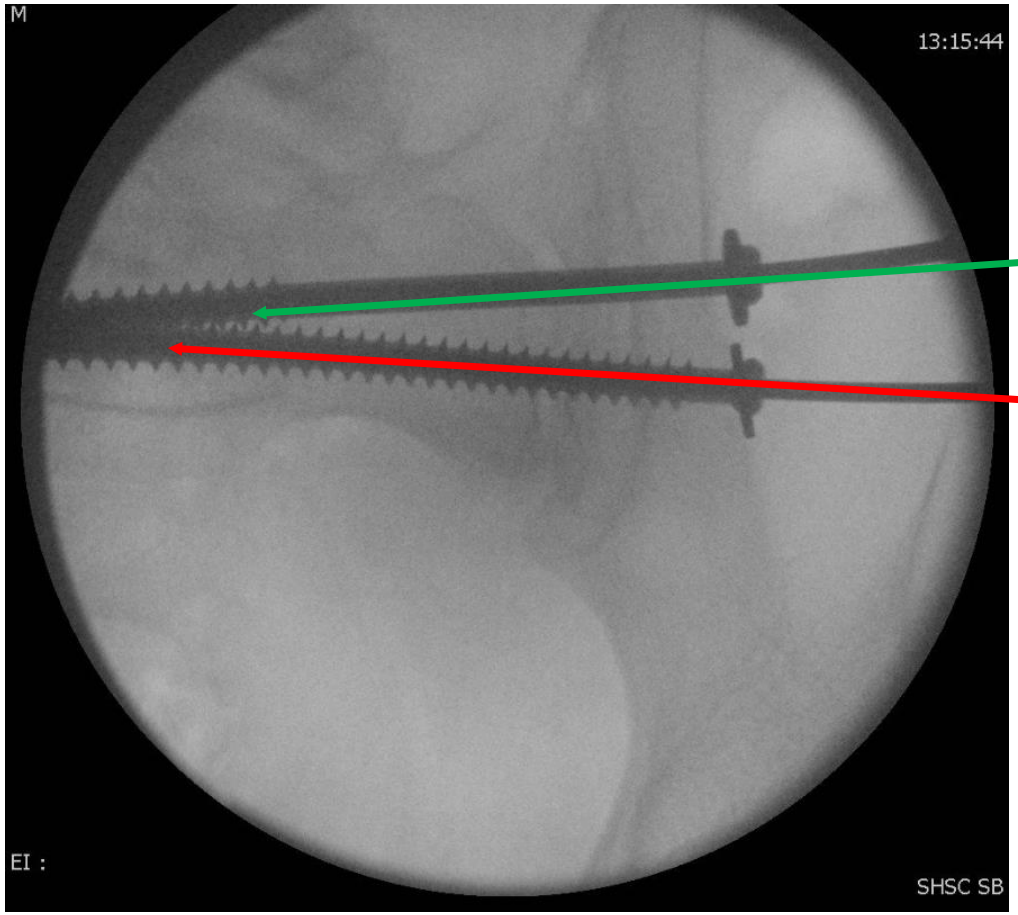
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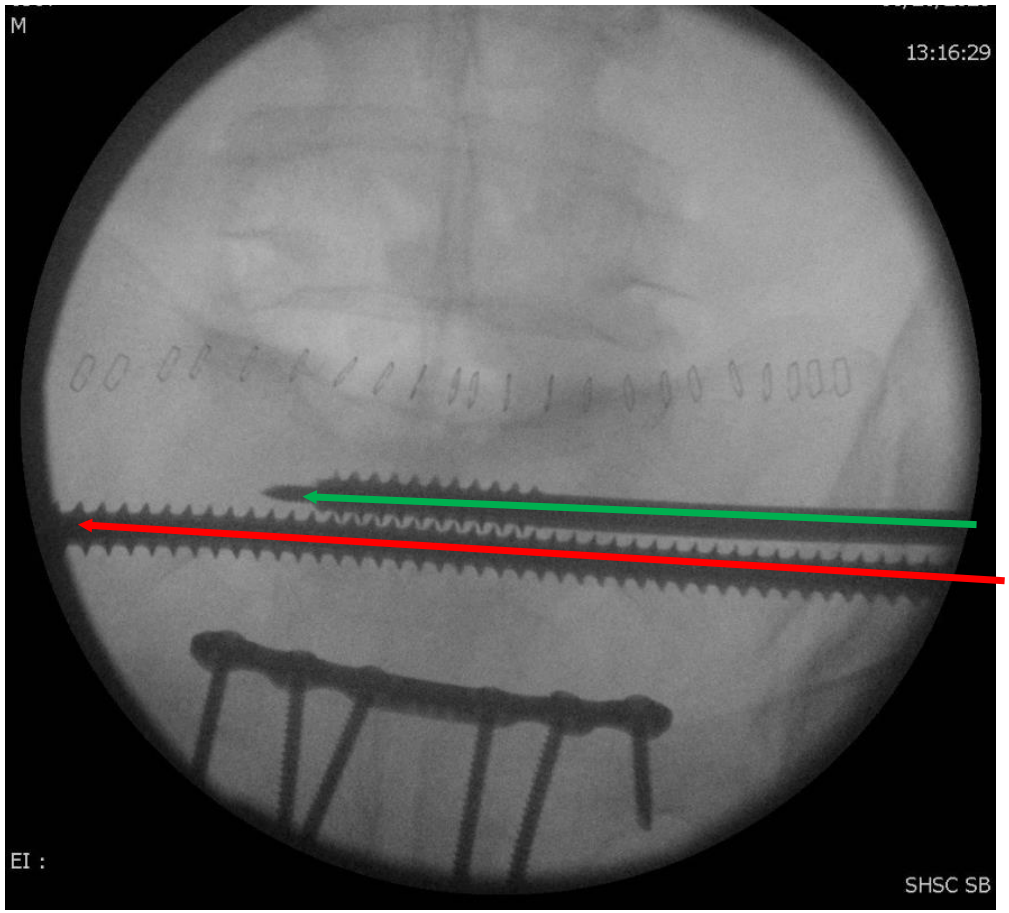
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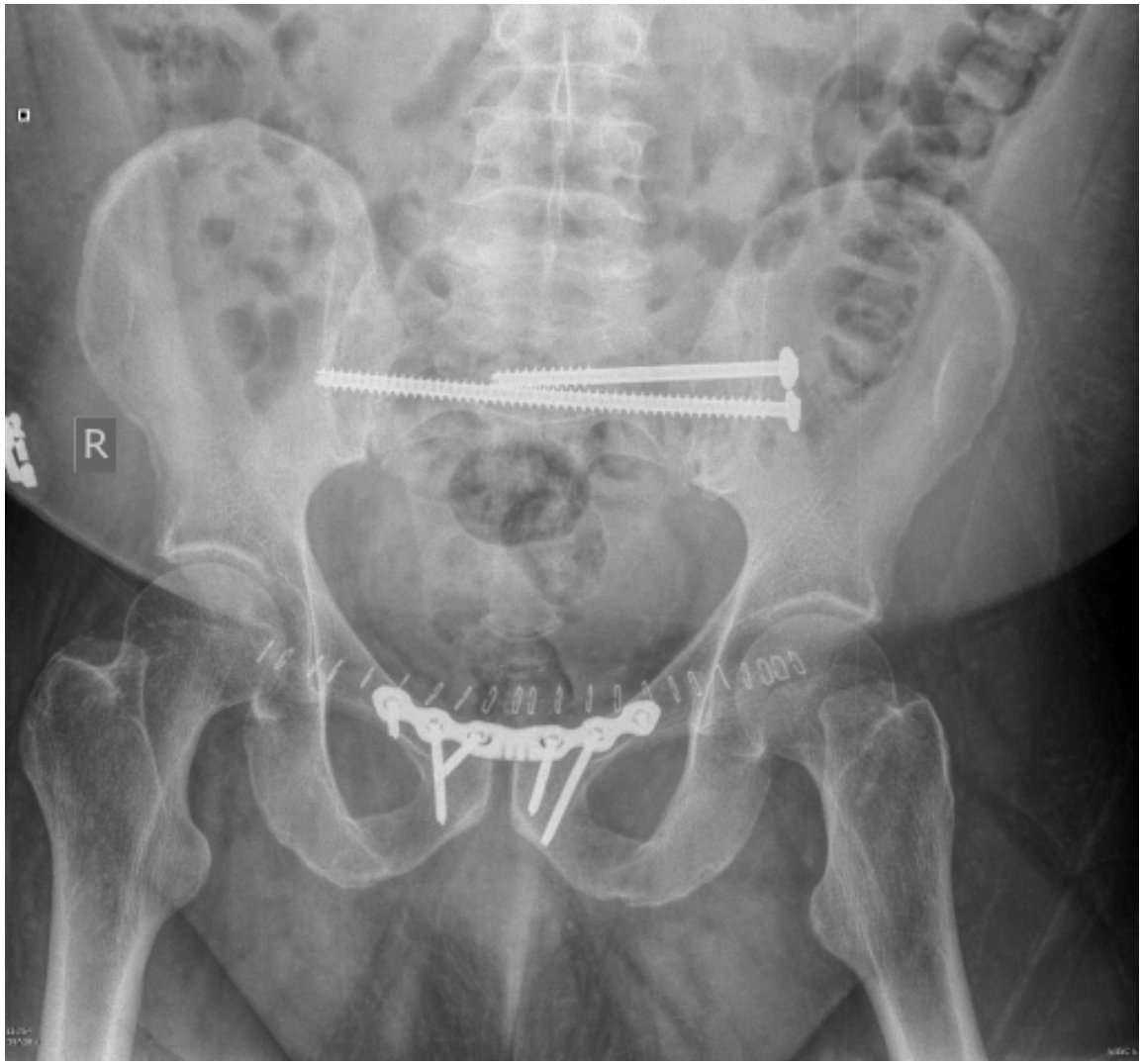
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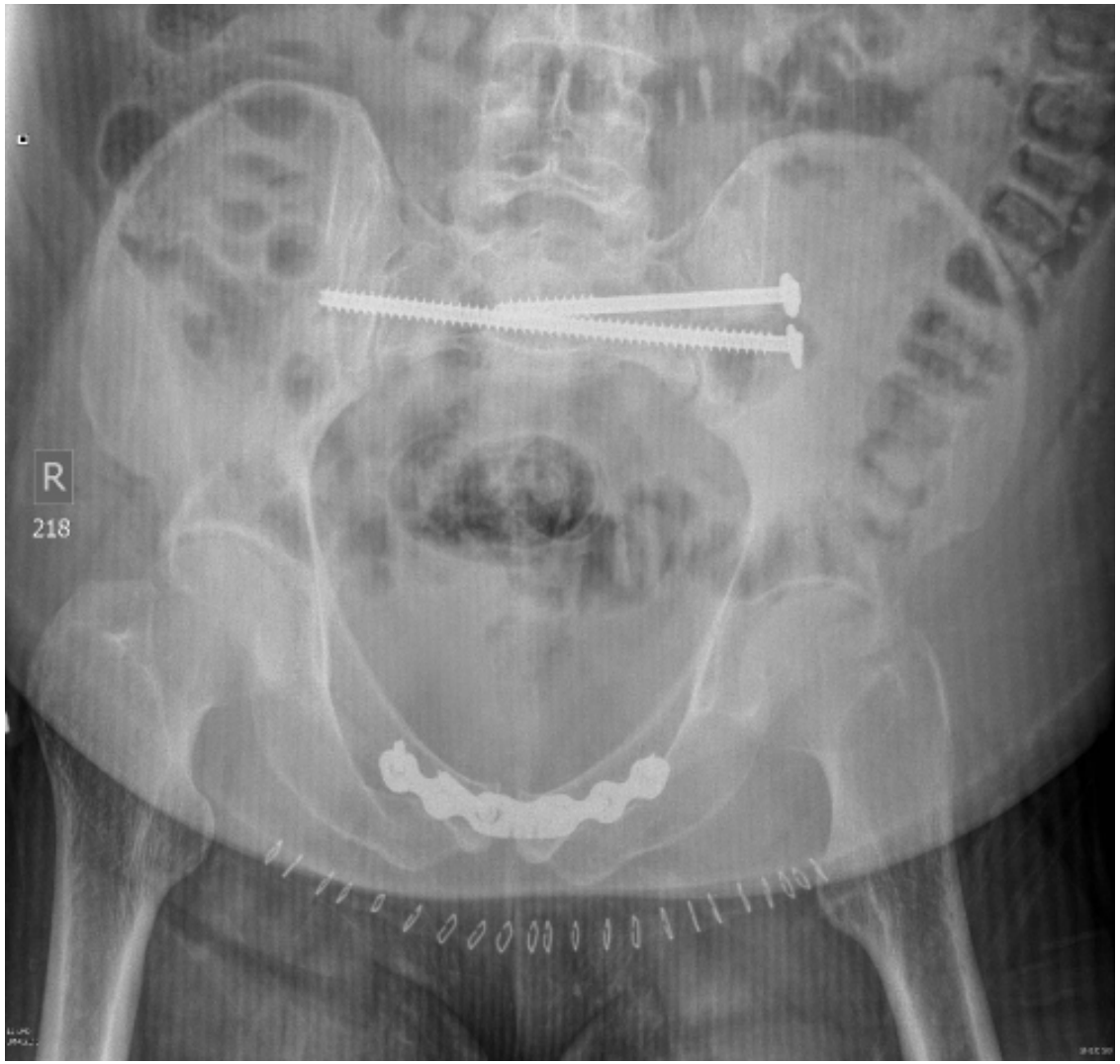
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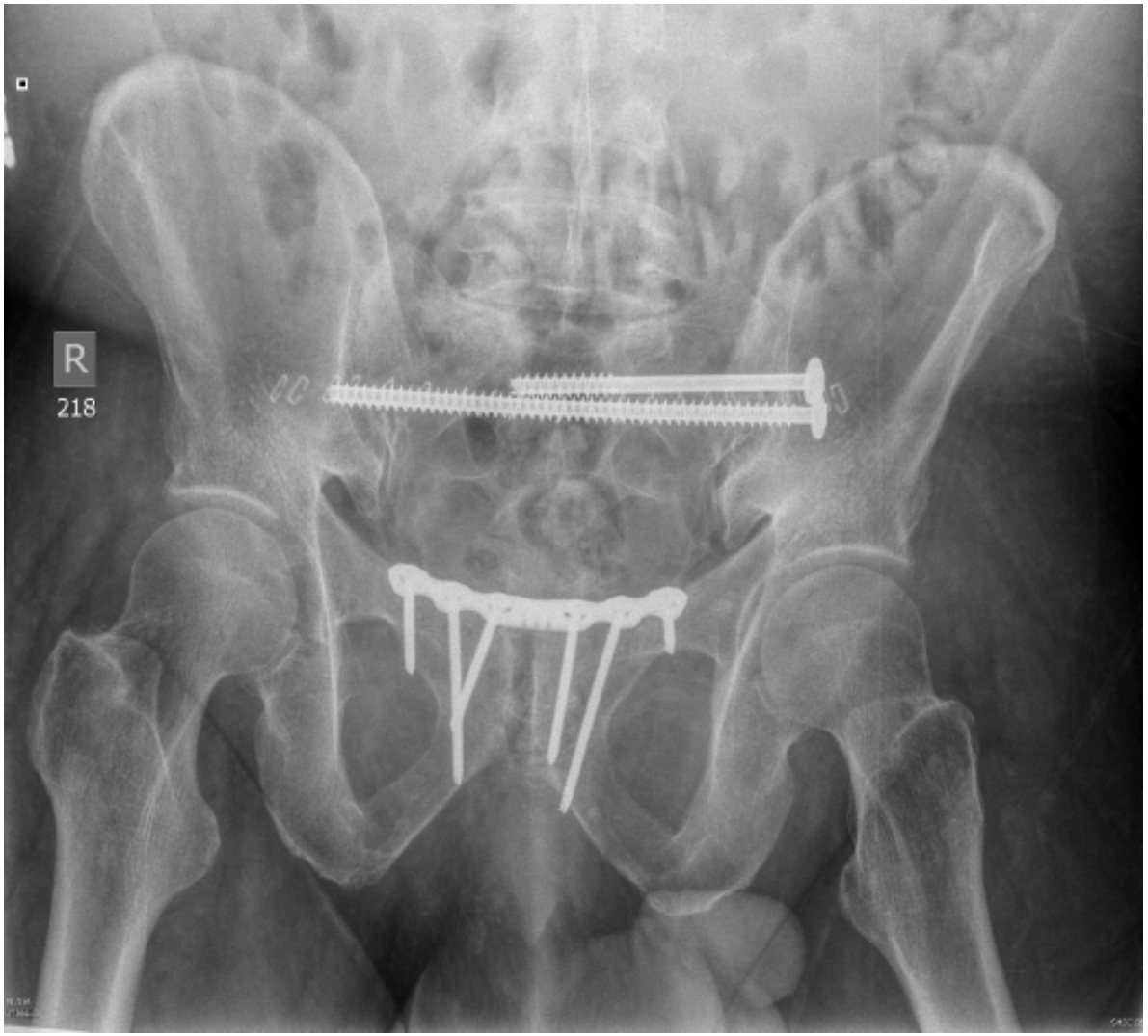
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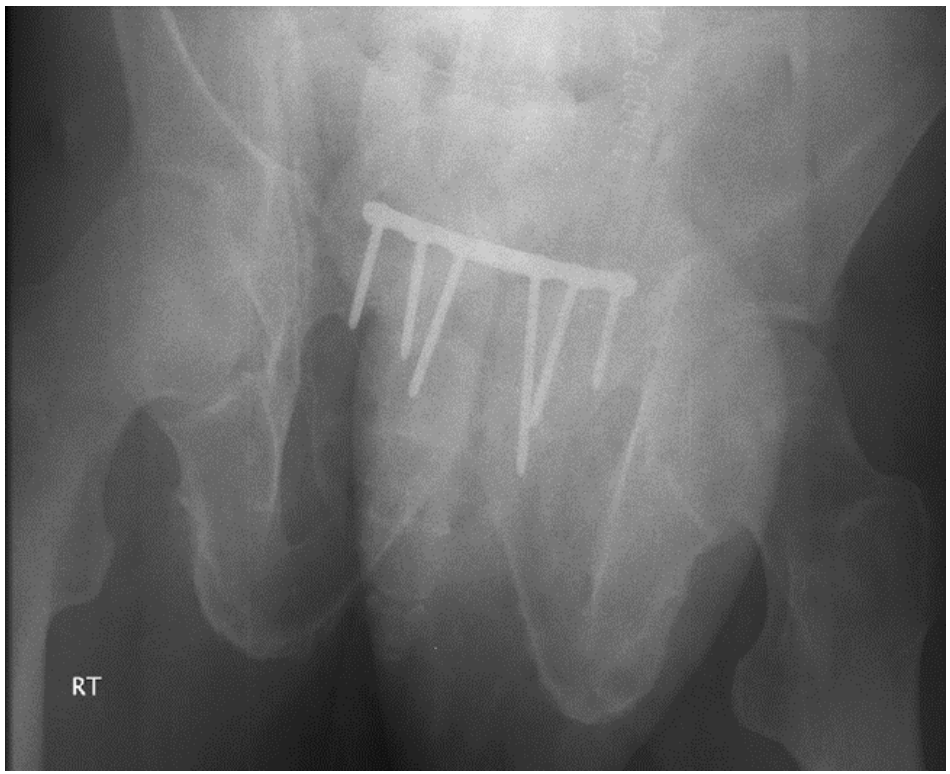
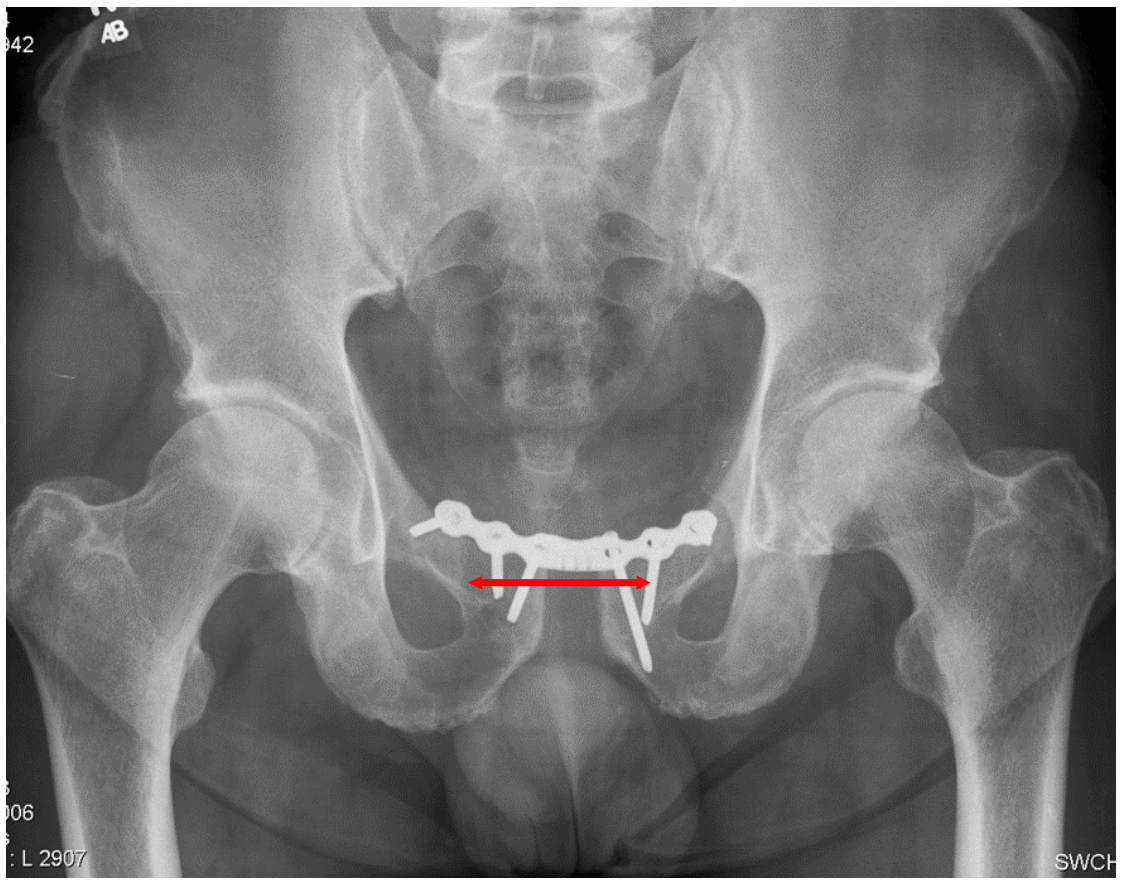
# Similar case from several years ago, anterior fixation only

# 6 month follow up



# Take home messages

- Early detection of pelvic instability in hemodynamically unstable trauma patient is essential.
- Simple procedure at ER may save patient life.
- Restoration of mechanical pelvic stability go side by side with resuscitation efforts.