

Pelvic Applications

Fractures and Disruptions of the Pelvic Ring

By Prof. Dr. D. Pennig and Dr. L. Renzi-Brivio

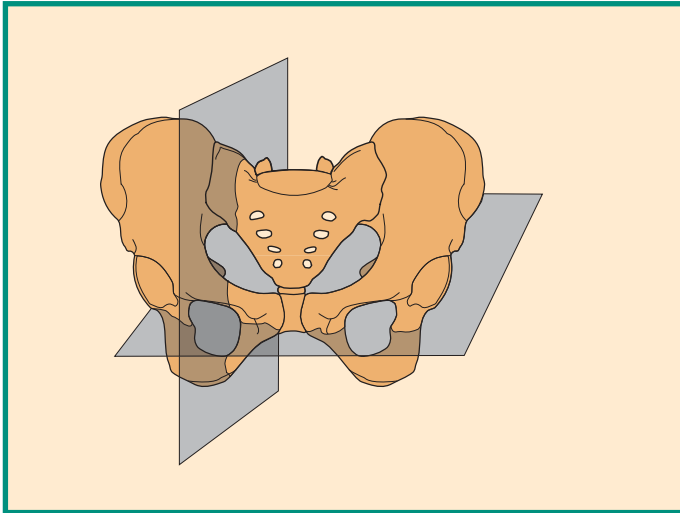
CLASSIFICATION OF PELVIC RING INSTABILITIES

- There are two main planes of pelvic instability, a horizontal plane and a vertical plane. Based upon this, pelvic ring instabilities may be divided into three types, which indicate the type of management required.

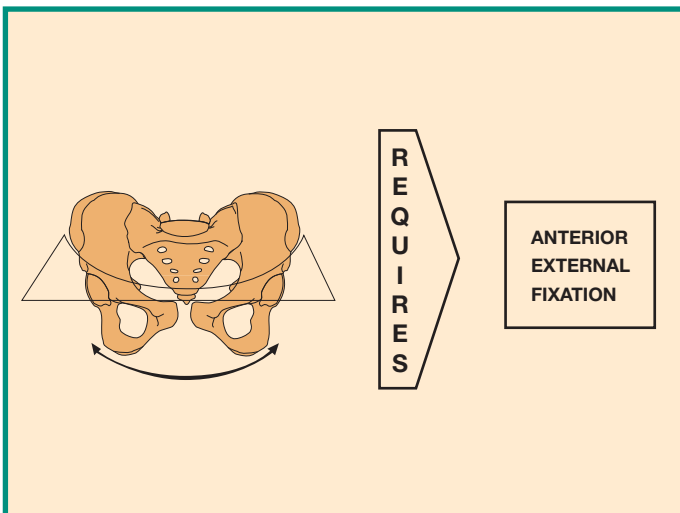
Type I: Anterior Horizontal Instability

Type II: Posterior Instability

Type III: Antero-Posterior Instability



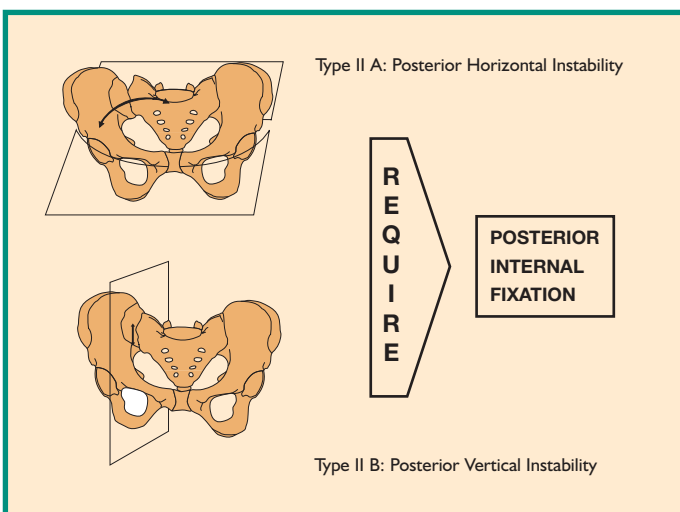
Type I: Anterior Horizontal Instability

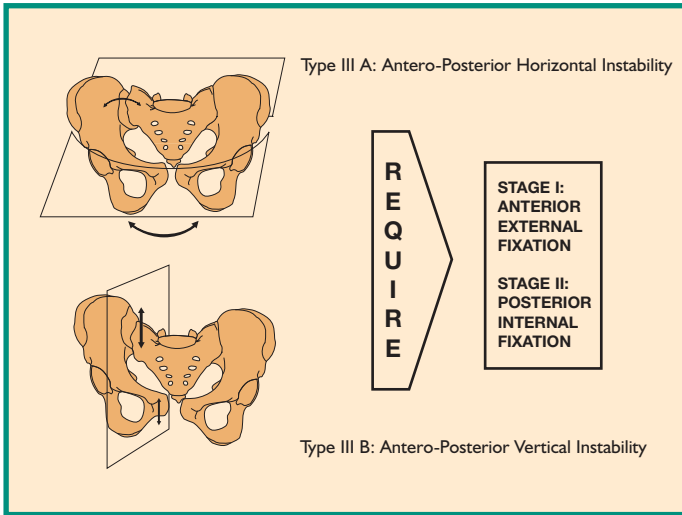


Type II: Posterior Instability

- Type II A: Posterior Horizontal Instability

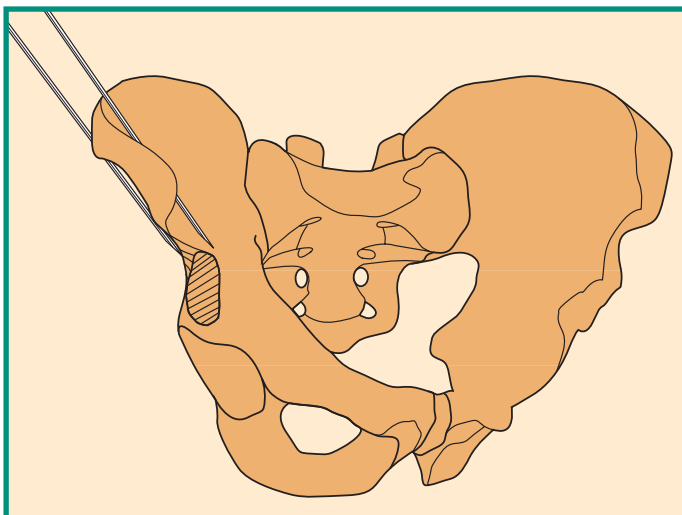
- Type II B: Posterior Vertical Instability





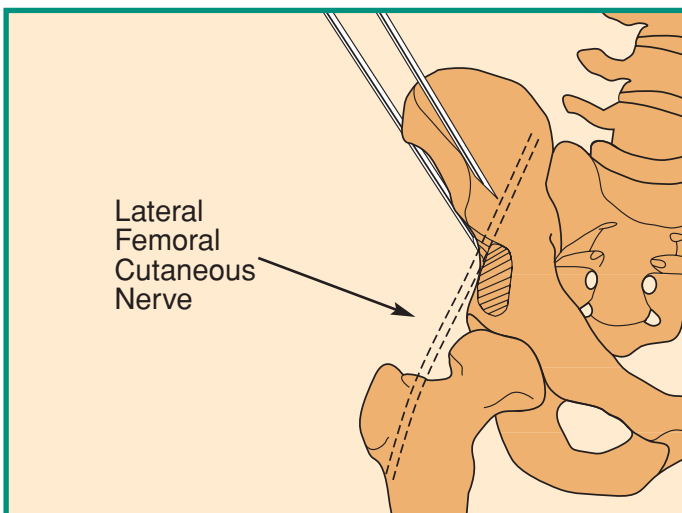
Type III: Antero-Posterior Instability

- Type III A: Antero-Posterior Horizontal Instability
- Type III B: Antero-Posterior Vertical Instability



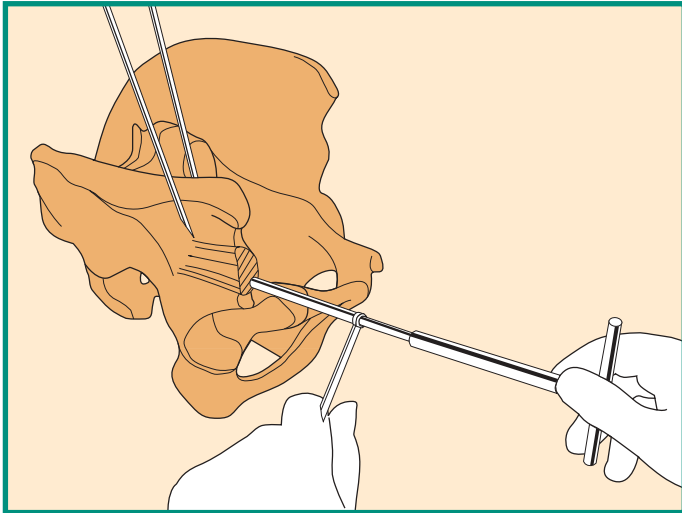
ANTERIOR APPLICATION OF FIXATOR

- Commence with the uninjured side. Insert two Kirschner wires to establish the orientation of the hemipelvis: one from the iliac crest along the inner table of the ilium and one along the outer table.

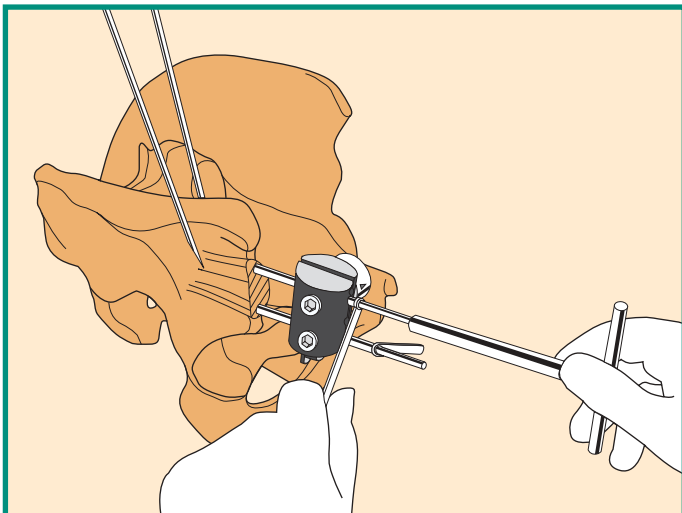


- Make a 3 cm incision, starting just below the anterior superior iliac spine. Expose the bone by blunt dissection, protecting the lateral femoral cutaneous nerve with retractors.

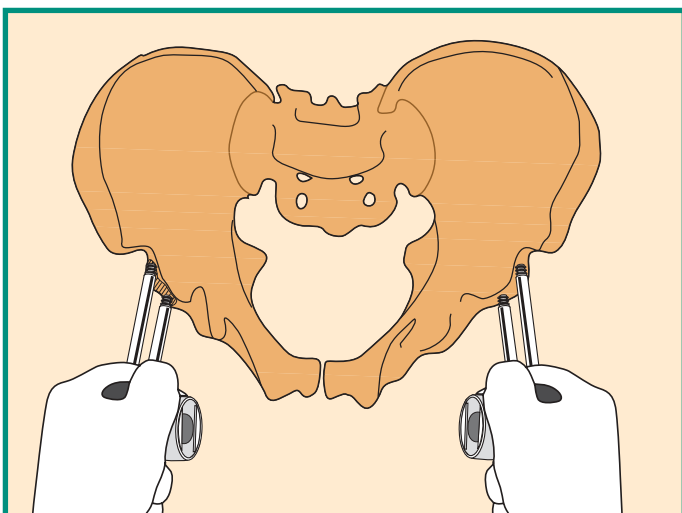
Identify the bony landmarks with a finger: anterior margin of ilium, anterior inferior spine, and superior edge of acetabulum.



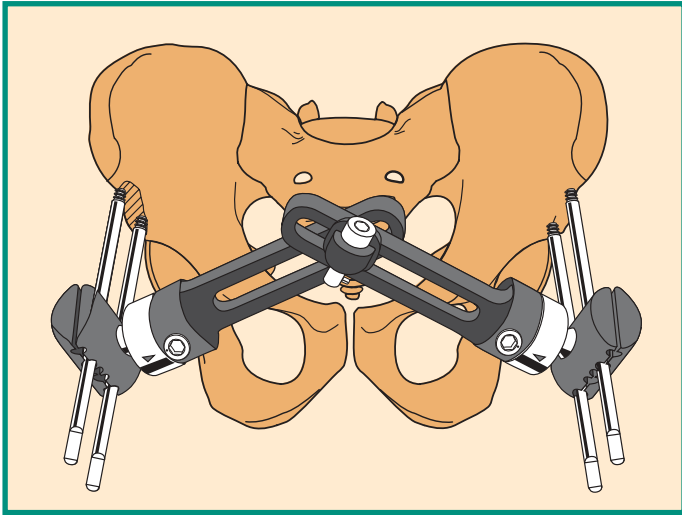
- Insert a screw guide down to the bone, at least 1cm superior to edge of acetabulum, angled 30 degrees upwards. Insert a self-drilling screw, gently tap it through the cortex and screw it home with the T-wrench, without forcing the screw in any direction. The depth of insertion is 40-50 mm (almost the entire thread length). In young patients (16 years and under), use a 3.2 mm drill bit and drill guide to penetrate the hard cortex to a depth of 1 cm.



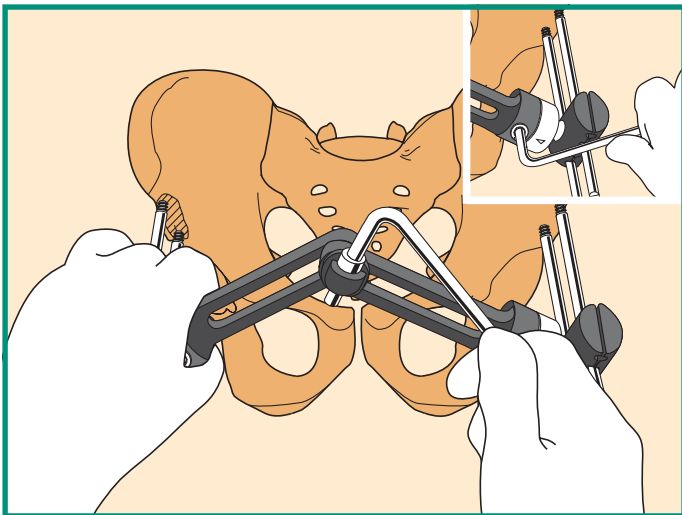
- Place the screw and screw guide in the first seat of the T-clamp. Insert second screw about 2 cm proximal to the first, in the third or fourth clamp seat.



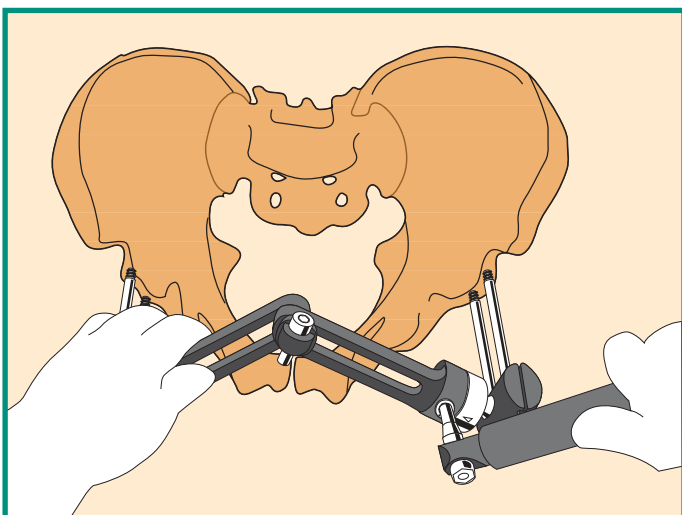
- Insert screws into the injured hemipelvis using the same procedure, and grasp both pairs of screws firmly to ensure they are able to withstand loads. Check screw placement under image intensification.



- Apply fixator to the T-clamps and, with the ball-joints and central hinge unlocked, reduce the fracture, if necessary manipulating the limb on the injured side. Manipulation forceps may be used to distance the surgeon's hands from the X-ray beam.



- Tighten the central cam and ball-joints with the Allen wrench.

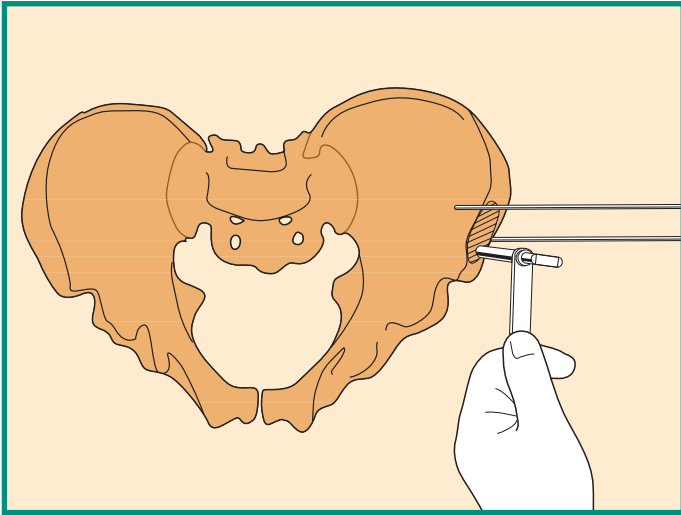


- Finally lock the ball-joints with the torque wrench.

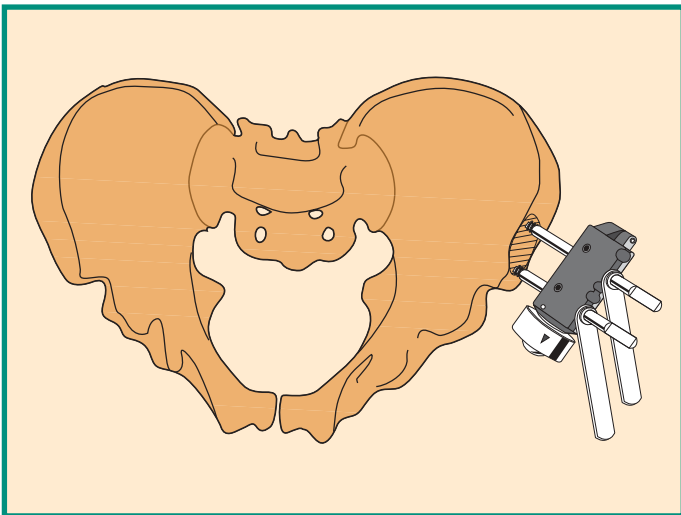
ILIAC CREST APPLICATION OF FIXATOR

Application with Straight Clamps

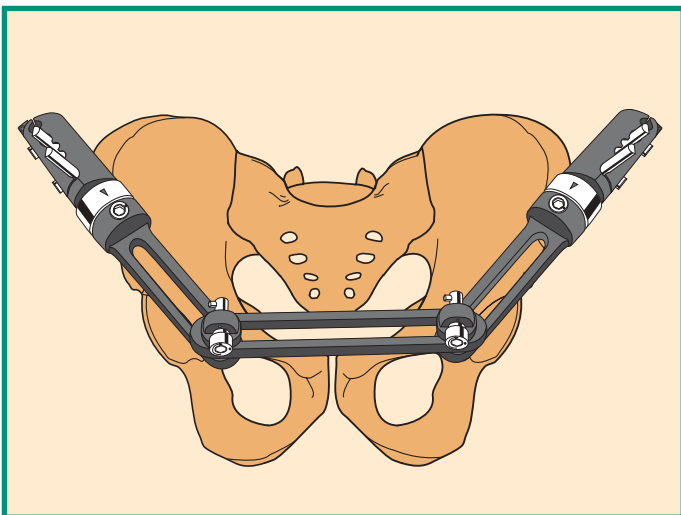
- Insert screws at an angle of 45° to the long axis of the body through a 3-4 cm incision over the iliac crest. Insert first screw 1.5-2.0 cm posterior to the anterior superior iliac spine, through a screw guide.

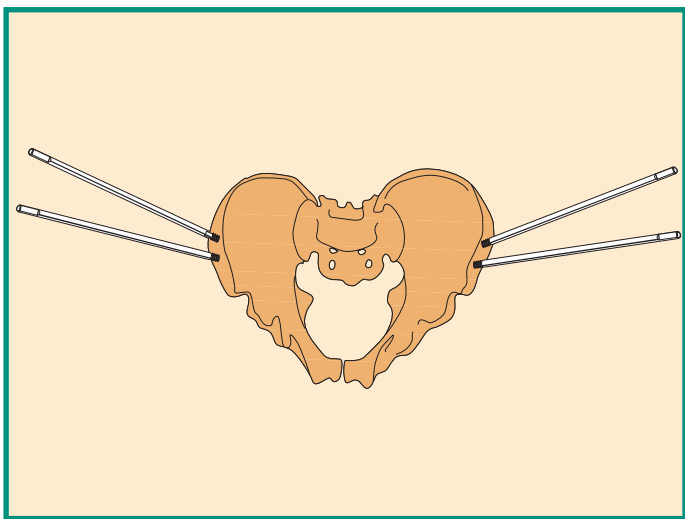


- Mount a hinged straight clamp on the screw guide and insert second screw about 2 cm posterior to first. Where the bone of the iliac crest is very hard, predrill using a 3.2 mm drill bit.



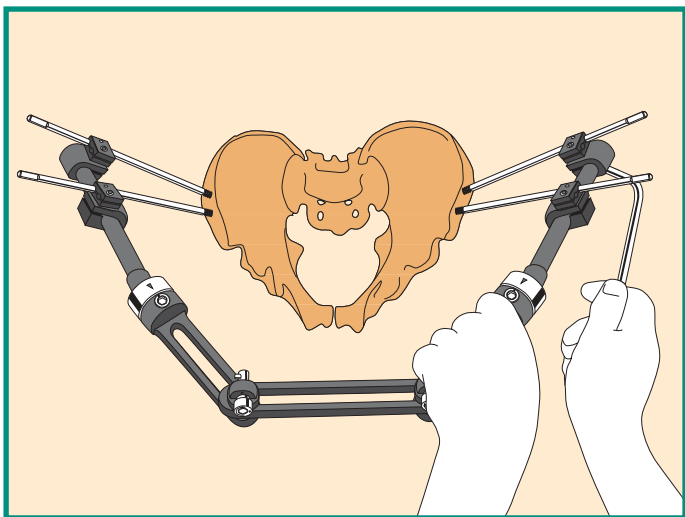
- Repeat the procedure on the opposite side, apply the fixator and reduce the fracture.



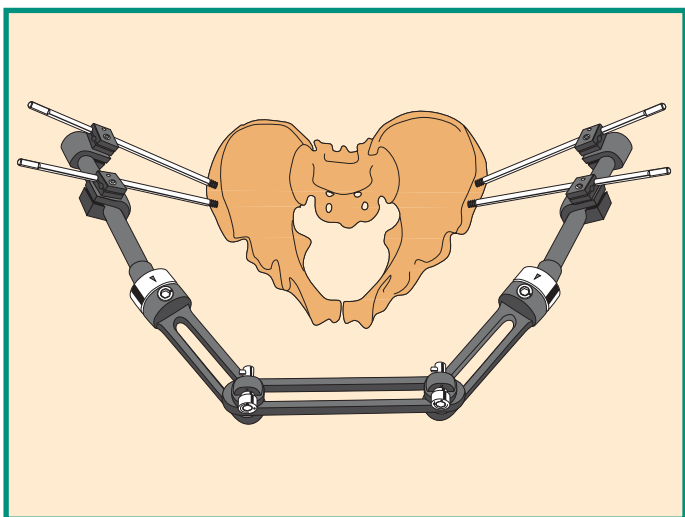


Application with Independent Screw Clamps

- Insert screws freehand through a screw guide in the preferred positions.




- Introduce screws into the independent screw clamps and lock the independent screw clamps both to the screws and to the bar of the Ball-Jointed Module on which they slide, by tightening the single nut.



- Reduce the fracture.

The Orthofix Quality System has been certified to be in compliance with the requirements of:

- Medical Devices Directive 93/42/EEC, Annex II - (Full Quality System)
 - International Standards EN 46001/ISO 9001
- for orthopaedic external fixator systems including bone screws, nails and wires, sterile external and internal fixation systems.

 See "Orthofix External Fixation System" instruction leaflet (PQ EXF) and appropriate Operative Manual prior to use.

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