

The AO ASIF Large External Fixator

TECHNIQUE GUIDE

Pelvic Frame



Technique overview

Manual reduction should be attempted prior to making skin incisions. The patient can be held in temporary reduction with a circumferential sheet, as long as the iliac crest area remains exposed.



1 Prepare for Schanz screw insertion on one side of pelvis

Palpate bony landmarks and make a transverse incision 2 cm posterior to the anterior superior iliac spine (ASIS).¹

2 Predrill for the first Schanz screw

Place the first Schanz screw.

3 Insert Schanz screw using the Universal Chuck

4 Repeat for second Schanz screw

Place the second Schanz screw approximately 2–3 cm posterior to the first, in the middle of the gluteus medius pillar.

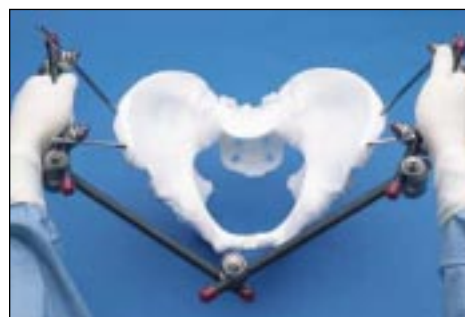
5 Repeat steps 1–4 for Schanz screw insertion in the opposite hemipelvis

6 Attach one short carbon fiber rod to each set of Schanz screws

Connect one Open Adjustable Clamp to each Schanz screw. Connect with a short 11.0 mm Carbon Fiber Rod.

7 Connect modules

Use two long rods connected to the modules and to each other with Combination Clamps.



8 Reduce fracture

Use the rods of the first and second modules as “handles” for reduction. Tighten the nuts.

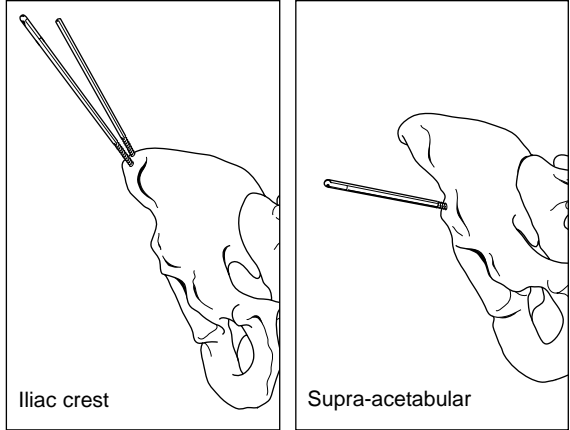


Note: By adjusting the clamps, the center rods can be maneuvered to facilitate access to the abdominal region.

When to use

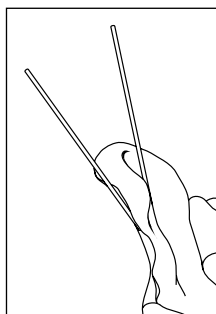
The principal indications for external fixation of the pelvis are for resuscitation of the hemodynamically unstable patient with an open book fracture or as an adjunct treatment for completely unstable pelvic ring injuries. Pelvic external fixation is frequently provisional; more definitive methods of achieving pelvic stability are carried out once the patient has been stabilized.

Pin placement

- Standard technique is to place two Schanz screws in each hemipelvis. A third Schanz screw can be added for increased stability.
 - Schanz screws can be placed in the iliac crest where they should be inserted anterior to the gluteal tubercle.
 - As a resuscitation frame, a single Schanz screw can be placed in each iliac crest.²
 - Another option is to place one Schanz screw (see illustration) in the supra-acetabular area, slightly superior and lateral to the anterior inferior iliac spine (AIIS). This Schanz screw is oriented posteriorly, lateral to the sacroiliac joint.
 - Iliac crest pin placement offers easier entry points but good pin purchase can be more easily achieved with supra-acetabular pin placement.
- 
- Pin placement options*
- Insertion of pins is facilitated by the use of image intensification, especially in the interspinous region and the AIIS.

Schanz screw insertion technique

- Schanz screws are usually inserted through small (1–2 cm) incisions which are made over the intended postreduction position of the pins. If made perpendicular to the iliac wing,³ the incisions allow the surgeon to find the appropriate orientation of the iliac wing and can be extended to release skin tension when the frame is used for definitive treatment.^{4,5}



- For placement of Schanz screws in the iliac crest, it may be useful in some patients to place two K-wires along the inner and outer tables of the ilium as guides when drilling.
 - Predrill only the outer cortex and insert Schanz screws by hand, using the Universal Chuck with T-handle [393.10], allowing the Schanz screw to find its path in the ilium.
- Note:** When self-drilling Schanz screws are used, they must be inserted by hand.
- Drill sleeves must be used to protect soft tissue.

References

1. J.F. Kellam. "The Role of External Fixation in Pelvic Disruptions." *Clinical Orthopaedics and Related Research*. 1989; 241. 66–82.
2. M.C. Tucker et al. "Simple Anterior Pelvic External Fixation." *Journal of Trauma*. 2000; 49. 989–94.
3. Kellam, op cit.
4. Ibid.
5. A.P. Yang, and W.M. Iannaccone. "External Fixator for Pelvic Ring Disruptions." *Orthopaedic Clinics of North America*. 1997; 28, 3. 331–344.

Additional Reading

- M.H.H. Noordeen et al. "Pin Placement in Pelvic External Fixation." *Injury*. 1993; 24, 9. 581–584.
- Tim Pohleman. "Pelvic Ring Injuries: Assessment and Concepts of Surgical Management." *AO Principles of Fracture Management*. Thomas P. Rüedi and William M. Murphy, ed. Dübendorf, Switzerland; AO Publishing. 2000. 402.

Optional Frame Configurations



Supra-acetabular frames

One Schanz screw can be placed in each AIIS and joined either by one curved carbon fiber rod or two straight carbon fiber rods. For greater stability, an additional Schanz screw can be placed above the first on each hemipelvis, allowing creation of a second frame that can be connected to the first.



Resuscitation frame

One Schanz screw can be placed in each hemipelvis and joined either by one or two carbon fiber rods, depending on patient anatomy.










Iliac crest frame

The use of three carbon fiber rods allows the frame to be constructed to fit larger patients.

Required set

Synthes Large External Fixator Set [115.720] or [115.740]

Recommended components for basic frame*

Product Number	Item	Quantity Needed	
294.5X	5.0 mm Schanz Screw, blunted trocar point	4	
394.8X	11.0 mm Carbon Fiber Rod		
	short (100–200 mm)	2	
	long (>250 mm)	2	
393.978	Open Adjustable Clamp	4	
393.647	Combination Clamp	3	
394.97	Protective Cap for 11.0 mm Rods	8	
394.993	Protective Cap for 5.0 mm Fixation Pins	4	

***Note:** Additional components are required for optional frame configurations.

Large External Fixator Sets

with stainless steel Self-Drilling Schanz Screws [115.720]

with Titanium Self-Drilling Schanz Screws [115.740]

Graphic Case

690.315 Large External Fixator Graphic Case

Implants in Set 115.720

293.74 5.0 mm Steinmann Pin with Central Thread, 200 mm, 4 ea.
294.56 5.0 mm Schanz Screw, blunted trocar point, 200 mm, 8 ea.
294.784 5.0 mm Self-Drilling Schanz Screw, 150 mm, 4 ea.
294.785 5.0 mm Self-Drilling Schanz Screw, 175 mm, 8 ea.
294.786 5.0 mm Self-Drilling Schanz Screw, 200 mm, 8 ea.
294.950 6.0 mm Transfixation Pin, 225 mm, 4 ea.

Implants in Set 115.740

293.74 5.0 mm Steinmann Pin with Central Thread, 200 mm, 4 ea.
294.56 5.0 mm Schanz Screw, blunted trocar point, 200 mm, 8 ea.
294.950 6.0 mm Transfixation Pin, 225 mm, 4 ea.
494.784 5.0 mm Titanium Self-Drilling Schanz Screw, 150 mm, 4 ea.
494.785 5.0 mm Titanium Self-Drilling Schanz Screw, 175 mm, 8 ea.
494.786 5.0 mm Titanium Self-Drilling Schanz Screw, 200 mm, 8 ea.

Instruments (for both sets)

310.37 3.5 mm Drill Bit, quick coupling, 195 mm, 2 ea.
310.48 4.5 mm Drill Bit, quick coupling, 195 mm, 2 ea.
321.20 Ratchet Wrench, 11 mm width across flats, 2 ea.
355.14 Cannulated Socket Wrench
392.951 8.0 mm/6.0 mm Threaded Drill Sleeve, short
392.952 8.0 mm/6.0 mm Threaded Drill Sleeve, long
392.963 6-Position Drill Guide Handle
393.10 Universal Chuck with T-Handle
393.746 Split Tissue Protection Sleeve, 5.0 mm
393.76 Open Compressor, 2 ea.
394.181 3.5 mm Trocar, short
394.182 3.5 mm Trocar, long
395.911 Drill Sleeve Handle
395.912 5.0 mm/3.5 mm Drill Sleeve, short
395.913 5.0 mm/3.5 mm Drill Sleeve, long
395.921 6.0 mm/5.0 mm Threaded Drill Sleeve, short
395.923 6.0 mm/5.0 mm Threaded Drill Sleeve, long

Fixation Material (for both sets)

394.97 Protective Caps for 11.0 mm Rods, 1 pkg. of 10
394.993 Protective Caps for 5.0 mm Fixation Pins, 1 pkg. of 10
394.994 Protective Caps for 6.0 mm Fixation Pins, 1 pkg. of 10
394.80 11.0 mm Carbon Fiber Rod, 100 mm, 4 ea.
394.82 11.0 mm Carbon Fiber Rod, 150 mm, 4 ea.
394.83 11.0 mm Carbon Fiber Rod, 200 mm, 4 ea.
394.84 11.0 mm Carbon Fiber Rod, 250 mm, 4 ea.
394.85 11.0 mm Carbon Fiber Rod, 300 mm, 4 ea.
394.86 11.0 mm Carbon Fiber Rod, 350 mm, 4 ea.

Fixation Material (continued)

394.87 11.0 mm Carbon Fiber Rod, 400 mm, 4 ea.
393.978 Open Adjustable Clamp, 8 ea.
393.647 Combination Clamp, 12 ea.
393.648 Dynamization Clip for Combination Clamp, 4 ea.
393.66 Transverse Clamp, 2 ea.
393.361 Titanium Tube-to-Tube Clamp, 2 ea.
393.751 Multi-Pin Clamp, 4 ea.
393.753 Rod Attachment for Multi-Pin Clamp, 6 ea.
393.755 Multi-Pin Clamp, 4 position, 2 ea.

Also Available

Implants

Schanz Screws
294.43–48 4.0 mm, diamond point, 60 mm–150 mm
294.52–57 5.0 mm, blunted trocar point, 100 mm–250 mm
294.71–76 4.5 mm, blunted trocar point, 80 mm–200 mm

Self-Drilling Schanz Screws
294.774–779 4.0 mm, 60 mm–175 mm
294.782–788 5.0 mm, 100 mm–250 mm
294.792–798 6.0 mm, 100 mm–250 mm

Titanium Self-Drilling Schanz Screws
494.774–779 4.0 mm, 60 mm–175 mm
494.782–788 5.0 mm, 100 mm–250 mm
494.792–798 6.0 mm, 100 mm–250 mm

Fixation Material

393.64 Adjustable Clamp
393.43 Spring-Loaded Nut
393.69 Open Clamp
393.71 Universal Joint for Two Tubes
393.75 Universal Clamp
394.991 Protective Caps for 4.0 mm Fixation Pins, 10/pkg.
394.992 Protective Caps for 4.5 mm Fixation Pins, 10/pkg.

Sets

105.957 Power Drive Set
150.16 ComPact Air Drive II Set

Accessories for Graphic Case

690.315.12 Label Sheet Pack for Large External Fixator Clamps
690.315.13 Label Sheet Pack for Schanz Screws
690.315.14 Replacement Brackets (3 sizes)
690.315.15 Replacement Screws, 10/pkg.

SYNTHES (USA)

1690 Russell Road
Paoli, PA 19301-1262
Telephone: (610) 647-9700
Fax: (610) 251-9056
To Order: (800) 523-0322

SYNTHES (CANADA) LTD.

111 Brunel Road, Suite 110
Mississauga, Ontario L4Z 1X3
Telephone: (905) 568-1711
Fax: (905) 568-1662
To Order: (800) 668-1119

