

Sacral Bars

Fixation of fractures and/or dislocations
in the posterior pelvic ring

Surgical Technique

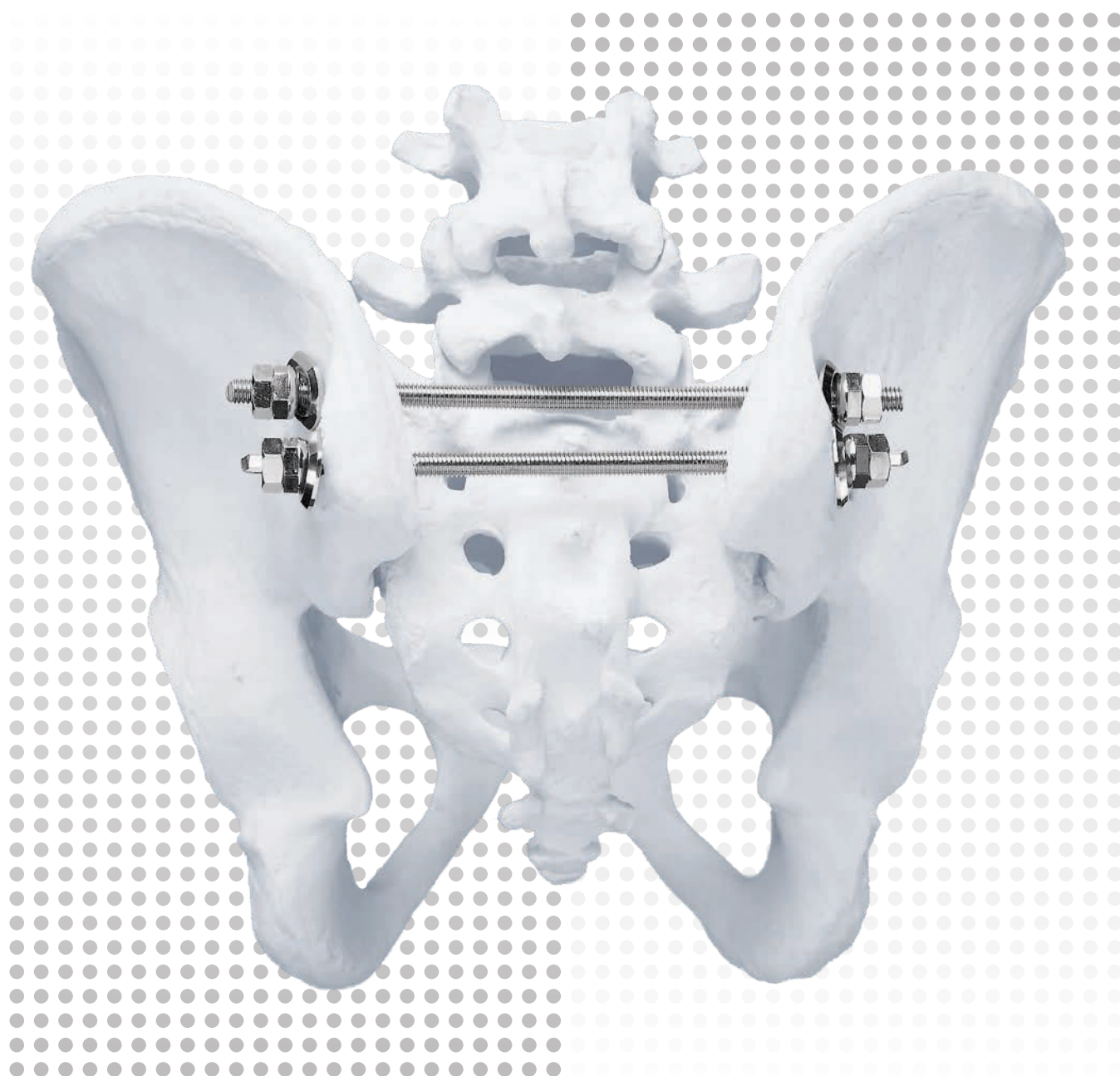


 Image intensifier control

This description alone does not provide sufficient background for direct use of DePuy Synthes products. Instruction by a surgeon experienced in handling these products is highly recommended.

Processing, Reprocessing, Care and Maintenance

For general guidelines, function control and dismantling of multi-part instruments, as well as processing guidelines for implants, please contact your local sales representative or refer to:

<http://emea.depuysynthes.com/hcp/reprocessing-care-maintenance>

For general information about reprocessing, care and maintenance of DePuy Synthes reusable devices, instrument trays and cases, as well as processing of DePuy Synthes non-sterile implants, please consult the Important Information leaflet (SE_023827) or refer to:

<http://emea.depuysynthes.com/hcp/reprocessing-care-maintenance>

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Sacral Bars

Fixation of fractures and/or dislocations in the posterior pelvic ring

- Sacral washers prevent the rounded sacral nuts from pressing onto the cortical bone
- The sacral bars feature a trocar tip for passage through the soft tissues
- The sacral bars are fully threaded and are available in 200 mm or 260 mm lengths
- Kits available sterile and nonsterile

Intended Use, Indications and Contraindications can be found in the corresponding system Instructions for Use.



The AO Principles of Fracture Management

Mission

The AO's mission is promoting excellence in patient care and outcomes in trauma and musculoskeletal disorders.

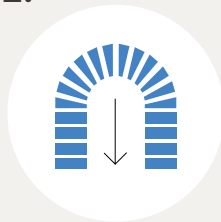
AO Principles^{1,2}

1.



Fracture reduction and fixation to restore anatomical relationships.

2.



Fracture fixation providing absolute or relative stability, as required by the “personality” of the fracture, the patient, and the injury.

3.



Preservation of the blood supply to soft-tissues and bone by gentle reduction techniques and careful handling.

4.



Early and safe mobilization and rehabilitation of the injured part and the patient as a whole.

¹ Müller ME, M Allgöwer, R Schneider, H Willenegger. Manual of Internal Fixation. 3rd ed. Berlin, Heidelberg, New York: Springer. 1991

² Buckley RE, Moran CG, Apivatthakakul T. AO Principles of Fracture Management: 3rd ed. Vol. 1: Principles, Vol. 2: Specific fractures. Thieme; 2017.

Preoperative Planning

Instruments and implants

01.100.763	Sacral Bar Set, Bar Length 200 mm
or	
01.100.766	Sacral Bar Set, Bar Length 260 mm
388.720	Bolt Cutter
321.160	Combination Wrench Ø 11.0 mm
or	
321.200	Ratchet Wrench for Nut, hexagonal, 11.0 mm

This procedure can be performed manually using a universal chuck with T-handle, or with power equipment.

▲ Precautions:

- In the case of bilateral fracture, it is necessary to have at least one side of stable reduction using a sacroiliac screw or posterior plate in addition to inserting sacral bars.
- The correct length of the sacral bar should extend 25–30 mm on either side of the posterior iliac crest (bar will be cut to size intraoperatively).

For additionally required instruments, please see additional instrument section.

Surgical Technique

1. Position the patient

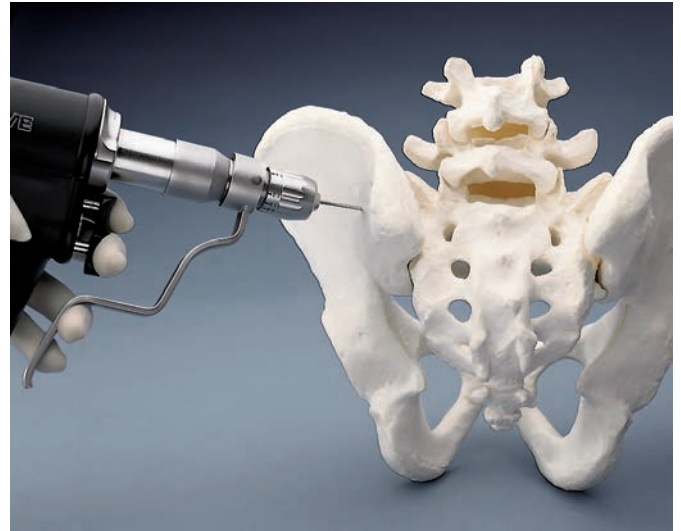
The patient is placed in the prone position.

2. Make the incisions

Make slightly curved bilateral incisions just lateral to the posterior superior iliac spine. The incision on the fracture side should be large enough to allow for direct visualization and reduction.

3. Reduce and stabilize the fracture

Reduce the fracture using pointed reduction forceps from the medial sacral crest to the lateral aspect of the posterior superior iliac spine, or from the opposite side using pelvic reduction forceps. After reduction, two Kirschner wires should be placed across the sacroiliac joint for provisional stabilization.



4. Drill gliding holes

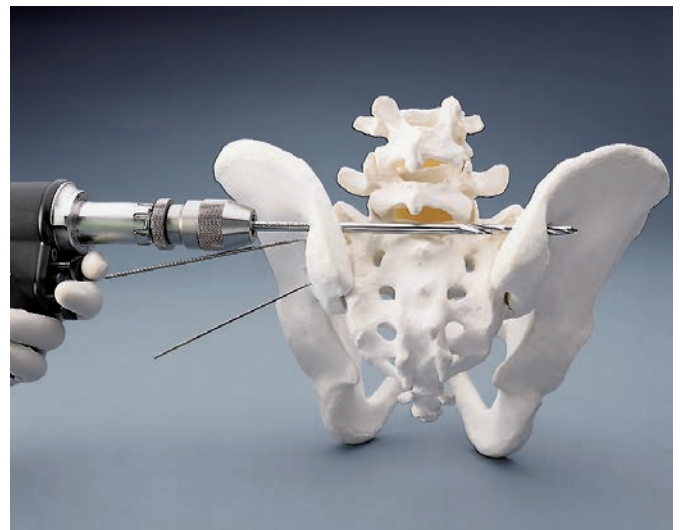
Instrument

310.60J	Drill Bit 6.0 mm, for Jacobs Chuck, length 195 mm
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Drill a set of gliding holes using a 6.0 mm drill bit. The holes should be located so that the first bar is placed at the level of L5/S1 interspace as seen on C-arm or by palpation.

The second set of holes should be at least 1.5 cm inferior to the first.

When drilling the gliding hole, make sure that the drill exits the medial aspect of the posterior superior iliac spine above the sacral lamina. Care must be taken to ensure that there is enough bone in the posterior superior iliac spine to hold the second bar. If not, use a sacroiliac screw or a posterior plate.

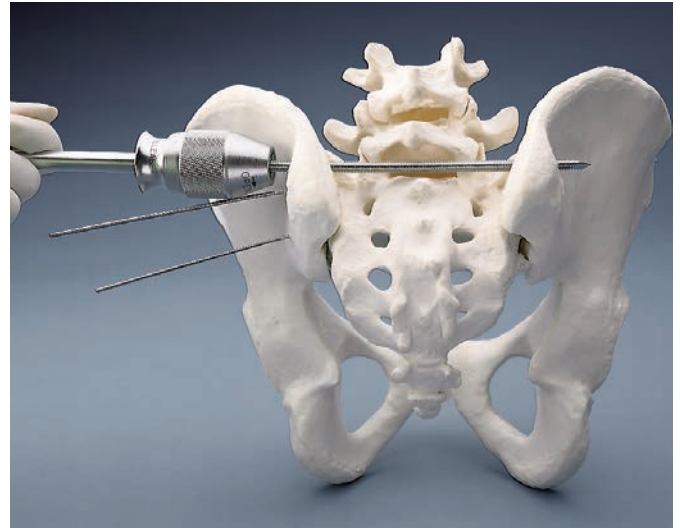


5. Insert first sacral bar

Instruments

296.763	Threaded Sacral Bar, length 200 mm, Stainless Steel
or	
296.766	Threaded Sacral Bar, length 260 mm, Stainless Steel

Drive the sharp trocar tip of the threaded sacral bar through the predrilled hole in the contralateral iliac spine. The sacral lamina must be seen, to ensure that the bar passes dorsal to it and does not enter the sacral canal; it may pass through the medial sacral crest.



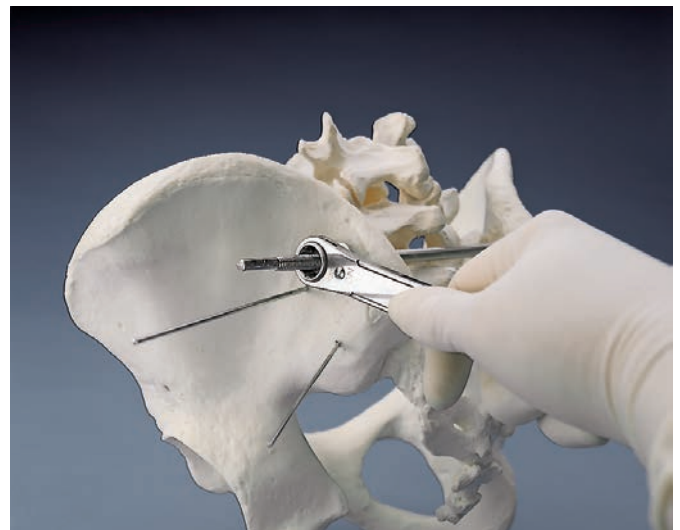
6. Apply washers and rounded nuts

Instruments

296.758	Washer Ø 6.0 mm
296.757	Nut, rounded, Ø 6.0 mm
321.160	Combination Wrench Ø 11.0 mm
or	
321.200	Ratchet Wrench for Nut, hexagonal, 11.0 mm

Place a 6.0 mm washer on each end of the sacral bar to prevent the nuts from pressing into the bone.

Mate the 6.0 mm rounded nuts to the sacral washers. Tighten with an 11 mm wrench to obtain compression.



7. Apply hexagonal nuts

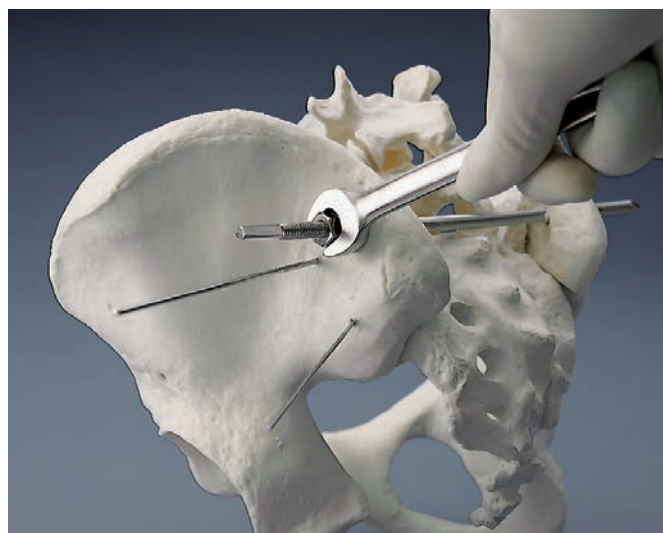
Instruments

296.759	Nut, hexagonal, Ø 6.0 mm
321.160	Combination Wrench Ø 11.0 mm
or	
321.200	Ratchet Wrench for Nut, hexagonal, 11.0 mm

Add 6.0 mm hexagonal nuts to maintain compression. With a hexagonal wrench, wedge the hexagonal nuts against the rounded sacral nuts.

▲ Precaution:

Pay attention not to over-compress the construct.



8. Place second bar

Repeat steps 5–7 for insertion and fixation of the second sacral bar. Two bars must be used to avoid rotation.

Remove Kirschner wires.

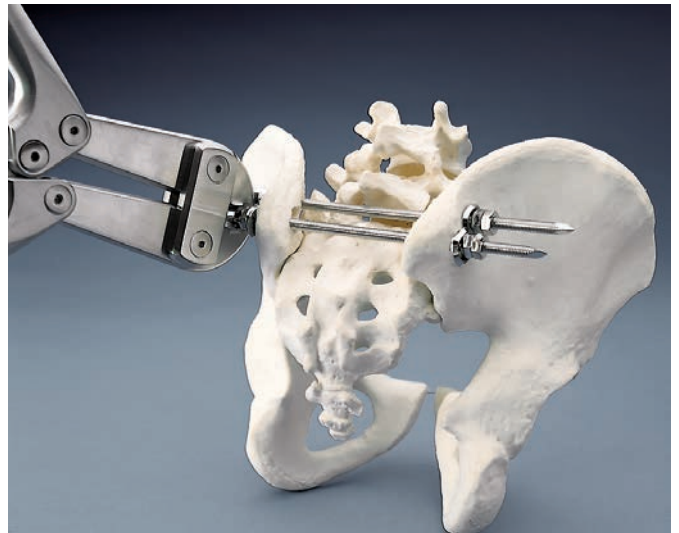


9. Trim sacral bars

Instrument

388.720	Bolt Cutter
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Use the bolt cutter to cut the ends of the sacral bars flush with the hexagonal nuts.



Implant Removal

In case the physician decides to remove the implants, implants can be removed by using general surgical instruments.

Sacral Bar Sets

Sets

Each set contains the necessary sterile implants and drill bit for one surgical procedure as described in the technique guide.

01.100.763 Sacral Bar Set,
Bar Length 200 mm

01.100.763 contains the following implants and instruments:

Art. No.	Description	Units
296.763S*	Threaded Sacral Bar, length 200 mm, Ø 6.0 mm, Stainless Steel, sterile	2
296.757S*	Nut, rounded, Ø 6.0 mm, sterile	4
296.758S*	Washer Ø 6.0 mm, sterile	4
296.759S*	Nut, hexagonal, Ø 6.0 mm, sterile	4
310.60JS	Drill Bit 6.0 mm, for Jacobs Chuck, length 195 mm, sterile	1

01.100.766 Sacral Bar Set,
Bar Length 260 mm

01.100.766 contains the following implants and instruments:

Art. No.	Description	Units
296.766S*	Threaded Sacral Bar, length 260 mm, Ø 6.0 mm, Stainless Steel, sterile	2
296.757S*	Nut, rounded, Ø 6.0 mm, sterile	4
296.758S*	Washer Ø 6.0 mm, sterile	4
296.759S*	Nut, hexagonal, Ø 6.0 mm, sterile	4
310.60JS	Drill Bit 6.0 mm, for Jacobs Chuck, length 195 mm, sterile	1

*Set includes two packs.

Additional Instruments

The following instruments are additionally required:

321.160 Combination Wrench \varnothing 11.0 mm
or
321.200 Ratchet Wrench for Nut, hexagonal,
11.0 mm



388.720 Bolt Cutter



393.100 Universal Chuck with T-Handle



Also available:

398.860 Pelvic Reduction Forceps, long,
with pointed ball tips, speed lock,
length 400 mm



511.200 Oscillating Drill Attachment



MRI Information

Torque, Displacement and Image Artifacts according to ASTM F 2213, ASTM F 2052 and ASTM F2119

Non-clinical testing of worst case scenario in a 3 T MRI system did not reveal any relevant torque or displacement of the construct for an experimentally measured local spatial gradient of the magnetic field of 3.69 T/m. The largest image artifact extended approximately 169 mm from the construct when scanned using the Gradient Echo (GE). Testing was conducted on a 3 T MRI system.

Radio-Frequency-(RF-)induced heating according to ASTM F2182

Non-clinical electromagnetic and thermal testing of worst case scenario lead to peak temperature rise of 9.5 °C with an average temperature rise of 6.6 °C (1.5 T) and a peak temperature rise of 5.9 °C (3 T) under MRI Conditions using RF Coils (whole body averaged specific absorption rate [SAR] of 2 W/kg for 6 minutes [1.5 T] and for 15 minutes [3 T]).

▲ Precautions:

The above mentioned test relies on non-clinical testing. The actual temperature rise in the patient will depend on a variety of factors beyond the SAR and time of RF application. Thus, it is recommended to pay particular attention to the following points:

- It is recommended to thoroughly monitor patients undergoing MR scanning for perceived temperature and/or pain sensations.
- Patients with impaired thermoregulation or temperature sensation should be excluded from MR scanning procedures.
- Generally, it is recommended to use a MR system with low field strength in the presence of conductive implants. The employed specific absorption rate (SAR) should be reduced as far as possible.
- Using the ventilation system may further contribute to reduce temperature increase in the body.

Not all products are currently available in all markets.
This publication is not intended for distribution in the USA.
Intended use, Indications and Contraindications can be found in the corresponding system Instructions for Use.
All Surgical Techniques are available as PDF files at www.depuysynthes.com/ifu



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