

Percutaneous Posterolateral-Oblique Sacroiliac Joint Fusion with A Titanium Transfixation Implant (TTI) Screw and Bone Graft

Example Operative Note

Procedural Billing Options

- **27279:** *Arthrodesis, sacroiliac joint, percutaneous or minimally invasive (indirect visualization), with image guidance, includes obtaining bone graft when performed and placement of transfixing device*
- **20930:** *Allograft, morselized, or placement of osteopromotive material, for spine surgery only (List separately in addition to code for primary procedure) (Secondary)*
- **20939:** *Bone marrow aspiration for bone grafting, spine surgery only, through separate skin or fascial incision (list separately in addition to code for primary procedure) (Secondary)*

HCPCS Code

- **C1713:** *Anchor/screw for opposing bone-to-bone or soft tissue-to-bone (implantable)*

This is an example of an operative report for treating spinal stenosis using a LESS (Less Exposure Spine Surgery) approach to perform a percutaneous sacroiliac joint fusion using titanium transfixation implant (TTI) screw plus bone graft.

Preoperative Diagnosis:

- Sacroiliac joint dysfunction with pain

Postoperative Diagnosis:

- Same

Procedure:

- Unilateral percutaneous lateral-oblique sacroiliac joint trans-articular fusion using titanium transfixation implant screws measuring 60mm x 12mm at S1 and 50mm x 12mm at S2
- Fusion using bone graft and harvested autograft iliac bone
- Use of fluoroscopy

Instrumentation: Sacrix titanium transfixation implant (TTI) screw measuring size **XX** mm

Bone graft: Nanofuse Biologics.

Surgeon: Assistant: Anesthesia: MAC | IV Sedation | Local | General anesthesia

Complications: None

Blood loss: Minimal

Indication

Refer to patient's history, physical examination, and radiological findings.

Operation:

Patient Position

The surgical site mark was made prior to entering the operating room. The patient was brought to the operating room, and adequate general endotracheal anesthesia was established. The patient was positioned prone on the operative table with careful padding to all bony prominences. The lower back and buttock area were prepped and draped in the standard sterile surgical fashion. The preoperative surgical site mark was visible within the operative field. All team members participated in a timeout to confirm the patient's name, operative level, procedure, and equipment verification.

Fluoroscopic Guided Skin Markings

The fluoroscope was tilted cephalad to approximately 20–30° to flatten the S1 endplate. A horizontal line was drawn on the skin, aligning with the S1 superior endplate and the top of the sacral ala. The fluoroscope was then angled contralateral oblique to approximately 20–30° (*Sacrix View or Outlet View*) to visualize the sacroiliac joint, the top of the iliac crest, and the lateral border of the iliac crest, which we designated as the “*Sacrix Line*.” The teardrop representing the posterior border of the iliac spine was identified. A vertical line was marked to correspond with the “*Sacrix Line*.” The fluoroscope was repositioned to approximately 5–10° ipsilateral oblique view to align with the sacroiliac joint (ipsilateral oblique view) and to visualize the SIJ and the shadow of the lateral border of the iliac crest. **The goal of this surgery is to go obliquely across the joint from posterolateral to anterior following fundamental AO biomechanical principles for fixation and arthrodesis and avoid going parallel to the joint or at 90°.**

Fluoroscopic Guided Placement of The Bone Needle and Guidewire

With the fluoroscope in the ipsilateral oblique view, a hypodermic needle was docked on the outer border of the iliac crest (medial to the SIJ joint but lateral to the shadow of the lateral border of the iliac crest), caudal to the S1 endplate and cephalad to the S1 foramen. An anesthetic agent with epinephrine was injected into the skin, subcutaneous layers, and periosteum of the ilium for local anesthesia. The Jamshidi needle was then inserted through the skin at the exact location of the hypodermic needle. The tip of the Jamshidi needle is inserted until it contacts the ilium. Under fluoroscopic guidance, the tip of the needle can be placed over the top of the ilium and then slowly retracted back until it is just on the lateral border of the ilium. With the needle angled to about 10 degrees from the vertical plane, a lateral fluoroscopy is obtained to ensure that the tip of the needle is sitting above the posterior cortical margin of the sacrum and on top of the ilium crest shadow. The needle should be angled towards the S1 vertebrae and caudad to the iliopectinal line that can be seen crossing the S1 endplate. The needle is malleted into the bone until stable cephalad to align parallel with the S1 endplate. Once stable, the fluoroscope was placed in the “*Sacrix View*” (cephalad tilt 20–30° and contralateral oblique angle 20–30°) to confirm that the Jamshidi needle penetrated the ilium lateral to medial and followed a horizontal trajectory to the S1 endplate. On the Inlet View, the fluoroscope was tilted caudal to 15–30° and angled contralaterally to 20–30° to flatten the anterior border of the sacrum and pelvic floor/rim and showed the sacroiliac joint. The Jamshidi needle was advanced obliquely across the sacroiliac joint until the tip of was 1–2 cm across the joint into the sacral alar. Note, the tip should be cephalad and lateral to the S1 foramen and lateral to the vertebral bodies. The inner sheath of the Jamshidi needle was removed, and a blunt, smooth-tipped nitinol guidewire was placed just beyond the Jamshidi needle tip into the bone. Care was taken to ensure that the nitinol guidewire did not penetrate the anterior surface of the sacral ala.

Fluoroscopic Guided Placement of The Titanium Transfixation Implant Screws for Fusion (27279, C1713, 20930)

A small incision, less than 1 inch, was made through the skin and subcutaneous layers around the guidewire. The dilator and working cannula were inserted over the guidewire. Once the working cannula was securely docked on the outer border of the iliac crest, the dilator was removed and its position confirmed via fluoroscopy. A Sacrix screw, measuring 50–60 mm in length, was pre-packed with NanoFuse Biologics. The screw was inserted over the guidewire and advanced across the SIJ at the S1 level under fluoroscopic guidance. **No need to drill or tap.** The implant was aligned with the guidewire to prevent bending, which could result in the implant tip cutting the guidewire. The guidewire was removed once the implant was positioned 1 cm beyond the SIJ. The implant's placement and depth were verified fluoroscopically and deemed satisfactory. The steps were repeated to place a second screw, measuring 40–50 mm in length, at the S2 level. **The same incision and initial implant trajectory were used as a reference.** Final fluoroscopic views confirmed successful implant fixation position and depth. The cannula and guidewire were then removed.

Bone marrow aspiration for bone grafting/separate incision (20939)

Make a small stab incision with a #11 blade. Insert a 18G hypodermic needle (1 or 3-1/2 inch) through the skin and the top of the iliac crest. Aspirate the bone marrow volume as needed. You may also use a Jamshidi needle.

[If BILATERAL PROCEDURE – Modifier 50]

The procedure was repeated on the other side at S1 and S2.

Closure

Hemostasis was achieved. The wound was closed in layers, and a dry sterile dressing was applied.