What are the benefits of minimally invasive sacroiliac joint fusion?

Frank M. Phillips, MD: Traditionally, fusion of the sacroiliac joint has involved open exposure of the joint with direct decortication of the articular surfaces, followed by bone grafting with supplemental fixation. Minimally invasive approaches to sacroiliac joint fusion aim to reduce the morbidity associated with open approaches by accessing the sacroiliac joint through a stab incision over the ilium, with implants then driven across the sacroiliac joint under fluoroscopy. The potential benefits of the minimally invasive approach include a shorter procedure with less disruption of the surrounding soft tissues and muscles, resulting in a shorter hospital stay and more rapid resumption of normal activities.

Describe the risks of minimally invasive sacroiliac joint fusion.

Steven R. Garfin, MD: The risks are typical of many spine surgeries and include: (1) injury to neural and vascular structures, (2) infection, (3) implant failure (unlikely), (4) implant loosening over time, (5) nonunion, and (6) continued or more pain.

Which patient is the ideal candidate for minimally invasive sacroiliac joint fusion?

Phillips: Although inflammatory and posttraumatic sacroiliac joint pain is well appreciated by most clinicians, as early as 1977, Bernard and Kirkaldy-Willis1 postulated that >20% of 1200 patients presenting with low-back pain had sacroiliac joint-related problems. More recently, Sembrano and Polly2 reemphasized the inter-relationship of the “sacroiliac-hip-lumbar” axis. A positive diagnosis of painful sacroiliac joint dysfunction typically includes pain and tenderness localized to the sacroiliac joint as well as positive provocative tests such as Faber’s and Gaenslan’s tests. In addition, a positive response to low-volume anesthetic injection into the sacroiliac joint is required before considering surgery. Patients should have failed at least 6 months of conservative treatment (physical therapy, nonsteroidal anti-inflammatory...
drugs [NSAIDs], exercise, and therapeutic injections) before considering surgical fusion. To date there have been anecdotal reports of success with minimally invasive sacroiliac joint fusion; however, a formal study of outcomes is required.

Garfin: Sacroiliac joint dysfunction is diagnosed by: (1) the patient pointing to his/her pain below the lumbar spine, near the sacrum, over an sacroiliac joint; (2) performing a series of sacroiliac joint provocative tests (with 3 minimum positive); and (3) performing a sacroiliac joint injection and when possible a second confirmatory injection, looking for pain relief consistent with the duration effect of the anesthesia agent or longer.

What is the prevalence of sacroiliac joint dysfunction in patients with low-back pain and what are the current treatment options?

Phillips: Sacroiliac joint dysfunction is thought to occur in 15% to 30% of patients with low-back pain. Current treatment options range from NSAIDS, massage, chiropractic manipulation, physical therapy, and steroid injections to radiofrequency ablation.

Describe the procedure.

Garfin: Three titanium triangular rods with titanium porous coating are placed across the sacroiliac joint, guided by fluoroscopy. Through a small lateral incision, a guide pin is placed across the sacroiliac joint, just inferior to the S1 endplate and central to the sacrum. A cannulated drill is used to ream over the pin. A triangular broach is then driven over the pin. An implant is then inserted over the pin. Leaving the first pin in the implant, a parallel pin guide is used to help insert the subsequent pins, and the steps are repeated for the second and third implants.

What is the learning curve for performing this procedure?

Phillips: The surgeon is required to appreciate the bony anatomy of the sacroiliac joint region as well as the fluoroscopic interpretation of these structures. The procedure typically involves biplanar fluoroscopy, which the surgeon needs to be able to assimilate. Cadaver training is recommended prior to performing this procedure.

What does the future hold for the treatment of sacroiliac joint dysfunction?

Phillips: Minimally invasive surgical treatment is an attractive alternative to patients who have been diagnosed with disabling sacroiliac joint dysfunction and are unresponsive to conservative treatment. In addition to primary sacroiliac joint pain, the sacroiliac joint has been shown to degenerate after lumbar fusion. This may be more a source of post-lumbar fusion back pain than is commonly appreciated. In the future, we will need to improve the specificity of the diagnosis of sacroiliac joint pain. In addition, studies are required to confirm the clinical efficacy of the procedure as well as the ability of the implants to promote fusion across the sacroiliac joint.

REFERENCES