Minimally Invasive Sacroiliac Joint Fusion

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Disclosures

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Sacroiliac Joint

- Pair of large joints connecting sacrum to pelvis
- Surrounded by strong ligaments and muscles
- Very stable with very limited range of motion
Sacroiliac Joint Pain

- Causes of pain
  - Trauma
  - Tumor
  - Infection
  - Degenerative arthritis
  - Inflammatory arthritis
  - Postpartum instability
  - Adjacent segment degeneration after lumbar fusion
  - Injury after aggressive posterior iliac crest bone graft harvesting.
Sacroiliac Joint Pain

• Degenerative sacroiliac joint pain is thought to be responsible for 10-26% of chronic low back pain\textsuperscript{1,2}

• It is frequently misdiagnosed or under-diagnosed.
Sacroiliac Joint Pain

• Diagnostic workup
  – Rule out instability, tumor, infection
    • Xray, MRI, Bone scan
  – In degenerative conditions imaging can be normal but often see sclerotic bone changes and osteophyte formation
Sacroiliac Joint Pain

• Rule out other common sources of pain that can mimic sacroiliac joint pain
  – Lumbar stenosis/spondylosis/spondylolisthesis
  – Hip joint arthritis
  – Muscle strain
  – Trochanteric bursitis
Sacroiliac Joint Pain

• Physical Exam
  – Pain on weightbearing – antalgic limp
  – Pain while sitting on that side
  – Tenderness to palpation
  – Pain reproduced on compression test (FABER) – 20% false positive test
Treatment

• Physical therapy
  – Main treatment, very effective
  – Stabilizes the joint by strengthening the muscles around it
  – Manipulation can “relocate” if subluxation occurred
Treatment

• Injections
  – Can be therapeutic and diagnostic
  – Must be done under fluoroscopic guidance
    • 50% miss rate if no imaging used

• Radiofrequency ablation
  – Somewhat controversial, not always successful
Treatment

• Surgery is considered ONLY after failure of all non-operative options.
• The goal is to eliminate motion through the joint
• Was initially performed through an open posterior approach
Treatment

- Smith-Peterson approach
  - Initially described in 1925
  - Significant muscle dissection required
  - Lengthy recovery
  - Shown to be effective in eliminating SIJ pain³
**Treatment**

- Recent advances in imaging and instrumentation allow for this procedure to be performed via minimally invasive, percutaneous lateral approach.
- Lateral approach is safe – no nerves or blood vessels in the way. No need for extensive dissection or neuromonitoring.
- Proper fluoroscopic guidance is critical.
MIS SIJ fusion

- Pre-incision xrays localize entry point for the screws
MIS SIJ fusion

• Dissect soft tissue bluntly down to bone
• Under fluoroscopic guidance or computer navigation, a guidewire is inserted across the SI joint to establish screw trajectory.
• Path for the screw is created by drilling over the guidewire
MIS SIJ fusion

• Screws are sequentially inserted using fluoroscopic guidance
MIS SIJ fusion

- Local bone autograft from bony reamings is used to achieve bony fusion while screws are stabilizing the joint.
MIS SIJ fusion
MIS SIJ fusion

• Animation: http://www.globusmedical.com/portfolio/si-lok/
MIS SIJ Fusion

• Surgery can be outpatient but overnight stay may be needed for pain control and physical therapy (for crutches training)
• If done at ACS, should have overnight stay capability
• Usually no drains required
• Toe-touch weight bearing on the operative side for 2 weeks to allow for soft tissue healing.
MIS SIJ fusion

• Very favorable early to mid-term results\textsuperscript{4,5}
• Long-term outcome studies pending
• One prospective multicenter cohort study how has 2-year results\textsuperscript{7}:
  – 172 patients at 26 sites
  – Triangular titanium implants used
  – Pain and ODI scores decreased from 79.8 to 26.0 and 55.2 to 30.9 points respectively
  – 97% fusion rate at 1 year per CT scan
  – 8 (4.7%) needed revision surgeries.
MIS SIJ Fusion

- Private insurance coverage very poor at this time for degenerative conditions
- Covered by Medicare as of 4/1/2016
- Economically more effective than non-operative treatment for chronic SIJ pain⁶
Case Example

- 59 y.o. male presents with 1.5 yr. history of low back and right buttock pain
- Anti-inflammatory medications, full course of physical therapy, trigger point injections, and osteopathic manipulations did not resolve the pain
- Sacroiliac joint injections under fluoroscopic guidance provided 100% relief of the pain for several weeks
Case Example

• Physical exam:
  – Antalgic gait to right side
  – Tenderness to palpation over right sacroiliac joint
  – Positive reproduction of pain with FABER test on right side only
  – No neurologic deficits or pain on hip or lumbar range of motion
Case Example

- **Xray:**
  - Mild lumbar spondylosis
  - Inferior osteophytes in right SI joint

- **MRI:**
  - No stenosis
  - Mild facet arthropathy
Case Example

- Patient failed all reasonable non-operative options
- Minimally invasive sacroiliac joint fusion was offered
- Patient was cleared from medical standpoint
Case Example

- Patient underwent uneventful MIS SIJ fusion
  - 1.5 hr procedure including set-up
  - 1.5 inch incision
  - Minimal blood loss
  - Discharged home on POD1
  - Toe-touch weightbearing on right side for 2 wks

- Pain improved within days of surgery
- Physical therapy was started 2 weeks after surgery
Case Example

• At 6 weeks postoperatively patient reported no pain, was off all pain medications and was released from physical therapy.
• Patient was released to full activity with no restrictions at 3 months after the surgery.
Case Example
References


THANK YOU