Retrospective Evaluation of Minimally Invasive Surgical (MIS) Method for Sacroiliac Joint Arthrodesis


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Introduction: Historically treatment focus in spine has centered on lumbar pathology. In published literature, 15-30% of individuals who presented with lower back complaints had SI joint (SIJ) problems. The incidence of SIJ degeneration is 75% in patients with previous lumbar fusions. A minimally invasive surgical (MIS) procedure may help to address this significant unmet clinical need.

Relevance: A triangular, titanium, MIS implant was developed that requires a minimal incision and fluoroscopic guidance. The implants are coated with a porous plasma spray creating interference fit to decrease implant motion. The implant size, geometry, and metallurgy, provide immediate post-op fixation, accomplishing the goal of traditional open SIJ fusion.

Diagnostic methods: SI joint diagnoses require appropriate interpretation of a patient's history, clinical exam, and imaging studies (Often hip and lumbar pathology coexists with SIJ joint). Physical examination includes pain, palpable tenderness, provocative tests, and absence of neurologic deficits. CT or fluoroscopic guided injection provides confirmation of sacroiliac pathology. Some physicians repeat injection to reduce the chance of a false positive. When physical findings point to the SI joint, chronic, degenerative changes in the lumbar spine or bulging discs should not override a diagnosis of SI Joint pathology.

Methods: The MIS procedure is performed under general in prone position. 4.0mm or 7.0 mm implants are inserted through a 2-3cm incision. The drills, broaches, and implants are cannulated to allow precise placement over a guide pin. This implant is marketed for fracture fixation of large bones, large bone fragments of the pelvis, including SI joint disruptions, and degenerative sacroiliitis. As a rule, patients are implanted with three MIS implants across the SI joint. However, MIS implant numbers may vary based on the size of the patient. Post-operatively patients are kept non-weight bearing for 6 weeks, depending on the patient's pain level, and followed by four weeks of partial weight bearing. Routine activities are allowed 12 weeks after surgery. Radiologic studies include X-rays and CTs at 3, 12, and 24-months to document implant position and to observe bone growth across the joint.

Results: This retrospective, post-market analysis covers 123 treated patients. To evaluate the procedure radiologic studies were used to document implant position, fixation of implants and observe osseous integration. In addition, patient satisfaction tests were utilized. Some patients exhibited evidence of bone at bone-implant interface at 3 months post-op, as seen on sagittal CT. Clinical significance was consistently good for those patients participating in assessments at 6 months post-op vs. pre-op (follow-up range 3-24 months). 41/123 patients answered satisfaction surveys and 90% indicated they would have the procedure again. Neural foramen encroachment was noted in two cases with no clinical sequelae. Non-optimal implant position was addressed with simple implant revision.

Conclusions: This retrospective study reinforces the need for awareness that SIJ problems are common symptom generators. Traditional treatments (e.g., open fusion) have shown limited efficacy. In some patients with residual symptoms after hip arthroplasty or lumbar spine procedures, it may be the SIJ that is symptom generator. With the advent of this MIS procedure, surgeons may avoid further, unnecessary surgery for failed lumbar fusion patients by looking at SIJ. Multicenter prospective studies are ongoing.