Sacroiliitis

Sacroiliitis and other sacroiliac joint (SIJ) alterations alterations are prevalent in young individuals with low back pain (LBP), albeit, the majority of these alterations are not recognized nor reported by senior radiologists thus may delay efficacious treatment [1].

Treatment

The mainstay of sacroiliac joint disruption/degenerative sacroiliitis therapy has been nonoperative management. This nonoperative management often includes a regimen of physical therapy, chiropractic treatment, therapeutic injections, and possibly radiofrequency ablation at the discretion of the treating physician. When these clinical treatments fail, sacroiliac joint fusion has been recommended as the standard treatment. Open and minimally invasive (MIS) surgical techniques are typical procedures.

To evaluate the usefulness of newly developed minimally-invasive technologies, the costs of traditional treatments must be better understood.

A retrospective study of claim-level medical resource use and associated costs used the MarketScan® Commercial Claims and Encounters as well as Medicare Supplemental Databases of Truven Healthcare. Patients with a primary ICD-9-CM diagnosis code for SI joint disruption (720.2, 724.6, 739.4, 846.9, or 847.3), an initial date of diagnosis from January 1, 2005 to December 31, 2007 (index date), and continuous enrollment for ≥1 year before and 3 years after the index date were included. Claims attributable to SI joint disruption with a primary or secondary ICD-9-CM diagnosis code of 71x.xx, 72x.xx, 73x.xx, or 84x.xx were identified; the 3-year medical resource use-associated reimbursement and outpatient pain medication costs (measured in 2011 US dollars) were tabulated across practice settings. A subgroup analysis was performed among patients with lumbar spinal fusion.

The mean 3-year direct, attributable medical costs were $16,196 (standard deviation [SD] $28,592) per privately-insured patient (N=78,533). Among patients with lumbar spinal fusion (N=434), attributable 3-year mean costs were $91,720 (SD $75,502) per patient compared to $15,776 (SD $27,542) per patient among patients without lumbar spinal fusion (N=78,099). Overall, inpatient hospitalizations (19.4%), hospital outpatient visits and procedures (14.0%), and outpatient pain medications (9.6%) accounted for the largest proportion of costs. The estimated 3-year insurance payments attributable to SI joint disruption were $1.6 billion per 100,000 commercial payer beneficiaries.

The economic burden of SI joint disruption among privately-insured patients in the US is substantial, highlighting the need for more cost-effective therapies [2].

Case series

2016

One hundred and forty-eight subjects with SIJ dysfunction were randomly assigned to minimally invasive SIJ fusion with triangular titanium implants (SIJF, n = 102) or non-surgical management (NSM, n = 46). SIJ pain (measured with a 100-point visual analog scale, VAS), disability (measured with Oswestry Disability Index, ODI) and quality of life scores were collected at baseline and at scheduled visits to 24 months. Crossover from non-surgical to surgical care was allowed after the 6-month study visit was complete. Improvements in continuous measures were compared using repeated measures analysis of variance. The proportions of subjects with clinical improvement (SIJ pain improvement ≥20 points, ODI ≥15 points) and substantial clinical benefit (SIJ pain improvement ≥25 points or SIJ pain rating ≤35, ODI ≥18.8 points) were compared.

In the SIJF group, mean SIJ pain improved rapidly and was sustained (mean improvement of 55.4 points) at month 24. The 6-month mean change in the NSM group (12.2 points) was substantially smaller than that in the SIJF group (by 38.3 points, p<.0001 for superiority). By month 24, 83.1% and 82.0% received either clinical improvement or substantial clinical benefit in VAS SIJ pain score. Similarly, 68.2% and 65.9% had received clinical improvement or substantial clinical benefit in ODI score at month 24. In the NSM group, these proportions were <10% with non-surgical treatment only. Parallel changes were seen for EQ-5D and SF-36, with larger changes in the surgery group at 6 months compared to NSM. The rate of adverse events related to SIJF was low and only 3 subjects assigned to SIJF underwent revision surgery within the 24-month follow-up period.

In this Level 1 multicenter prospective randomized controlled trial, minimally invasive SIJF with triangular titanium implants provided larger improvements in pain, disability and quality of life compared to NSM. Improvements after SIJF persisted to 24 months. This study was approved by a local or central IRB before any subjects were enrolled. All patients provided study-specific informed consent prior to participation [3)].

2015

A total of 148 subjects with sacroiliac joint dysfunction were randomly assigned to minimally invasive SIJ fusion with triangular titanium implants (n = 102) or nonsurgical management (n = 46). Pain, disability, and quality-of-life scores were collected at baseline and at 1, 3, 6, and 12 months. Success rates were compared using Bayesian methods. Crossover from nonsurgical to surgical care was allowed after the 6-month study visit was complete.

Six-month success rates were higher in the surgical group (81.4% vs 26.1%; posterior probability of superiority > 0.9999). Clinically important (≥ 15 point) Oswestry Disability Index improvement at 6 months occurred in 73.3% of the SIJ fusion group vs 13.6% of the nonsurgical management group (P < .001). At 12 months, improvements in SIJ pain and Oswestry Disability Index were sustained in the surgical group. Subjects who crossed over had improvements in pain, disability, and quality of life similar to those in the original surgical group. Adverse events were slightly more common in the surgical group (1.3 vs 1.1 events per subject; P = .31).

This Level 1 study showed that minimally invasive SIJ fusion using triangular titanium implants was more effective than nonsurgical management at 1 year in relieving pain, improving function, and improving quality of life in patients with SIJ dysfunction caused by degenerative sacroiliitis or SIJ disruptions. Pain, disability, and quality of life also improved after crossover from nonsurgical to surgical treatment [4)].

1989

Eleven cases of sacroiliac dislocation and/or fracture (Malgaigne pattern) were successfully reduced and stabilized using two threaded compression rods. The mean follow-up period was 26.1 months (range, seven to 45 months). None of the implants failed and there was no subsequent displacement. Two patients had mild residual lower back pain, and one was treated with implant removal without subsequent relief of pain. One patient, in whom the operation was done 110 days after dislocation, had extension of an incomplete preoperative peroneal nerve palsy. After anterior pelvic ring stabilization has been performed, two threaded 3/16-inch diameter rods are driven from the normal posterior iliac wing superficial to the sacrum and through the reduced opposite iliac wing. Compression is obtained with washers and nuts. This procedure can be performed safely and effectively, providing stable fixation and allowing early mobilization to help lessen or prevent the complications associated with prolonged bed rest [5].

1)
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