Editorial Commentary

Minimally invasive sacroiliac joint fusion *vs.* conservative management for chronic sacroiliac joint pain

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Dengler *et al.* have reported the 12-month results of a randomized controlled trial comparing minimally invasive sacroiliac joint fusion to conservative measures (1). This study is the second RCT (randomized control trial) of MIS SI (minimally invasive sacroiliac joint) fusion versus CM (conservative management) and it has findings consistent in direction and magnitude of effect as the first RCT (2). Why is this study important?

Low back pain (LBP) is the number one cause of disability in the world. 15–30% of LBP comes from the SI joint, probably higher in those who have had a prior spinal fusion to the sacrum (3-7). Patients with SIJ pain have a very decreased quality of life, similarly disabled as those needing a total hip, total knee, surgery for spinal stenosis or degenerative spondylolisthesis (8).

The SI joint moves a little bit (9-12). It is innervated with pain sensing nerve fibers (13,14). Specific physical exam maneuvers that stress the SI joint can reliably determine that the SI joint is the source of pain (15). Intra-articular local anesthetic injections into the joint can confirm the diagnosis by pain relief of >50% (16).

Non-operative treatment is the first line of treatment. There are guidelines for this (17) but the level of evidence supporting their efficacy is limited. The risk is also low. It does however have recurring costs that could perhaps be offset with a surgical intervention (18).

How did this study improve upon the previous study? Here the randomization was 1:1 instead of 2:1. It incorporated 2 new outcome measures—the active straight leg raise test and walking distance. It also used generic patient reported outcomes tools as well as disease targeted tools.

This study had strict inclusion and exclusion criteria and high-quality follow-up. There has been some criticism about allowing cross over at 6 months, but given that this device and procedure were commercially available this was a considered approach to allow enrollment and adequate treatment of those failing to respond to CM.

So, what were the findings? There was statistically and clinically significant improvement in the VAS LBP (41.6 SIJF *vs.* 14.0 CM). The same was true for Oswestry Disability Index (25.0 SIJF *vs.* 8.7 CM). Once patients crossed over they had similar rates of improvement. These changes very closely parallel the findings of INSITE and SIFI.

What were the study limitations? There was no blinding of the outcomes assessments. These were patient reported outcomes, so it is unclear how much effect the lack of blinding has on these. Also, the 2 functional tests were objective (ASLR and walking distance).

What are the takeaways? These patients averaged 4 years of pain prior to entering the clinical trial. For

patients who meet the trial inclusion criteria (positive Fortin finger test, 3/5 positive physical exam maneuvers and a positive response to image guided intra-articular local anesthetic injections) there is a high likelihood that they will experience a 50% reduction in their VAS back and leg pain, ODI and a significant improvement in their health-related quality of life. The risks are low. Other studies now indicate that the procedure is durable (19-22). In the United States this procedure is commonly done as on an outpatient basis.

This data should not be extrapolated to those who have a negative physical exam and a positive response to injection. Similarly, as in this trial other sources such as the hip and spine should be ruled out. In my clinical practice I have many patients referred for SIJF who have had spinal fusion and are in positive sagittal balance. This results in erector spinae over pull on the posterior pelvis. Fixing the SIJ does not solve this malalignment problem.

This study has now completed and published their 2-year results as well (1). The benefits seen at 1 year persist through 2 years.

In summary, for patients with SIJ pain meeting these inclusion criteria can expect to have a 50% pain reduction with this intervention.

Acknowledgments

None.

Footnote

Conflicts of Interest: Dr Polly is a consultant to SI Bone. To date has received no money from them.

Ethical Statement: The author is accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

References

1. Dengler J, Kools D, Pflugmacher R, et al. Randomized Trial of Sacroiliac Joint Arthrodesis Compared with Conservative Management for Chronic Low Back Pain Attributed to the Sacroiliac Joint. J Bone Joint Surg Am 2019;101:400-11.
2. Polly DW, Swofford J, Whang PG, et al. Two-Year Outcomes from a Randomized Controlled Trial of Minimally Invasive Sacroiliac Joint Fusion vs. Non-Surgical Management for Sacroiliac Joint Dysfunction. Int J Spine Surg 2016;10:28.
3. Sembrano JN, Polly DW, Jr. How often is low back pain not coming from the back? Spine (Phila Pa 1976) 2009;34:E27-32.
4. Bernard TN, Jr., Kirkaldy-Willis WH. Recognizing specific characteristics of nonspecific low back pain. Clin Orthop Relat Res 1987:266-80.
5. Schwarzer AC, Aprill CN, Bogduk N. The sacroiliac joint in chronic low back pain. Spine (Phila Pa 1976) 1995;20:31-7.
6. Liliang PC, Lu K, Liang CL, et al. Sacroiliac joint pain after lumbar and lumbosacral fusion: Findings using dual sacroiliac joint blocks. Pain Med 2011;12:565-70.
7. DePalma MJ, Ketchum JM, Saullo TR. Etiology of chronic low back pain in patients having undergone lumbar fusion. Pain Med 2011;12:732-9.
8. Cher D, Polly D, Berven S. Sacroiliac joint pain: Burden of disease. Med Devices (Auckl) 2014;7:73-81.
9. Sturesson B, Uden A, Onsten I. Can an external frame fixation reduce the movements in the sacroiliac joint? A radiostereometric analysis of 10 patients. Acta Orthop Scand 1999;70:42-6.
10. Jacob HA, Kissling RO. The mobility of the sacroiliac joints in healthy volunteers between 20 and 50 years of age. Clin Biomech (Bristol, Avon) 1995;10:352-61.
11. Wilke HJ, Fischer K, Jeanneret B, et al. In vivo measurement of 3-dimensional movement of the iliosacral joint. Z Orthop Ihre Grenzgeb 1997;135:550-6.
12. Smidt GL, Wei SH, McQuade K, et al. Sacroiliac motion for extreme hip positions. A fresh cadaver study. Spine (Phila Pa 1976) 1997;22:2073-82.
13. Szadek KM, Hoogland PV, Zuurmond WW, et al. Nociceptive nerve fibers in the sacroiliac joint in humans. Reg Anesth Pain Med 2008;33:36-43.
14. Szadek KM, Hoogland PV, Zuurmond WW, et al. Possible nociceptive structures in the sacroiliac joint cartilage: An immunohistochemical study. Clin Anat 2010;23:192-8.
15. Petersen T, Laslett M, Juhl C. Clinical classification in low back pain: best-evidence diagnostic rules based on systematic reviews. BMC Musculoskelet Disord 2017;18:188.
16. Polly D, Cher D, Whang PG, et al. Does Level of Response to SI Joint Block Predict Response to SI Joint Fusion? Int J Spine Surg 2016;10:4.
17. Vleeming A, Albert HB, Ostgaard HC, et al. European guidelines for the diagnosis and treatment of pelvic girdle pain. Eur Spine J 2008;17:794-819.

18. Buysman EK, Halpern R, Polly DW. Sacroiliac joint fusion health care cost comparison prior to and following surgery: an administrative claims analysis. Clinicoecon Outcomes Res 2018;10:643-51.
19. Vanaclocha V, Herrera JM, Saiz-Sapena N, et al. Minimally Invasive Sacroiliac Joint Fusion, Radiofrequency Denervation, and Conservative Management for Sacroiliac Joint Pain: 6-Year Comparative Case Series. Neurosurgery 2018;82:48-55.
20. Rudolf L, Capobianco R. Five-year clinical and radiographic outcomes after minimally invasive sacroiliac joint fusion using triangular implants. Open Orthop J 2014;8:375-83.
21. Darr E, Meyer SC, Whang PG, et al. Long-term prospective outcomes after minimally invasive trans-iliac sacroiliac joint fusion using triangular titanium implants. Med Devices (Auckl) 2018;11:113-21.
22. Darr E, Cher D. Four-year outcomes after minimally invasive transiliac sacroiliac joint fusion with triangular titanium implants. Med Devices (Auckl) 2018;11:287-9.

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