SI-BONE, Inc. Announces Three Significant Clinical Evidence Publications on iFuse Implant System® for MIS SI Joint Fusion

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- **One-year results from two prospective clinical trials demonstrate early and marked improvements in pain, disability and quality of life achieved at six months are sustained at one year.**
- **Systematic review of 18 MIS SI joint fusion studies shows clinically important reductions in pain and disability that were consistent and maintained out to five years.**

SAN JOSE, Calif., Aug. 24, 2015 /PRNewswire/ -- SI-BONE, Inc., a medical device company that pioneered the use of the iFuse Implant System, a minimally invasive surgical (MIS) device indicated for fusion for certain disorders of the sacroiliac (SI) joint, announced the publication of one-year results from two separate prospective multicenter clinical trials as well as the publication of a systematic review of 18 MIS SI joint fusion studies.

"Collectively, these three recent publications significantly strengthen the more than 20 clinical papers already published on iFuse and further solidify our clinical evidence foundation supporting MIS SI joint surgery using SI-BONE's unique triangular implants," said Jeffrey Dunn, President and CEO of SI-BONE.

The first clinical trial publication is of INSITE (Investigation of Sacroiliac Fusion Treatment), a prospective multicenter randomized controlled trial (RCT) that included 148 subjects treated at 19 centers. One-year results from INSITE were published in the journal Neurosurgery and titled Randomized Controlled Trial of Minimally Invasive Sacroiliac Joint Fusion Using Triangular Titanium Implants Vs Non-Surgical Management for Sacroiliac Joint Dysfunction: 12-Month Outcomes.1 Subjects were randomized in a 2:1 ratio to either immediate SI joint fusion with iFuse (102 subjects) or non-surgical management (NSM, 46 subjects).

Subjects surgically treated with iFuse had a mean 52.0-point reduction in SI joint pain at six months on the 0-100 Visual Analog Scale (VAS) versus only a mean 12.2-point decrease in the NSM group. Pain relief was sustained at twelve months in the surgical group with a mean 54.2-point reduction from the baseline VAS measurement. The study design allowed subjects in the NSM group to cross over and have surgery after six months and 79.5% of the NSM group elected to have the iFuse procedure as of June 30, 2015. NSM group subjects who elected to cross over to iFuse surgery after six months had pain reduction similar to that seen in subjects originally assigned to iFuse surgery (see Figure 1).

The study also included Oswestry Disability Index (ODI), a measure of disability due to back pain, where a score of 0 indicates no disability and scores > 60 indicate severe disability. At baseline, all subjects showed a high degree of disability (mean 56.8). Subjects assigned to iFuse had a mean 27.4-point reduction in ODI at six months while subjects assigned to NSM had only a mean 4.6-point decrease ($p < 0.0001$ for difference between groups). Reduction in disability was sustained at twelve months in the iFuse group with a mean 29.3-point reduction from baseline. In addition, subjects who elected to cross over after six months to have the iFuse procedure had similar disability reduction as the subjects originally assigned to SI joint fusion with iFuse (see Figure 2).

At twelve months, taking into account responses due solely to the assigned treatment, clinically important improvements in VAS SI joint pain were seen in 81.6% of SI joint fusion subjects but only 12.5% of NSM subjects ($p < 0.0001$ for difference). Similarly, for ODI scores, clinically important improvements were observed in 72.4% vs. 10.0%, respectively.

"Surgery vs. non-surgery studies are difficult to execute. INSITE's design and execution in preventing early crossover has provided significant, high quality, Level 1 evidence to the existing body of literature demonstrating that, for patients with certain SI joint disorders, SI joint fusion with triangular porous coated titanium implants can meaningfully improve pain, function and quality of life compared to non-surgical management," commented David Polly, MD, lead author of the paper. "This study shows that significant improvements in pain, disability and quality of life achieved at six months were sustained at twelve months and that subjects who crossed over to iFuse treatment did nearly as well as those originally assigned to iFuse."

SI-BONE also announced the publication of one-year results from a second multicenter clinical trial of minimally invasive SI joint fusion. This study, called SIFI (Sacroiliac Joint Fusion with iFuse Implant System) is a prospective multicenter single-arm clinical trial of SI joint fusion using iFuse in a patient population with the same enrollment criteria as INSITE. The study included 172 subjects at 26 US centers and was published in Global Spine Journal titled Triangular Titanium Implants for Minimally Invasive Sacroiliac Joint Fusion: A Prospective Study.2

Twelve-month postoperative follow-up was available in 157 of 172 initially enrolled subjects (91%). By six months, 81% of subjects met the study's definition for treatment success; by twelve months, the success rate was 80%. Mean SI joint pain improved from 79.8 at baseline to 30.0 and 30.4 at six and twelve months respectively (mean improvements of 49.9 and 49.1 points, $p < 0.0001$ each) (see Figure 3). Mean ODI improved from 55.2 at baseline to 32.5 and 31.4 at six and twelve months (improvements of 22.7 and 23.9 points, $p < 0.0001$ each) (see Figure 4). SF-36 physical

component summary (PCS), a quality of life measurement summarizing overall physical health, improved from 31.7 at baseline to 40.2 and 40.3 at six and twelve months ($p < 0.0001$). At six and twelve months, 94% and 87% of subjects, respectively, were somewhat or very satisfied and 92% and 91%, respectively, stated they would have the procedure again. Two subjects underwent revision for immediate postoperative radiculopathy due to implant malposition. Two subjects underwent late revision surgery.

"The one-year results from the SIFI study have shown durable improvements in pain, disability, and quality of life with the iFuse procedure. This paper adds important, high quality clinical evidence to the more than two-dozen existing publications that support the safety and effectiveness of the iFuse procedure," said Brad Duhon, MD, lead author of the SIFI one-year publication.

One-year results from both INSITE and SIFI demonstrate early and marked improvements in pain, disability and quality of life that were maintained to twelve months in more than 250 subjects.

The third publication entitled, A Systematic Review of Minimally Invasive Sacroiliac Joint Fusion Utilizing a Lateral Transarticular Technique, was published in the International Journal of Spine Surgery (IJSS).3 Study authors used PRISMA, a published standard for systematic reviews, to perform a systematic review and meta-analysis of published literature reporting clinical outcomes on subjects who underwent MIS SI joint fusion using a lateral transarticular approach. A total of 18 articles met the inclusion criteria and after accounting for overlapping cohorts, 12 unique cohorts from 4 countries were extracted for a total of 432 subjects. Of the 12 unique cohorts, 10 were iFuse cohorts that included a total of 368 treated subjects. For the 12 unique cohorts, random effects meta-analysis (RMA) mean (range) procedure time was 59 minutes (27-78), estimated blood loss was 36.9 cc (10-70) and hospital length of stay (LOS) was 1.7 days (range 0-7). The RMA mean pain score dropped by 5.2 points at 6 months and 5.3 points at 12 months (baseline score of 8.1, 12-month score of 2.7), and a 24-month score of 2.0. ODI decreased by 31 points at 12 months (baseline score of 56.2, 6-month score of 30.7, and 12-month score of 25.1). Two studies in the review had long-term (4.5 and 5 years) follow-up with consistent results.

These results demonstrate that MIS SI joint fusion using a lateral transarticular approach provides consistent and clinically important improvements in pain and associated disability that is maintained out to 5 years. Changes seen in the iFuse cohorts (which represented 85% of treated subjects) were larger than those seen in the cohorts in which hollow modular anchor screws were used. Furthermore, the minimally invasive characteristics of this procedure were confirmed as evidenced by minimal blood loss, a short operative time and brief length of stay.

Clinical publications have identified the SI joint as a pain generator in 15% to 30% of low back pain patients.4-7 In addition, the prevalence of SI joint pain in post-lumbar fusion, so called "failed back surgery" patients, has been shown to be up to 43%.8 Of these patients with SI joint pain, some may have degenerative sacroiliitis or SI joint disruptions. Initial treatment options for patients with SI joint disorders typically involve non-surgical management and, when non-surgical management of the SI joint fails, surgical options such as the iFuse procedure may be considered.

SI-BONE, Inc. received original 510(k) clearance in November 2008 from the Food and Drug Administration (FDA) to market its iFuse Implant System. The CE mark for European commercialization was obtained in November 2010.

The iFuse Implant System is a minimally invasive surgical option that uses titanium implants coated with a porous, titanium plasma spray (TPS) that acts as an interference surface, designed to help decrease implant motion, provide immediate fixation and allow for biological fixation to support long term fusion. The iFuse Implant System is intended for sacroiliac fusion for conditions including sacroiliac joint dysfunction that is a direct result of sacroiliac joint disruption and degenerative sacroiliitis. This includes conditions whose symptoms began during pregnancy or in the peripartum period and have persisted postpartum for more than 6 months. There are potential risks associated with the iFuse Implant System. It may not be appropriate for all patients and all patients may not benefit. For information about the risks, visit: www.si-bone.com/risks

About SI-BONE, Inc.
SI-BONE, Inc. (San Jose, California) is the leading sacroiliac joint medical device company dedicated to the development of tools and products for patients with low back issues related to certain SI joint disorders. The company has developed, and is manufacturing and marketing, minimally invasive products for patients with certain SI joint disorders. SI-BONE has an experienced management team with extensive experience in orthopedic and spine medical devices.

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Disclosures

a Investigators in a clinical research study sponsored by SI-BONE, but they have no financial interest in the company.
One or more of the authors named herein may be past or present SI-BONE employees, consultants, investors, clinical trial investigators, or grant recipients.

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