Low back pain with surgical and nonsurgical treatment of closed pelvic ring fractures with sacral injuries: A single institutional retrospective review

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INTRODUCTION:

Sacroiliac joint (SIJ) fusion surgery for chronic back pain has grown in popularity since 2011. A variety of implants have been developed since then to allow surgeons to perform this technique with ease while decreasing complications associated with a new technology. Despite the wide acceptance of this technology, factors that would lead to a satisfactory surgical outcome still remain unclear. Due to the robust mechanical properties of the incongruent sacroiliac joint, one could argue that the joint is truly not unstable. Adding additional stability by fusing the joint that is already stable does not explain why the procedure would be beneficial. Based on the null hypothesis that SIJ pain is not necessarily due to mechanical instability, this study will review patients with pelvic trauma who either underwent non-operative management versus operative management to assess who eventually developed chronic SIJ pain and required further ongoing intervention. For patients who underwent sacroiliac joint fusion, theoretically they should not develop chronic SIJ pain afterward. For the patients who were treated non-operatively, leading to potential mechanical instability, they would be more likely to develop chronic sacroiliac joint pain. This study will either validate or refute the belief that sacroiliac joint dysfunction is truly mechanically related. The purpose of this study is to determine if surgery negates the need for additional intervention for SI joint pain and determine if any displacement addressed during surgery contributes to better outcomes for the patient.

METHODS: A total of 68 patients (56% male) from a single Level I trauma center were included between 2015 and 2019. Patients between 18 and 65 years of age who sustained closed pelvic ring fractures with SI joint involvement were included in the study. Exclusion criteria include no contact information listed in chart, history of back pain prior to the injury, lack of appropriate follow up radiographs, and previous history of lumbar surgery or lumbar surgery as a result of the inciting injury. Patients were separated into surgical and non-surgical groups, with additional interventions of chiropractic manipulation, narcotics, physical therapy, non-steroidal anti-inflammatory medications and home exercises Data analysis was performed with student's T test, Wilcoxon rank sum test, and Fischer exact test with statistical significance achieved when $p < 0.05$. A stepwise regression model was used to determine if comorbidities are associated with increased interventions in both the surgical and nonsurgical group.

RESULTS:

No significant difference was found between the surgical and non-surgical groups in terms of both demographics and comorbidities. There was also no significant difference between the number of interventions needed for patients treated with or without surgery. increased comorbidities are not associated with an increased number of interventions needed in either the surgical or non-surgical group. Additionally, surgery did not significantly decrease the amount of anterior-posterior and vertical displacement as measured on x-rays.

DISCUSSION AND CONCLUSION:

Conservative management is likely just as effective for certain pelvic ring injuries involving the SI joint and surgery for SI joint pain should be presented as a treatment that will likely require additional interventions for patients to return to pre-injury activity levels.