Assessing the Impact of Radiographic Realignment on Adult Spinal Deformity Patients with Sacroiliac Joint Pain at Presentation

Peter Sergeyevich Tretiakov[1], Jamshaid Mir, Pooja R Dave, Matthew Galetta, M. Burhan Janjua, Pawel P Jankowski, Virginie Lafage[2], Oluwatomi Adedoyin Lanre-Amos[3], Jordan Lebovic[4], Nathan August Lorentz, Stephane Owusu-Sarpong[1], Djani Robertson, Shaleen Vira[5], Peter Gust Passias[6]
[1]NYU Langone Orthopedic Hospital, [2]Lenox Hill Hospital, [3]NYU Langone, [4]NYU Orthopedics, [5]University of Texas Southwestern Medical Center, [6]NY Spine Institute / NYU Medical Center-Hjd

INTRODUCTION:
Sacroiliac joint (SIJ) pain in adult spinal deformity (ASD) patients may have a significant impact on disability and patient-reported outcomes after surgery. However, the impact of realignment after ASD surgery remains understudied.
METHODS:
ASD patients >18 years of age with baseline (BL) and up to two-year (2Y) data were included. Means comparison analysis via ANOVA assess BL demographic, radiographic, and Health-Related Quality of Life (HRQL) measures were assessed in patients with SIJ pain (SIJP+) versus those without (SIJP+). SIJP+ were further stratified by Lafage et al. age-adjusted criteria as being undercorrected, overcorrected, or matched. Postoperative factors were assessed via ANCOVA controlling for BMI, levels fused, and concurrent SI fusion. Backstep logistic regression modeling was used to assess predictive factors on resolution of symptoms at follow up adjusting for similar covariates.
RESULTS:
A total of 114 patients were included (63.4±14.7 years, 59% F, 29.1±6.0 kg/m^2) in the analysis. At baseline, 44 (30.8%) reported SIJP. SIJP+ patients had significantly higher mean BMI (p=.009) and were more frail (p<.001) at presentation. Radiographically, SIJP+ patients also presented with greater PI-LL (22.6 vs. 9.1, p=.033), though were otherwise comparable in global alignment (all p>.05). Per BL HRQLs, SIJP+ patients had greater disability per ODI, NRS-Back and Leg, and SRS-22 total (all p<.001). Surgically, cohorts were comparable in levels fused and 3-column osteotomy (3CO) rates (all p>.05).In total, 6.5% of SIJP+ underwent concurrent SI fusion at index operation. By six-weeks (6W) postoperatively, no significant differences were noted in patients matched in age-adjusted criteria in SIJP+ vs. SIJP- patients. In SIJP+, 9.8% reported resolution of symptoms by 6W, while 47.4% reported resolution within 1Y of surgery. Patients who did not report symptom resolution were significantly more likely to have higher C7-S1 SVA by 1Y (p=.017). Regression analysis showed that by increasing T12-S1 lordosis, patients were more likely of achieving resolution of pain symptoms at 6W [OR: 1.558 (1.024-2.373), p=.039] when controlling for BL BMI and concurrent SI fusion.
DISCUSSION AND CONCLUSION:
Sacroiliac joint pain is associated with significantly higher overall patient-reported pain and disability in adult spinal deformity when compared to patients without baseline SIJ pain. The present study finds that, when controlling for concurrent SI fusion at index surgery, nearly 50% of patients report symptom resolution by 1Y postoperatively. Predictive analysis also finds that increased operative correction of T12-S1 lordosis is significantly associated with symptom resolution.