

The Therapeutic Effectiveness of Fluoroscopically Guided Intra-articular Sacroiliac Joint Injections in Treating Patients with Sacroiliac Joint Dysfunction

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Abstract

Objective: The goal of this project is to evaluate the therapeutic effectiveness of fluoroscopically guided intra-articular sacroiliac joint injections in patients with diagnosed sacroiliac joint dysfunction. We will evaluate patient reported outcomes related to pain and quality of life measures.

Design: This is a retrospective observational study of patients receiving first time fluoroscopically guided intra-articular sacroiliac joint injections under a single provider at the Cleveland Clinic from September 2013 to April 2019. Primary outcome measures were change in the Numeric Rating Scale (NRS), Patient Health Questionnaire (PHQ9), and Pain Disability Questionnaire (PDQ).

Results: A total of 351 patients were included in analysis. The average subject age was 52.1 years (SD = 15.2 years) with 74.9% female and 59.0% white. The mean difference in NRS was -3.59 (95% CI, -3.91, -3.27), -2.50 (95% CI, -2.85, -2.14), -2.42 (95% CI, -2.88, -1.96) and -1.38 (95% CI, -1.90, -0.87) for 1, 3, 6, and 12 months respectively. Mean differences in PHQ9 saw significant change of -1.37 (95% CI, -2.31, -0.43) and -1.31 (95% CI, -2.53, -0.08) for 1 month and 12 months respectively. For PDQ scores, mean differences were -12.7 (95% CI, -16.9, -8.5), -9.8 (95% CI, -14.6, -5.0), and -7.1 (95% CI, -14.1, -0.2) for 1-, 3-, and 6-month follow up, respectively.

Conclusion: This study shows that the average patient receiving fluoroscopically guided intra-articular sacroiliac joint injection for sacroiliac joint dysfunction receives significant, therapeutic relief of pain for the year following the injection that positively impacts quality of life. These findings warrant further prospective, multi-institutional investigation to better understand the therapeutic effectiveness of these injections.

Purpose

- The evidence for the effectiveness intra-articular sacroiliac joint injections is still limited^{1, 2}
- The goal of this research project is to reevaluate the therapeutic effectiveness of intra-articular sacroiliac joint injections
- Primary outcome measures were pain relief, depression, and patient's perception on their disability measured by the Numeric Rating Scale (NRS), Patient Health Questionnaire (PHQ9), and Pain Disability Questionnaire (PDQ), respectively.

Methods

Study Design

- Retrospective, observation study
- Patients undergoing first time Intra-articular sacroiliac joint injections by a single provider at Cleveland Clinic Foundation from 9/2013 – 5/2019

Subjects and Measurements

- 351 patients were reviewed for initial, 1 month, 3 month, 6 month, and 12 month follow up
- Patient reported pain scores were determined by using the Numeric Rating Scale (NRS)
- Quality of Life measures were recorded with the Patient Health Questionnaire (PHQ9) and Pain Disability Questionnaire (PDQ)

Statistical Treatment

- NRS, PHQ9, and PDQ scores before and after treatment were compared with paired t-tests
- Minimal clinically important difference (MCID) were defined as 2.5, 5, and 16 for NRS, PHQ9, and PDQ respectively³⁻⁵

Results

Table 1. Subject Demographics and Baseline Characteristics

Participant Demographics	Mean	Std. Dev.
Age, years	52.1	15.2
	Number	Percentage
Sex		
Male	88	25.1%
Female	263	74.9%
Race		
White	207	59%
Black	39	11.1%
Other	78	22.2%
Unknown	27	7.7%
Baseline Characteristics	Mean	Std. Dev.
NRS	7.6	1.7
PHQ9	8.9	6.5
PDQ	83.3	30.6

Results

Table 2. NRS, PHQ9, and PDQ MCID Achievement Rates

	Follow Up (months)	N	Improve by MCID N (%)
Pain (MCID = 2.5)	1	264	160 (60.6%)
	3	202	85 (42.1%)
	6	101	48 (47.5%)
	12	77	25 (32.5%)
PHQ-9 (MCID = 5)	1	97	22 (22.7%)
	3	94	16 (17.0%)
	6	44	11 (25.0%)
	12	51	12 (23.5%)
PDQ (MCID = 16)	1	120	38 (31.7%)
	3	85	23 (27.1%)
	6	38	15 (39.5%)
	12	36	6 (16.7%)

Table 3. NRS, PHQ9, and PDQ MCID Average Change

	Follow Up (months)	N	Average Change (C.I.)	P-value
NRS	1	264	-3.59 (-3.91, -3.27)	< 0.001
	3	202	-2.50 (-2.85, -2.14)	< 0.001
	6	101	-2.42 (-2.88, -1.96)	< 0.001
	12	77	-1.38 (-1.90, -0.87)	< 0.001
PHQ-9	1	114	-1.37 (-2.31, -0.43)	0.005
	3	107	-0.83 (-1.78, 0.12)	0.089
	6	48	-0.78 (-2.12, 0.55)	0.254
	12	59	-1.31 (-2.53, -0.08)	0.038
PDQ	1	126	-12.7 (-16.9, -8.5)	< 0.001
	3	91	-9.8 (-14.6, -5.0)	< 0.001
	6	39	-7.1 (-14.1, -0.2)	0.046
	12	40	-0.6 (-7.6, 6.4)	0.876

Discussion and Conclusions

- These findings suggest that fluoroscopically guided intra-articular sacroiliac joint injections with anesthetic and steroid can be therapeutic for patients diagnosed with sacroiliac joint dysfunction. Our findings show that greater than 60% of patients achieved the MCID threshold for at least one month and greater than 40% reaching at least 6 months. The percentage of patients maintaining MCID level relief decreased to about 30% at the 12-month mark.
- Prior to intervention PHQ-9 scores were around 9, suggesting that this population had mild depression at baseline. Around 20% of patients saw clinically significant improvement following their first injection at all-time points
- For total PDQ scores we saw that the average baseline score for this patient population was 83.3. Scores between 71-100 are generally classified as severe disability. While on average the population did not achieve the MCID threshold, about 30% of patients did have clinically significant improvement by their one month follow up that persisted for 6 months. Similar to NRS pain response, the number of patients reaching MCID criteria decreased by the one year follow up.
- While sacroiliac joint injections may provide significant pain relief, they may not help patients deal with the psychosocial aspect of chronic pain to the same extent
- One of the limits of this study is the lack of complete 12 month follow up on patients. The most common reason for incomplete follow up data was having another intervention (injection or surgery), followed by losing patients to follow up.
- These findings warrant further prospective, multi-institutional investigation to better understand the therapeutic effectiveness of these injections

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