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Outcomes Following MIS Sacro-Iliac Joint Fusion: 6-24 Month Results

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Purpose

Minimally Invasive Sacro-iliac Joint (MIS SIJ) Fusion is an increasingly accepted treatment for disorders of the SIJ. This study reports on outcomes of up to 24 months status post MIS SIJ Fusion using a novel MIS SIJ Fusion system.

Methods

17 patients having MIS SIJ Fusion using the SImmetry™ device from a single surgeon consecutive case series with prospectively collected data were retrospectively reviewed for outcomes. 2 patients were excluded for multitrauma. 2 additional patients were lost early to follow-up. VAS scores for back and legs as well as ODI were obtained pre-operatively, and at 6 weeks, 3, 6, 9, 12, 18 and 24 months post-operatively.

Figure 1: Values by Time

Time point	ODI		VAS Back		VAS Leg	
	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)
Pre-op	14	55.1 (9.2)	13	78.2 (16.6)	13	56.9 (31.1)
6 weeks	13	39.7 (18.8)	13	39.2 (21.1)	13	31.7 (24.8)
3 months	12	42.0 (17.1)	12	43.2 (25.7)	12	33.6 (30.1)
6 months	13	36.6 (22.3)	13	39.0 (23.1)	13	29.4 (28.0)
9 months	9	25.6 (18.2)	9	25.3 (16.8)	9	19.3 (24.9)
12 months	7	27.1 (16.4)	7	34.0 (20.6)	7	8.9 (9.2)
18 months	3	8.7 (1.2)	2	10.0 (14.1)	3	8.3 (7.6)
24 months	2	27.0 (26.9)	2	36.5 (40.3)	2	29.5 (33.2)

Figure 2: Improvements from Baseline Pre-op by Time

Time point	ODI			VAS Back			VAS Leg		
	N	Mean (SD)	P-value	N	Mean (SD)	P-value	N	Mean (SD)	P-value
6 weeks	13	-14.8 (15.1)	0.004	12	-40.1 (23.3)	<0.001	12	-24.0 (42.6)	0.077
3 months	12	-13.3 (13.4)	0.006	11	-34.4 (27.4)	0.002	11	-23.8 (43.9)	0.102
6 months	13	-20.2 (21.5)	0.005	12	-44.1 (21.9)	<0.001	12	-32.3 (43.1)	0.025
9 months	9	-29.6 (15.8)	<0.001	9	-52.1 (22.3)	<0.001	9	-31.1 (54.0)	0.122
12 months	7	-27.0 (17.9)	0.007	7	-47.9 (29.4)	0.005	7	-60.0 (27.2)	0.001
18 months	3	-42.0 (7.2)	0.01	2	-90.0 (14.1)	0.07	3	-80.0 (20.0)	0.02
24 months	2	-20.0 (19.8)	0.389	2	-51.0 (22.6)	0.194	2	-58.0 (15.6)	0.119

Results

Patients showed statistically significant improvement at 6 weeks, 3, 6, 9, 12 and 18 months (Figures 1 & 2). Patients at 24 months showed improvement but cohort size was inadequate to demonstrate significance. A repeated measures linear regression model was used to analyze for trends in long term outcomes. This model demonstrated no evidence for change in the level of improvement achieved in the acute post-operative phase ($P<0.05$).

Conclusions

MIS SIJ Fusion using the SImmetry™ device demonstrated clinical improvement at all data points through 18 months. Clinical improvement is seen in the acute (6-12 week) phase post-operatively. The linear regression analysis demonstrated that improvement is, at a minimum, maintained and possibly trends towards improvement over time. Greater numbers of patients and longer follow-up is recommended to strengthen these claims.