

Do Dysmorphic Sacrums Result in Different Operative Outcomes and Fracture Patterns?

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Background

Sacral dysmorphism is common, reported to occur in 30% to 40% of adults. Many studies have focused on the importance of its identification regarding treating pelvic fractures with dysmorphic upper sacral segments.

However, no studies have looked at how dysmorphic sacrums fracture compared to non-dysmorphic sacrums, and whether they require operative intervention more often.

Methods

- Design: Retrospective cohort
- Groups: Dysmorphic sacrums vs Nondysmorphic
- N: 671 reviewed for final N of 355
- Inclusions: Pelvic ring injury & at least 1 out of 6 dysmorphic features
- Protocol: Fracture classifications and patterns determined on CT imaging
- STATS: SPSS used for descriptive statistics, binary correlations, and logistic regression

Discussion/Conclusions

- Our study suggests that sacral dysmorphism is not protective against operative fixation.
- However, our data does support that pelvises with dysmorphic sacrums fracture differently based on other ring injuries.
- More studies are needed to assess whether long term outcomes are any different.

Acknowledgements

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Operative Rates Between Dysmorphic and Non-Dysmorphic Sacrums Are Not Different

RESULTS:

- 44% dysmorphic sacrums
- 68% with steep alar slope
- No statistical difference in operative rates between dysmorphic and ND (p=.879)
- Statistical difference seen regarding ipsilateral posterior SI joint widening (p=.020)

TABLE 1	ND	Dysmorphic	P value	Odds Ratio
Operative fixation:	34 (17.2%)	26 (16.6%)	.879	.957
Operative fixation:			.768	.918
Op fixation construct correlation:				
Unilateral S1 screw	24 (12.1%)	15 (9.6%)	.442	
Bilateral S1 screw	5 (2.5%)	5 (3.2%)	.709	
Unilateral S2 screw	9 (4.5%)	7 (4.5%)	.969	
Bilateral S2 screw	7 (3.5%)	5 (3.2%)	.856	
Pelvic ex fix	1 (0.5%)	2 (1.3%)	.432	
Spinopelvic fixation	3 (1.5%)	2 (1.2%)	.848	
Operative fixation multiple regression:				
Unilateral S1 screw	24 (12.1%)	15 (9.6%)	.277	0.648
Bilateral S1 screw	5 (2.5%)	5 (3.2%)	.457	1.674
Unilateral S2 screw	9 (4.5%)	7 (4.5%)	.938	0.955
Bilateral S2 screw	7 (3.5%)	5 (3.2%)	.861	1.129
Pelvic ex fix	1 (0.5%)	2 (1.3%)	.341	3.321
Spinopelvic fixation	3 (1.5%)	2 (1.2%)	.901	0.889
Operative fixation multiple regression:				
Unilateral S1 screw	24 (12.1%)	15 (9.6%)	.279	0.646
Bilateral S1 screw	5 (2.5%)	5 (3.2%)	.529	1.550
Unilateral S2 screw	9 (4.5%)	7 (4.5%)	.998	1.001
Bilateral S2 screw	7 (3.5%)	5 (3.2%)	.989	1.009
Pelvic ex fix	1 (0.5%)	2 (1.3%)	.431	2.720
Spinopelvic fixation	3 (1.5%)	2 (1.2%)	.806	0.792

Correlation and logistic regression of operative fixation rates and fixation construct used with P value set at <.05. (A) Represents those controlled for age and gender.

DYSMORPHIC FEATURES

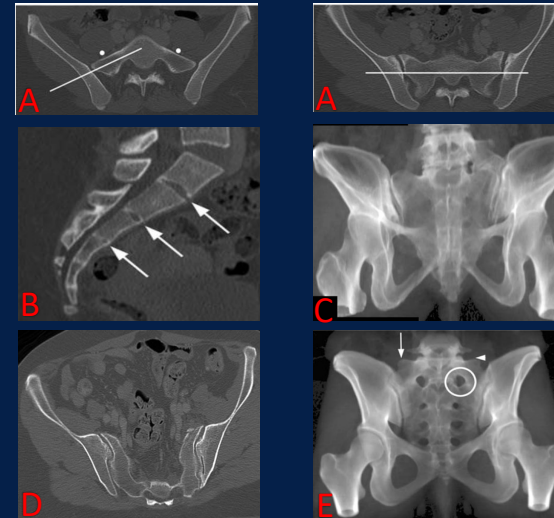


TABLE 2	ND	Dysmorphic	P
Other pelvic ring injuries regression			
Ipsi sup rami	23 (11.6%)	16 (10.2%)	.670
Ipsi inf rami	13 (6.6%)	10 (6.2%)	.941
Contra sup rami	8 (4.0%)	7 (4.5%)	.846
Contra inf rami	3 (1.5%)	5 (3.2%)	.292
Ipsi sup&inf rami	78 (39.4%)	62 (39.5%)	.985
Contra sup&inf	12 (6.1%)	18 (11.5%)	.069
Ipsi sup contra inf	0	0	—
Contra sup ipsi inf	0	0	—
Bilat sup rami	7 (3.5%)	6 (3.8%)	.887
Bilat inf rami	6 (3.0%)	5 (3.2%)	.934
Bilat sup & inf	21 (10.6%)	18 (11.5%)	.797
Pubic symph disrupt:			
<2.5cm	3 (1.5%)	7 (4.5%)	.096
2.5cm<x<5cm	2 (1.0%)	5 (3.2%)	.143
>5cm	1 (.5%)	1 (.6%)	.869
SI joint widening:			
Ips post. SI widening	4 (2.0%)	11 (7.0%)	.020
Ips ant SI widening	16 (8.1%)	17 (10.8%)	.376
Contra post SI widening	2 (1.0%)	1 (0.6%)	.703
Contra ant SI widening	2 (1.0%)	3 (1.9%)	.474
Bilat post SI widening	1 (0.5%)	4 (2.5%)	.105
Bilat ant SI widening	2 (1.0%)	5 (3.2%)	.143

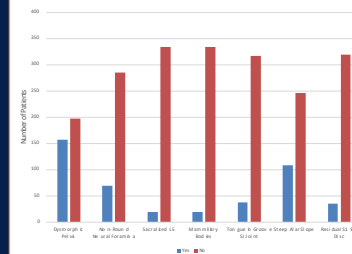


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Dysmorphic Features Legend

- A – Steep alar slope
- B – Retained S1 disk
- C – Sacralized L5
- D – Tongue in groove SI joint
- E – Mamillary bodies & non-round neural foramina

Dysmorphic Feature	Frequency out of 157
Steep alar slope	108 (68%)
Non-round neural foramina	69 (44%)
Tongue in groove	38 (24%)
Residual S1-S2	35 (22.3%)
Sacralized L5	20 (12.7%)
Mamillary bodies	20 (12.7%)



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