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Supplemental Table 1: Statistical Analysis Output for Independent Variables Analyzed

P version	Between Groups	.496	1	.496	2.817	.094
	Within Groups	72.757	413	.176		
	Total	73.253	414			
Age	Between Groups	184.713	1	184.713	1.079	.300
	Within Groups	70702.612	413	171.193		
	Total	70887.325	414			
Gender	Between Groups	.002	1	.002	.008	.931
	Within Groups	103.476	412	.251		
	Total	103.478	413			
Laterality	Between Groups	.398	1	.398	1.594	.207
	Within Groups	102.810	412	.250		
	Total	103.208	413			
Bone type	Between Groups	.394	1	.394	2.000	.158
	Within Groups	81.379	413	.197		
	Total	81.773	414			
Rod diameter	Between Groups	2.427	1	2.427	5.660	.018
	Within Groups	177.101	413	.429		
	Total	179.528	414			
Rod length	Between Groups	92.205	1	92.205	.067	.796
	Within Groups	561584.686	408	1376.433		
	Total	561676.890	409			
Nail entry	Between Groups	.413	1	.413	3.607	.058

	Within Groups	47.298	413	.115		
	Total	47.711	414			
Length achieved	Between Groups	.338	1	.338	.157	.692
	Within Groups	887.336	412	2.154		
	Total	887.674	413			
Delayed union	Between Groups	.001	1	.001	.013	.910
	Within Groups	20.833	413	.050		
	Total	20.834	414			

Supplemental Table 2: Review of available literature about the incidence of mechanical failure in PRECICE nail.

Study	Number of Segments	Mechanical Failure Rate (%)	PRECICE Generation	Details
Shabtai <i>et al.</i> CORR 2014	21 (18 pts)	0 (0%)	P1	No implant-related complications reported
Paley <i>et al.</i> Tech Orthop 2014	65 (48 pts)	11/65 (17%)	P1	1 locking screw failure 3 rod fractures through weld sites 2 nonfunctioning mechanism (ERC misuse) 5 nonfunctioning mechanism (excessive tissue resistance)
Schiedel <i>et al.</i> Acta Orthopaedica 2014	26 (24 pts)	4/26 (15%)	P1	2 nonfunctioning mechanism 1 rod fracture through weld site
Kirane <i>et al.</i> CORR 2014	25 (24 pts)	1 (4%)	P1	1 set screw failure 1 nonfunctioning mechanism
Paley <i>et al.</i> Tech Orthop 2015	116 (51 pts)	P1 (12.1%) P2 (1.7%)	P1 58 (25) P2 58 (26)	4 rod fracture (P1) 2 mechanism failure (P1) 1 rod fracture (P2) 0 mechanism failure (P2)
Laubscher <i>et al.</i> BJJ 2016	20 (15 pts)	2 (10%)	Not specified	2 locking screw failures
Wiebking <i>et al.</i> Arch Trauma Res 2016	9 (9 pts)	2 (22%)	P1	1 backwinding 20 mm 1 rod fracture through weld site
Tiefenbock <i>et al.</i> Orthop Traumatol Surg Res 2016	10 (10 pts)	2 (20%)	Not specified	1 backwinding 1 backwinding and rod fracture through weld site
Wagner SICOT-J 2017	30 pts	0%	n/a	n/a
Rentenburger <i>et al.</i> Injury 2021	24 (24 pts)	4 (16.7%)	P1 (1) P2 (3)	2 rod fracture through the gear box 1 rod fracture through a welding site 1 rod fracture through the interlocking area
Frost <i>et al.</i> Systematic Review Acta orthopaedica 2021	983 (782 pts) FITBONE & PRECICE	122 (12%)	Not specified	5% distraction mechanism related 1% segments did not reach lengthening goal
Frost <i>et al.</i> Strategies in Trauma and Limb Reconstruction 2021	70 nails removed PRECICE	9% (6/70)	Not specified	Not specified

ERC; external remote controller, P1, first-version of PRECICE, P2; second version PRECICE, pts; patients; n/a; not applicable.