



Figure A1. Flowchart detailing eligibility/selection criteria of the subgroup with available 3- or 5-year follow-up. PROM, patient-reported outcome metric; LCEa, lateral center edge angle; CEM, coarsened-exact matching.

Table AI. Patient Demographic Characteristics by Subgroup with Minimum 3-Year Follow-Up

	HS_{Sub} Cohort (n = 40)	MC_{Sub} Cohort (n = 49)	P Value
Age (years), mean (95% CI)	40.6 (37.3, 43.9)	38.2 (34.8, 41.6)	.329
Sex , n (%)			.271
Male	19 (47.5%)	29 (59.2%)	
Female	21 (52.5%)	20 (40.8%)	
BMI (kg/m ²), mean (95% CI)	25.4 (24.4, 26.5)	25 (23.9, 26.1)	.598
Laterality , n (%)			.449
Left	22 (55.0%)	23 (46.9%)	
Right	18 (45.0%)	26 (53.1%)	
α angle , mean (95% CI)	52.4 (47.6, 57.1)	52.7 (48.2, 57.3)	.914
LCEa , mean (95% CI)	36.8 (34.8, 38.7)	36.8 (35.3, 38.3)	.984
Tönnis Angle , mean (95% CI)	7.4 (6.0, 8.8)	6.9 (5.5, 8.3)	.626
Tönnis Grade , n (%)			.821
0	17 (42.5%)	22 (44.9%)	
1	23 (57.5%)	27 (55.1%)	
Type of FAI , n (%)			.362
Pincer deformity	24 (60.0%)	27 (55.1%)	
CAM deformity	0 (0%)	3 (6.1%)	
CAM and Pincer	16 (40.0%)	19 (38.8%)	
Lumbar Spine Pathology			
Degenerative Disk Disease/Spondylosis	17 (42.5%)	-	
Degenerative Scoliosis	6 (15.0%)	-	
Lumbar Disc Herniation	6 (15.0%)	-	
Foraminal Stenosis	8 (20.0%)	-	
Spondylolysis	1 (2.5%)	-	
Spondylolisthesis	2 (5.0%)	-	

HS_{Sub}, hip-spine subgroup; MC_{Sub}, matched control subgroup; CI, confidence interval; BMI, body mass index; LCEa, lateral center edge angle; FAI, femoroacetabular impingement.

Table A2. Intraoperative Findings and Procedures Performed by Subgroup with Minimum 3-Year Follow-Up

	HS_{Sub} Cohort (n = 40)	MC_{Sub} Cohort (n = 49)	P Value
Labrum Condition, n (%)			.620
Normal	0 (0%)	0 (0%)	
Degeneration	9 (22.5%)	14 (28.6%)	
Full Thickness Tear	21 (52.5%)	27 (55.1%)	
Detachment	9 (22.5%)	8 (16.3%)	
Ossification	1 (2.5%)	0 (0%)	
Outerbridge Grade, n (%)			.562
0	0 (0%)	0 (0%)	
1	2 (5.0%)	2 (4.1%)	
2	8 (20.0%)	14 (28.6%)	
3	21 (52.5%)	27 (55.1%)	
4	9 (22.5%)	6 (12.2%)	
Chondrolabral Junction, n (%)			.452
Normal	0 (0%)	2 (4.1%)	
Malacia	4 (10.0%)	2 (4.1%)	
Debonding	3 (7.5%)	4 (8.2%)	
Cleavage	21 (52.5%)	31 (63.3%)	
Defect	12 (30.0%)	10 (20.4%)	
Chondral Flap, n (%)	13 (32.5%)	14 (28.6%)	.688
Chondral Treatment, n (%)			.855
None	22 (55.0%)	26 (53.1%)	
BMAC Augmentation	18 (45.0%)	23 (46.9%)	
Microfracture	0 (0%)	0 (0%)	
Labral Management, n (%)			.402
Repair Alone	4 (10.0%)	2 (4.1%)	
Reconstruction with Capsular Augmentation	36 (90.0%)	47 (95.9%)	
Osteoplasty Performed, n (%)			.362
Acetabuloplasty	24 (60.0%)	27 (55.1%)	
Femoroplasty	0 (0%)	3 (6.1%)	
Femoroacetabular Osteoplasty	16 (40.0%)	19 (38.8%)	

HS_{Sub}, hip-spine subgroup; MC_{Sub}, matched control subgroup; BMAC, bone marrow aspirate concentrate.

Table A3. Mean PROM/Pain Scores and Interval Improvements at Baseline through 3-Year and Available 5-Year Follow-Up*

	HS _{Sub} Cohort (n = 40)		MC _{Sub} Cohort (n = 49)		Significance	
	Mean	Improvement [‡]	Mean	Improvement [‡]	P _{Mean}	P _{Improvement}
Preoperative						
n	40		49			
mHHS	59.9 (55.9, 63.9)	-	63.2 (59.6, 66.8)	-	.235	-
HOS-ADL	69.6 (65.7, 73.6)	-	74.0 (70.4, 77.5)	-	.111	-
HOS-SS	38.6 (30.6, 46.6)	-	43.3 (36.2, 50.5)	-	.387	-
NAHS	60.7 (56.7, 64.7)	-	69.8 (66.3, 73.3)	-	<.001 [†]	-
iHOT-33	35.4 (29.2, 41.6)	-	45.6 (40.2, 51.1)	-	.016 [†]	-
VAS	6.0 (5.4, 6.6)	-	4.5 (3.9, 5.1)	-	<.001 [†]	-
3 Years						
n	28		31			
mHHS	82.1 (77.6, 86.6)	21.8 (16.6, 26.9)	90.2 (86.0, 94.5)	27.3 (22.5, 32.0)	.010 [†]	.125
HOS-ADL	88.3 (83.8, 92.8)	18.2 (12.2, 24.2)	91.0 (86.9, 95.2)	17.1 (11.6, 22.5)	.384	.784
HOS-SS	75.3 (66.3, 84.3)	36.3 (26.4, 46.1)	78.1 (69.8, 86.4)	34.9 (25.9, 43.9)	.651	.842
NAHS	85.6 (81.2, 90.1)	24.4 (18.8, 30.0)	90.2 (86.0, 94.3)	20.2 (15.1, 25.2)	.147	.275
iHOT-33	71.4 (64.4, 78.3)	35.3 (27.3, 43.3)	81.3 (75.0, 87.6)	36.0 (28.9, 43.2)	.039 [†]	.896
VAS	2.7 (1.9, 3.4)	-3.3 (-4.3, -2.3)	1.3 (0.6, 2.0)	-3.1 (-4.0, -2.2)	.010 [†]	.746
5 Years						
n	21		31			
mHHS	86.8 (81.8, 91.9)	27.3 (21.7, 32.8)	87.7 (83.4, 91.9)	24.4 (19.6, 29.2)	.797	.441
HOS-ADL	92.6 (87.6, 97.6)	23.2 (17.0, 29.4)	92.5 (88.3, 96.7)	18.4 (13.0, 23.9)	.963	.262
HOS-SS	77.8 (68.0, 87.6)	39.4 (28.8, 49.9)	80.4 (72.1, 88.7)	37.1 (28.1, 46.2)	.693	.752
NAHS	89.2 (84.3, 94.1)	28.9 (23.0, 34.7)	90.4 (86.3, 94.6)	20.9 (15.8, 26.0)	.712	.045 [†]
iHOT-33	77.1 (69.6, 84.7)	42.3 (33.9, 50.7)	83.3 (77.0, 89.6)	37.6 (30.5, 44.8)	.221	.412
VAS	1.9 (1.1, 2.8)	-4.2 (-5.3, -3.1)	1.4 (0.7, 2.1)	-3.1 (-4.1, -2.2)	.321	.153

*Patient reported outcome scores and interval improvements are reported as mean (95% confidence interval). [†]A significant difference between groups. [‡]Improvements reported at each timepoint relative to preoperative, baseline score. HS_{Sub}, hip-spine subgroup; MC_{Sub}, matched control subgroup; mHHS, modified Harris Hip Score; HOS-ADL, Hip Outcome Score–Activities of Daily Living; HOS-SS, Hip Outcome Score–Sports Subscale; NAHS, Non-Arthritic Hip Score; iHOT-33, International Hip Outcome Tool-33; VAS, visual analog scale.

Table A4. Weighted Differences in Interval PROM/Pain Score Improvement between Patients with (HS_{sub}) and without (MC_{sub}) Hip-Spine Syndrome from Baseline through Available 5-Year Follow-Up*

PROM	Weighted Difference in Average Improvement (95% CI)[†]	P value
mHHS	-3.8 (-9.8, 2.2)	0.217
HOS-ADL	-1.3 (-8.7, 6.2)	0.733
HOS-SS	2.2 (-9.2, 13.6)	0.704
NAHS	3.6 (-3.3, 10.4)	0.300
iHOT-33	3.2 (-6.1, 12.5)	0.496
VAS	0.1 (-1.2, 1.3)	0.906

*Weighted differences in improvements are reported as mean (95% confidence interval). [†]Reference group: matched control cohort. PROM, patient-reported outcome metric; HS_{sub}, hip-spine subgroup; MC_{sub}, matched control subgroup; CI, confidence interval; mHHS, modified Harris Hip Score; HOS-ADL, Hip Outcome Score-Activities of Daily Living; HOS-SS, Hip Outcome Score-Sports Subscale; NAHS, Non-Arthritic Hip Score; iHOT-33, International Hip Outcome Tool-33; VAS, visual analog scale.

Table A5. Frequency of HS_{Sub} and MC_{Sub} Patients Achieving MCID and PASS Thresholds*

		MCID			PASS			
	Threshold	HS _{Sub} Cohort % Achieved	MC _{Sub} Cohort % Achieved	P	Threshold	HS _{Sub} Cohort % Achieved	MC _{Sub} Cohort % Achieved	P
12 Month								
<i>n</i>		39	44			39	44	
mHHS	Δ ≥6.9	86.8%	90.7%	.728	≥84.8	47.4%	65.1%	.108
HOS-ADL	Δ ≥8.8	64.1%	68.2%	.695	≥89.7	53.8%	84.1%	.003 [†]
HOS-SS	Δ ≥13.9	82.1%	81.4%	.939	≥72.2	56.4%	76.7%	.050 [†]
NAHS	Δ ≥9.1	82.1%	72.7%	.313	≥81.9	69.2%	88.6%	.029 [†]
iHOT-33	Δ ≥15.1	78.9%	79.5%	.947	≥69.1	63.2%	86.4%	.015 [†]
24 Month								
<i>n</i>		36	42			36	42	
mHHS	Δ ≥9.2	88.9%	90.5%	.999	≥83.3	58.3%	85.7%	.007 [†]
HOS-ADL	Δ ≥9.7	61.1%	76.2%	.150	≥88.2	66.7%	90.5%	.009 [†]
HOS-SS	Δ ≥14.3	83.3%	88.1%	.547	≥76.4	61.1%	78.6%	.092
NAHS	Δ ≥8.3	83.3%	85.7%	.771	≥85.6	63.9%	88.1%	.011 [†]
iHOT-33	Δ ≥13.9	83.3%	92.9%	.189	≥72.2	58.3%	83.3%	.014 [†]
5 Year								
<i>n</i>		21	31			21	31	
mHHS	Δ ≥11.4	81.0%	80.6%	.999	≥83.6	71.4%	77.4%	.624
HOS-ADL	Δ ≥10.2	71.4%	58.1%	.326	≥92.2	71.4%	71.0%	.971
HOS-SS	Δ ≥15.2	85.7%	80.6%	.724	≥80.9	61.9%	64.5%	.848
NAHS	Δ ≥12.6	81.0%	71.0%	.415	≥81.9	81.0%	83.9%	.999
iHOT-33	Δ ≥15.1	85.7%	77.4%	.721	≥74.3	52.4%	74.2%	.105

*Note 12-month, 24-month, and 5-year MCID/PASS analyses include patients with minimum 3-year follow-up and available follow-up at these discrete time points. [†]A significant difference between groups. HS_{Sub}, hip-spine subgroup; MC_{Sub}, matched control subgroup; MCID, minimal clinically important difference; PASS, patient acceptable symptom state; mHHS, modified Harris Hip Score; HOS-ADL, Hip Outcome Score-Activities of Daily Living; HOS-SS, Hip Outcome Score-Sports Subscale; NAHS, Non-Arthritic Hip Score; iHOT-33, International Hip Outcome Tool-33.