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Title: Intraoperative Traction Has A Negligible Time-dependent Influence On Patient Reported Outcomes After Hip Arthroscopy: A Cohort Study

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Disclosures

- Jacob Feingold : None
- Ryan Thacher : None
- Adit Maniar : None
- Stefan Mitrasinovic : None
- Anil Ranawat :
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INTRODUCTION

- Traction for hip arthroscopy is necessary but can be associated with complications.¹⁻⁵
- Decreased traction times and reduced weight can reduce these complications.¹⁻⁵
- No studies to date have investigated the relationship between overall traction time and patient-reported outcome measures (PROMs)



METHODS

- Data was collected prospectively from 2006 to 2018 via a separate IRB approved multi-surgeon hip registry.
- Four hip-specific PROMs were utilized:
 - (1) Modified Harris Hip Score (mHHS),
 - (2) Hip Outcome Score – Activities of Daily Living (HOS-ADL),
 - (3) Hip Outcome Score – Sports Specific (HOS-SS), and
 - (4) International Hip Outcome Tool (iHOT).
- PROMs were collected after surgery at three time points: (1) six-months, (2) one-year, and (3) two-years postoperatively.



METHODS

- Inclusion criteria :
 - (1) Hip arthroscopy for FAI and
 - (2) Had both a pre- and postoperative score available for at least one of the PROMs.

- Exclusion criteria :
 - (1) history of ipsilateral hip surgery,
 - (2) ipsilateral hip osteoarthritis,
 - (3) simultaneous bilateral hip arthroscopy, and
 - (4) hip arthroscopy in conjunction with another ipsilateral hip surgery



METHODS

- 222 patients were included in the study.
- The distribution of traction time across the study population provided the basis for two different study cohorts.
- The average traction time of the study population was 46.1 ± 12.9 minutes.
- 145 patients (65%) with a traction time below the 66th percentile of the study population (<50 minutes) were designated to the short traction cohort.
- 77 patients (35%) were included in the long traction cohort (≥ 50 minutes).



RESULTS

Table 1. Univariate analysis comparing preoperative characteristics and patient demographics between two cohorts based on intraoperative traction time

	All (n = 222)	Short Traction (n = 145)	Long Traction (n = 77)	P value
Age (yr), mean ± SD	32.4 ± 9.4	32.3 ± 8.7	32.7 ± 10.7	.69
Female, n (%)	116 (52.3)	83 (57.2)	33 (42.9)	.06
Comorbidities, n (%)				
Labral tear	222 (100)	145 (100)	77 (100)	1
Cam lesion	222 (100)	145 (100)	77 (100)	1
Pincer lesion	60 (27.0)	26 (17.9)	34 (44.2)	<.05**
Surgical intervention, n (%)				
Labral repair	185 (83.3)	118 (81.4)	67 (87.0)	.38
Labral debridement	37 (16.7)	27 (18.6)	10 (13.0)	.38
Cam decompression	222 (100)	145 (100)	77 (100)	1
Pincer resection	63 (28.4)	25 (17.2)	38 (49.4)	<.05**
Traction time, n (%)	46.1 ± 12.9	38.3 ± 6.2	60.7 ± 8.9	<.05**
Surgical time, n (%)	89.9 ± 22.1	78.6 ± 10.5	112.0 ± 22.4	<.05**

Values do not add up to 100% where there is missing data.

**Denotes a significant difference with *P* value < 0.05.

The left column represents all eligible patients for the study. The second column represents patients with an intraoperative traction time less than 50 minutes. The third column represents patients with an intraoperative traction time greater than or equal to 50 minutes.

Table 2: Scores on PROMs between two cohorts based on intra-operative traction time

	All (n = 222)	Short Traction (n = 145)	Long Traction (n = 77)	P value
Baseline, mean ± SD				
mHSS	61.7 ± 12.6	61.2 ± 12.8	62.6 ± 12.2	.35
HOS-ADL	73.3 ± 16.2	72.7 ± 16.9	74.5 ± 14.9	.63
HOS-SS	50.8 ± 23.8	50.2 ± 24.1	51.9 ± 23.4	.55
iHOT	39.1 ± 17.2	38.5 ± 17.5	40.1 ± 16.8	.62
6 months post-op, mean ± SD				
mHSS	82.3 ± 13.1	81.7 ± 14.0	83.3 ± 11.0	.93
HOS-ADL	89.9 ± 11.2	90.1 ± 11.8	89.6 ± 10.0	.32
HOS-SS	72.1 ± 24.8	72.7 ± 25.1	71.0 ± 24.4	.44
iHOT	72.4 ± 19.9	72.1 ± 20.9	72.9 ± 18.2	.89
1-year post-op, mean ± SD				
mHSS	85.2 ± 14.5	86.1 ± 14.0	83.4 ± 15.2	.22
HOS-ADL	91.7 ± 12.8	92.0 ± 12.7	91.1 ± 13.2	.38
HOS-SS	81.1 ± 22.8	81.8 ± 23.3	79.7 ± 21.8	.24
iHOT	77.2 ± 21.1	77.7 ± 21.5	76.3 ± 20.6	.37
2-years post-op, mean ± SD				
mHSS	85.7 ± 14.9	86.0 ± 14.7	84.1 ± 15.8	.59
HOS-ADL	91.8 ± 13.3	92.0 ± 13.6	90.9 ± 12.2	.21
HOS-SS	82.8 ± 23.4	83.3 ± 24.2	80.8 ± 19.6	.12
iHOT	79.3 ± 22.7	79.0 ± 22.6	75.4 ± 23.6	.34

Table 3: Achievement of the MCID on post-operative PROMS between two cohorts based on intra-operative traction time

	Short Traction (n = 145)	Long Traction (n = 77)	P value
6 months post-op, delta (%)			
mHSS	20.5 (250.4)	20.7 (252.6)	.84
HOS-ADL	17.3 (209.0)	15.2 (182.7)	.61
HOS-SS	22.5 (155.1)	19.1 (132.0)	.36
iHOT	33.6 (277.6)	32.9 (271.5)	.96
1-year post-op, delta (%)			
mHSS	24.9 (303.5)	20.8 (253.5)	.07
HOS-ADL	19.3 (233.0)	16.7 (200.8)	.31
HOS-SS	31.6 (217.8)	27.9 (192.2)	.25
iHOT	39.2 (323.7)	36.2 (299.5)	.39
2-years post-op, delta (%)			
mHSS	24.8 (303.0)	23.0 (280.9)	.57
HOS-ADL	19.3 (232.9)	18.4 (222.0)	.96
HOS-SS	33.1 (228.0)	28.9 (199.5)	.50
iHOT	40.4 (334.3)	35.1 (290.3)	.22



**Denotes a significant difference with P values < .05.

Delta values were based on pre-operative PROM scores at each time point.

Achievement of MCID is based on difference between the reference delta of 8.2 (HSS), 8.3 (HOS-ADL), 14.5 (HOS-SS), 12.1 (iHOT).⁷

Table 4: Multivariable analysis predicting achievement of MCID in PROMs among all patients after hip arthroscopy at 2-years post-op

	Adjusted ¹ odds ratio (95% CI)	P value
mHSS		
Sex	0.71 (0.35-1.41)	.33
Pincer lesion	0.26 (0.05-1.32)	.11
Pincer resection	6.48 (1.22-34.62)	<.05**
Traction time	0.88 (0.83-0.93)	<.05**
Surgical time	1.01 (0.98-1.03)	.51
HOS-ADL		
Sex	0.53 (0.27-1.02)	0.06
Pincer lesion	0.09 (0.01-0.64)	<0.05**
Pincer resection	10.77 (1.57-73.94)	<0.05**
Traction time	0.88 (0.84-0.93)	<0.05**
Surgical time	1.01 (0.98-1.04)	0.29
HOS-SS		
Sex	0.49 (0.17-1.50)	.70
Pincer lesion	0.17 (0.01-2.25)	.08
Pincer resection	11.29 (0.77-165.47)	.08
Traction time	0.84 (0.74-0.96)	<.05**
Surgical time	1.01 (0.99-1.04)	.38
iHOT		
Sex	0.35 (0.12-1.01)	.05
Pincer lesion	0.09 (0.01-1.39)	.08
Pincer resection	23.00 (1.38-382.06)	<.05**
Traction time	0.90 (0.82-0.99)	<.05**
Surgical time	1.02 (0.99-1.05)	.15

**Denotes a significant difference with P values < .05.
 Odds ratios (OR) are reported such that an OR > 1.0 represents an increased odds of improvement in PROMs
 Multivariate models adjusted for factors with P < .20 on univariate comparisons: sex, pincer lesion, pincer resection, traction time and surgical time.

Conclusion

- There was no difference in PROMs and MCID achievement between longer and shorter traction time cohorts.
- On multivariable analysis,
 - (1) Decrease in traction time is predictive of MCID for all PROM scores and
 - (2) Pincer type resection is predictive of MCID for most PROM scores



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