Meniscectomy vs. Meniscal Repair: Comparing Rates of Readmission, Reoperation, and Osteoarthritis

Samantha Lynn Watson, Seth Sherman, Nherera M Leo, Siyuan Ding, Ronak M. Patel

INTRODUCTION:

The meniscus has a proven role in load transmission, stability, and prevention of osteoarthritis (OA). Research suggests that meniscal repair may improve long-term joint health compared to meniscectomy, but higher reoperation and readmission rates may be incurred.

The purpose of this study is to examine 90-day readmissions, reoperations, and healthcare utilization for symptomatic OA for patients who underwent meniscal repair vs. meniscectomy. We hypothesize that meniscal repairs may incur more reoperations but will result in better long-term joint outcomes as compared to meniscectomy, specifically reducing healthcare utilization related to OA. With regard to age, we hypothesize that there is no difference in index procedure outcome for patients under the age of 40 years vs. those 40 and older.

METHODS: Using a nationally representative database, patients undergoing one of two index procedures, meniscus repair or meniscectomy, were identified. Three endpoints were investigated: 90-day readmission, reoperations, and healthcare utilization for symptomatic OA. The demographics for each index procedure group were matched by propensity score matching. Chi-square tests of independence were used to compare endpoints between the two index procedure groups, and subanalyses were performed for patients under age 40 vs. those age 40 and older.

RESULTS: After matching, 36,386 patients were studied (mean age = 38 years, mean Charleston Cormidity Index = 0.12). Both index procedures had similarly low rates of 90-day readmission (1.1% for repair and 1.9% for meniscectomy). Repair patients were significantly less likely to necessitate reoperation, whether of index procedure type or another procedure (2.3% vs. 4.3% for meniscectomy, P <0.0001). Patients undergoing meniscectomy were significantly more likely to receive OA treatment within two years of meniscectomy as opposed to meniscal repair (9.2% vs. 6.7%, P<0.0001; trend maintained for both age groups).

DISCUSSION AND CONCLUSION:

Of the work suggesting favorable outcomes for meniscal repairs compared to meniscectomies, most studies analyze a small cohort of patients instead of national databases. The present study uses a large, nationally representative database to further investigate this topical question and specifically analyzes outcomes for patients under age 40 vs. those age 40 and older.

Both index procedures had similarly low rates of 90-day readmission. Repair patients were significantly less likely to necessitate any reoperation. OA treatment was significantly more likely in patients who had meniscectomy compared to meniscus repair, and this trend was maintained for both age groups. This data supports consideration for meniscus preservation in all patients, regardless of age.

Table 1. Patient Demographics

		Non-Propensity Score Matched			Propensity Score Matched		
		Meniscectomy (n=361,588)	Meniscal Repair (n=20,109)	P-value	Meniscectomy (n=18,193)	Meniscal Repair (n=18,193)	P-value
Age	Mean ± SD	51.47 ± 15.52	37.52 ± 17.54	<0.0001	38.45 ± 17.29	38.10 ± 17.37	0.0589
	Patients < 40 years	72056(19.93)	10777(5359)	<0.0001	9424(51.80)	9424(51.80)	1
	Patients ≥ 40 years	289532(80.07)	9332(46.41)		8769(48.20)	8769(48.20)	
Sex	Female	174764(48.33)	9413(46.81)	<0.0001	8459(46.5)	8459(46.5)	1
	Male	186824(51.67)	10696(53.19)		9734(53.5)	9734(53.5)	
Race	Asian	6080(1.68)	385(1.91)	<0.0001	209(1.15)	316(1.74)	<0.0001
	Black	36759(10.17)	2473(12.3)		2107(11.58)	2022(11.11)	
	Other	22327(6.17)	1506(7.49)		1214(6.67)	1256(6.9)	
	Unable to determine	8660(2.39)	690(3.43)		406(2.23)	430(2.36)	
	White	287762(79.58)	15055(74.87)		14257(78.37)	14169(77.88)	
Obesity	No	267014 (99.8)	34225 (90.0)	<0.0001	33414 (98.5)	33414 (98.5)	1
	Yes	517 (0.2)	3789 (10.0)		517 (1.5)	517 (1.5)	
CCI Score	Mean ± SD	0.25 ± 0.66	0.16 ± 0.49	<0.0001	0.12 ± 0.38	0.12 ± 0.37	0.5763

Percent of given population (%) is given in parentheses when applicable
CCI = Charlson Comorbidity Index
RCC = Ratio of Cost to Charge

Table 2. Meniscectomy vs. Meniscal Repair Outcomes

	Patients < 40 years			Patients ≥ 40 years			All Patients		
Outcome	Meniscectomy (n=9,424)	Repair (n=9,424)	P-value	Meniscectomy (n=8,769)	Repair (n=8,769)	P-value	Meniscectomy (n=18,193)	Repair (n=18,193)	P-value
Reoperation (index procedure)	414 (4.4)	260 (2.8)	**<0.0001**	371 (4.2)	165 (1.9)	**<0.0001**	786 (4.3)	425 (2.3)	**<0.0001**
Reoperation (other)	24 (0.25)	8 (0.08)	**0.0046**	323 (3.7)	198 (2.3)	**<0.0001**	347 (1.9)	206 (1.1)	**<0.0001**
Readmission at 90 days	66 (0.70)	65 (0.69)	0.9301	92 (1.1)	49 (0.56)	**0.0003**	158 (0.87)	114 (0.63)	**0.0074**
Healthcare utilization for symptomatic OA* (HA injections/ physical therapy/ steroid or has ICD10CM code)	296 (4.9) *n = 6080*	190 (3.1) *n = 6080*	**<0.0001**	695 (14.9) *n = 4672*	531 (11.4) *n = 4672*	**<0.0001**	991 (9.2) *n = 10,752*	721 (6.7) *n = 10,752*	**<0.0001**

Percent of given population (%) is given in parentheses when applicable
OA=osteoarthritis
**Per protocol, healthcare utilization related to OA required a two-year follow-up period and therefore propensity matching was performed separately. The n value for OA matching is noted for each OA datapoint.*