

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

I (and/or my co-authors) have something to disclose.
All relevant financial relationships have been mitigated.

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Background

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.

Research Objective and Hypotheses

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 the the Premier Health Database. meniscus repair and meniscectomy were identified as **index procedures**.
- Three endpoints** were investigated: 90-day readmission, reoperations, and healthcare utilization for symptomatic OA.
- Propensity score matching** was used to balance demographics for each index procedure group.
- Chi-square tests of independence compared endpoints between the two index procedure groups. Subanalyses were performed for patients under age 40 vs. those age 40+.

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 (years)	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(53.59)	<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)	
BMI > 30 kg/m ²	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

See Appendix 1 for other matched variables.

Table 2. Outcomes

Outcome	Patients < 40 years			Patients ≥ 40 years			All Patients		
	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 HA = hyaluronic acid

*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.

Results

Demographic Data

- After matching, **36,386 patients** were included in this study.
 - Mean age: 38 ± 17 years
 - Mean Charleston Comorbidity Index: 0.12 ± 0.38

Readmission

- Both index procedures had similarly low rates of 90-day readmission (1.1% for repair and 1.9% for meniscectomy).

Reoperation

- 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).

OA Treatment

- 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).

Conclusion

The present study is strengthened by the use of a large, nationally representative database and specific analyses for patients under age 40 vs. those age 40 and older.

Our data, particularly lower rates of reoperation and healthcare utilization related to OA, may support consideration for meniscus preservation in all patients, regardless of age. However, future studies are needed to further stratify age-appropriate recommendations.

