The Role of Physical Therapy in Preventing the Eventual Need for Meniscectomy: A Retrospective Chart Review

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INTRODUCTION:

With an estimated cost of $4 billion per year, knee arthroscopy is among the most common ambulatory procedures, performed over half a million times annually. Despite its frequency, there is growing evidence that partial meniscectomies may not be effective in improving outcomes for non-obstructive meniscus tears, and in fact may accelerate the progression of osteoarthritis. Recent literature suggests that conservative management with physical therapy is comparable to surgery, although a third of the randomized physical therapy subjects crossed over to surgery due to persistent symptoms. The goal of this retrospective chart review is to determine if physical therapy can prevent the need for arthroscopic partial meniscectomies (APM) in patients with MRI-diagnosed meniscus tears. Our hypothesis is that physical therapy will reduce the rate for eventual APM.

METHODS:

In this retrospective chart review, medical records of patients with meniscus tears that initially presented to an orthopaedic clinic between January 15, 2015, to December 31, 2023, were reviewed. A total of 607 charts were selected based on billing code ICD-10 S83.2 (tear of meniscus, current injury). Patients over the age of 18 with an isolated meniscus tear confirmed on MRI were included in the study. Patients with concurrent pathologies including ACL tears and end stage degenerative joint disease were excluded from the study. Demographic data and outcome data was collected using the electronic medical record by two authors. Outcome data collected included use of physical therapy, length of physical therapy, use of other conservative therapies, and eventual need for APM. Univariable analysis was used to detect significance. Surgical outcome was compared to conservative treatments using a logistic regression model.

RESULTS:

A total of 226 patients were selected to be included in the study. Ninety-one patients underwent physical therapy while 135 did not and instead received alternative conservative treatments (NSAIDs, corticosteroid injections, bracing, etc.). There was no significant difference in the demographic data between the physical therapy and no physical therapy group. Of those receiving physical therapy, 39.6% of patients eventually had surgery, while 78.5% of patients without physical therapy received surgery. Odds ratio for requiring APM without physical therapy compared to with physical therapy was calculated to be 5.38, with a p-value of <0.0001 and a 95% confidence interval of 2.97-9.74. The average time committed to physical therapy in the study group 7.8 weeks with a standard deviation of 5.6 weeks.

DISCUSSION AND CONCLUSION:

Patients who did not participate in physical therapy were significantly more likely to receive surgery compared to patients who did participate in physical therapy. Our results corroborate with the current literature on physical therapy as a viable first line treatment for isolated meniscus tears. Furthermore, this study works to show that compared to other conservative treatments, physical therapy can reduce the eventual need for APM for isolated meniscus tears.

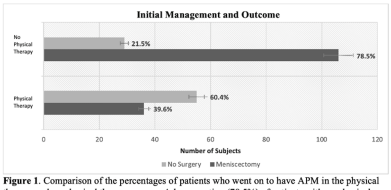

Figure 1. Comparison of the percentages of patients who went on to have APM in the physical therapy and no physical therapy groups. A large portion (78.5%) of patients with no physical therapy required APMs while only 39.6% of patients with physical therapy went on to receive surgery.

Table 1. Demographics and characteristics of patients with meniscal tears

	No Therapy (n = 135)	Physical Therapy (n = 91)
Age, *mean ± SD*	52.7 ± 10.7	50.3 ± 10.7
Gender, *n (%)*		
Male	70 (51.9)	31 (34.1)
Female	65 (48.1)	60 (65.9)
Ethnicity, *n (%)*		
Hispanic	29 (21.5)	29 (31.9)
Non-Hispanic	106 (78.5)	62 (68.1)
Race, *n (%)*		
Black	56 (41.5)	42 (46.2)
White	47 (34.8)	18 (19.8)
Other	32 (23.7)	31 (34.1)
BMI, *mean ± SD*	31.0 ± 6.0	32.4 ± 7.8
Injury cause, *n (%)*		
Traumatic	43 (31.9)	53 (58.2)
Non-traumatic	92 (68.1)	38 (41.8)
Tear laterality, *n (%)*		
Medial	49 (74.2)	29 (74.4)
Lateral	14 (21.2)	7 (17.9)
Both	3 (4.6)	3 (7.7)

Comparison of conservative managements with the outcome of surgery

Treatment (No vs. Yes)	Odds Ratio Estimate	95% Confidence Limits	P-Value
Physical Therapy*	5.38	2.97 – 9.74	<0.0001
Steroid Injection	1.33	0.73 – 2.43	0.35
Knee Bracing	1.85	0.99 – 3.45	0.054

*Statistically significant

Table 2. Odds ratio of the three main conservative treatments after accounting for the impact of other variables. Analysis is performed comparing the odds of patients receiving surgery without the treatment to the odds of patients receiving surgery after the treatment.