

# Comparison of Meniscectomy to Conservative Management on Meniscus Repair

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## ABSTRACT

**Clinical Scenario:** The meniscus transmits load and reduces stress and compression of the articular cartilage and subchondral bone of the knee during weight bearing. A meniscus tear is a common musculoskeletal injury that occurs in active populations. An investigation analyzing the effectiveness of surgical intervention vs. conservative management is important for patients to determine which provides better functional outcomes and pain reduction. **Focused Clinical Question:** When treating patients with medial meniscus tears and osteoarthritis, is meniscectomy or conservative management more beneficial in alleviating pain? **Search Strategy:** Databases used to search for evidence included PubMed, ProQuest Nursing Collection, and CINAHL Plus with Full Text. Inclusion criteria for this appraisal were randomized controlled trials (RCTs), with the articles having to be published after the year 2000 and the use of human subjects. Terms used to search for the articles included “partial meniscectomy,” “physical therapy,” “osteoarthritis.” Exclusion criteria involved patients that had symptoms persisting for three months or less. **Evidence Quality Assessment:** Quality of evidence was assessed by one evaluator using the PEDro scale, the scores ranged from 6/10 to 9/10 and OCEBM Levels of Confidence scale with an average score of 2/4. **Results and Summary of Search:** Pain was measured using various scales, such as Knee Injury and Osteoarthritis Outcome Score (KOOS), Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC). Analyzing the articles pain scales to compare both treatment options, they showed conservative management as the better option for short term pain relief. When looking at the 6 and 12-months follow up surgical intervention showed improvement when looking at the pain scales as compared to the conservative treatment. Critical analysis of the studies showed mixed results; overall both treatment options were effective in decreasing pain after a meniscal tear. A weakness, the patient population amongst all the studies were similar, but primarily pin-pointed the older adult population rather than the younger athletic population. **Clinical Bottom Line:** The treatment that should be considered as the first option is partial meniscectomy. Conservative management should not be overlooked as a treatment option, but surgical removal of the torn meniscus is highly valued to effectively treat pain. The Strength of Recommendation based on a Body of Evidence (SORT) score was a B. **Implications:** These findings can help when deciding which type of treatment for a meniscal tear would return someone in a safe and orderly fashion.

## CLINICAL SCENARIO

- The importance of this review is to gain a knowledge base when it comes to choosing a treatment that will have a better outcome for the patients long term.
- Meniscal tears are commonly treated arthroscopically with a partial meniscectomy. With the younger generation, rehabilitation techniques and strengthening exercises are utilized until done with collegiate sports.
- The meniscus is a piece of cartilage that provides cushion and shock support between your femur and tibia, there is a medial and lateral meniscus. They can be completely torn or partially torn during activity that puts pressure or rotation on the knee joint.
- Arthroscopic Surgery: Meniscectomy utilizes the trimming the damaged meniscus back to a stable rim. Post-operative patients can bear weight under their discretion.<sup>1</sup>
- Physical Therapy: There was a protocol patients had to follow. Patients progressed at their own pace, generally program lasted around 6 weeks, including cardio, functional, proprioception and balance. Divided into different stages I-III, included level of reported pain, and strength.<sup>1</sup>
- The WOMAC scale is used to evaluate the patients osteoarthritis of the knee including pain, stiffness, and functioning of joints; scored on a scale from 0-4, 0 being none to 4 being extreme.<sup>1</sup>
- KOOS pain scale is intended for knee injuries and is used over short and long-term intervals to assess progression.<sup>1</sup>
- Pain was measured using various scales and their values were recorded at 3-months, 6-months, and 12-months post, such as the Knee Injury and Osteoarthritis Outcome Scale (KOOS), and Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC).

## FOCUSED CLINICAL QUESTION

- When treating patients with medial meniscus tears and osteoarthritis, is meniscectomy or conservative management more beneficial in decreasing pain?

## SEARCH STRATEGY

- The Inclusion Criteria:
  - At least one symptom common with a meniscal tear that persisted at least 3 months.
  - Patients had to be eligible for arthroscopy, or be able to participate in Conservative Management
  - Tear in medial meniscus, and knee osteoarthritis
  - Males and females mean age among the articles: 37-61.5 years old
  - A total of 351 subjects were used in this research
- The Exclusion Criteria
  - Acute locked knee, ligament injury, or knee surgery within the previous two years.
  - Cruciate ligament injury, significant history of hip or ankle pathology, both meniscus injury, neuromuscular or systemic disease, and or classification of osteoarthritis with the Kellgren and Lawrence system (K-L) grade 3 or 4.
  - Loose bodies, ligament injuries, osteochondral defects and tumors, prosthetic replacement of knee or hip, or contraindications to physical therapy.

## EVIDENCE QUALITY ASSESSMENT

- The 9 randomized controlled articles were found based on this criteria.
- The PEDro scores ranged from 6/10 to 9/10 and the Oxford Centre for Evidence Based Medicine score was 2 for all studies found.
- Patients were put into one of two groups: medial meniscectomy or conservative management; with the option of crossing between groups at any time.

## RESULTS AND SUMMARY OF SEARCH

- Pain was measured using various scales and their values were recorded at 3-months, 6-months, and 12-months post, such as the Knee Injury and Osteoarthritis Outcome Scale (KOOS), and Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC).

Figure 1. Partial Meniscectomy



Figure 2. Conservative Management



Table 1. Overview of Medial Meniscectomy compared to Conservative Management

Article	Intervention	Number of Subjects	Duration	Results
Kise	Meniscectomy	70	2 years	Primary: knee function at 2 years and thigh muscle strength at three months; used KOOS (knee injury and osteoarthritis outcome score) a reliable and valid pain scale. Results: Questionnaires were completed at 3 and 12 months (129) and at 2 years (126). Results: KOOS score: Intervention: 54.3 Outcome: 59.6. P value: 0.72 (non-significant). Surgical Intervention provided better pain relief when comparing it to physical therapy
	Conservative Management	70		
Risberg	Meniscectomy	43	3 months	Knee extension peak torque at 3-month follow-up. Knee muscle strength was tested using the biodes. Comparison (difference in means 95% CI) between the two groups: knee extension peak torque: 24.7 with p-value <0.0001. Isokinetic knee extension (total work): 99.2 and p-value <0.0001. Both interventions provided pain relief at the 3-month follow up.
	Conservative Management	47		
Gauffin	Meniscectomy	75	3 years	KOOS -> at 3 months, 1 year, 3 years after the baseline was taken. Significant improvement in both treatment groups in the KOOS pain sub score at the 3-year follow-up, with the difference in change there was none, 95%CI -1.6 - 14.4, and p-value .115
	Conservative Management	75		
Mahajan	Meniscectomy	26	12 months	Within both comparisons of pre-op to post-op p-value <0.0001 to <0.01 (improvement). Comparison of meniscectomy and conservative management on the KOOS pain score was a p-value >0.05. When comparing the KOOS pain score, meniscectomy provided better pain relief than conservative management.
	Conservative Management	26		
Herrlin	Meniscectomy	47	6 months	P-value 0.05 was statistically significant (based off KOOS scale). Both groups improved with significantly higher scores on all subscales. Pain p-value (among both groups) 0.08, 8-wks later: 0.90, 6-mths 0.42. Both provided pain relief
	Conservative Management	43		
Silhonen	Meniscectomy	70	2 years	Based on the statistics between the two groups they had a p-value of 0.05, which would be view as statistically significant. Meniscectomy provided better pain relief when compared to conservative management.
	Conservative Management	76		
Katz	Meniscectomy	174	12 months	Between the two groups the WOMAC scale was utilized. With a higher KOOS scores indicating more severe pain in the physical therapy groups. A 10-point difference in the WOMAC physical-function score between the surgical group and physical therapy. WOMAC 95% CI -1.8 to 6.5.
	Conservative Management	176		
El Ghazaly	Meniscectomy	20	6 months	Physical Therapy improved swelling and pain when compared to the meniscectomy group, with p-values of <0.01 which was highly significant.
	Conservative Management	50		
Yim	Meniscectomy	54	2 years	Functional outcomes: VAS (visual analog scale) for pain, Lysholm knee score. Meniscectomy did not provide better functional improvement. Average VAS scores were 1.8 (range 1-5) meniscectomy group and 1.7 (range 1-4), in the non-op group (p = .675). Average Lysholm at 2-year follow 83.2 (range 52-100). Both groups reported a relief in knee pain, improved knee function, and high level of satisfaction with treatment (p-value < .05).
	Conservative Management	54		

Table 1. Comparison of the results from the research articles on meniscectomy and conservative management on pain relief.

## RESULTS AND SUMMARY OF SEARCH, CONT.

Table 2. Comparison of pain scales used among the research articles at last follow-up.

Articles SCO	Pain Scale	Treatment	Score (at last follow-up)	P-value
Kise	KOOS	Meniscectomy	54.3	P = 0.72 (no clinical difference)
		Conservative Management	59.6	P = 0.72 (no clinical difference)
Gauffin	KOOS	Meniscectomy	84 → 62	P<0.001
		Conservative Management	78 → 56	P<0.001
Mahajan	KOOS	Meniscectomy	24 +/- 6	P <0.85
		Conservative Management	28 +/- 13	P <0.05
Herrlin	KOOS	Meniscectomy	89 (75-97)	P<0.001 (no statistical difference)
		Conservative Management	86 (72-94)	P<0.001 (no statistical difference)
Katz	KOOS	Meniscectomy	19.1 (16.4 to 21.9)	P = 0.001
		Conservative Management	19.3 (16.6 to 22.0)	P = 0.001 (higher incidence of pain)
Silhonen	VAS	Meniscectomy	1.9 (1.1 to 2.7)	5.8 +/- 2.0 (p = 0.05)
		Conservative Management	2.3 (1.5 to 3.1)	6.1 +/- 2.0
El Ghazaly	VAS	Meniscectomy	6.2	1.9 +/- 0.93 (p = 0.001)
		Conservative Management	2.2	5.16 +/- 1.75 (p = 0.001)
Yim	VAS	Meniscectomy	1.8	1.8 with p = .678 (no significant difference)
		Conservative Management	1.7	1.7 with p = .237 (no significant difference)
Risberg	Pain Scale (0-10)	Meniscectomy	2	P < / = 0.05*
		Conservative Management	3	

Table 2. Final follow-up of the different pain scales used over the span of study. \* = statistically significant

## CLINICAL BOTTOM LINE

- This evidence is rated as a B level recommendation on the strength of Recommendation Taxonomy (SORT) scale.
- No significant differences in detecting a superior treatment when it came to the 12-month follow-up between the two interventions
- More studies should be done to show that arthroscopic meniscectomy helps reduce the pain, or that conservative management if implemented early can help reduce the risk of potential meniscus repair when the patients are older.
- Potential weakness is that out of the 8 studies only 3 chose PT as the more effective option and one had surgical that was more effective outcome and the other 4 had no significant differences among the two groups.

## IMPLICATIONS

- Meniscectomy should be the first option patients look into, but with conservative management not being overlooked.
- More research should be conducted to finalize whether PT or surgical intervention will produce long-term benefits when looking at pain management.
- Conservative Management caused pain relief immediately when compared to Meniscectomy.

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