

# ROLE OF PARTIAL MEDIAL MENISECTOMY IN MENISCAL TEARS

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## ABSTRACT

**Background:** Partial medial menisectomy has no adverse results. The objective of the study was to determine the demographic attributes of meniscal tears cases and to assess the radiological findings before and after partial medial menisectomy.

**Material & Methods:** This cross-sectional study was conducted in department of Orthopedics, DHQ Teaching Hospital, DIKhan and DHQ Hospital Tank from January 2005 to December 2006. Sample size was 60 and sampling technique was non probability, consecutive. Adult, admitted patients with medial meniscus injury in whom conservative treatment failed to produce relief were included in the study. Patients with associated ligamentous injuries and those having grade 3 osteoarthritis were excluded. The demographic variables were sex and age groups. Research variables were; presenting symptoms, types of meniscal tears, mechanism of injury, time interval between injury and surgery, duration of relief of symptoms after surgery and radiological findings before and after surgery. All the variables being categorical, were calculated by frequency and percentages. SPSS Version 20 was used for data analysis.

**Result:** Out of 60 patients, 42(70%) were males and 18(30%) were females. Forty (66.7%) of our patients had age below 40 years. The presenting symptoms were pain in 37(61.7%), locking in 18(30%) and instability in 5(8.3%) patients. The mechanism of injury was history of slip in 16(26.7%), sport's injury in 34(56.7%) and in the rest 10(16.7%) patients the cause was unknown. The right knee was found to be involved in 80% patients. Modal duration of time between injury and surgery was less than 1 month 20(33.3%). Modal type of meniscal tear was Bucket handle 42(70%). Modal duration of relief of symptoms after surgery was less than 1 month 40(66.7%) and modal radiological findings before and after 10 years of surgery were grade 0 55(91.7%) and 48(80%).

**Conclusion:** Mostly the right knees undergo meniscal tears in young males engaged in physical activities including sports. The major presenting symptom is pain. Partial medial menisectomy is an alternative procedure to treat meniscal tear, after conservative management fails and indication for meniscus repair is not there.

**KEY WORDS:** Meniscus; Osteoarthritis; Menisectomy.

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## INTRODUCTION

Knee osteoarthritis is said to be an age related disorder, but various factors are associated with early incidence of this degenerative process especially

obesity, female gender, trauma and positive family history.<sup>1,2</sup> Various studies have shown increased correlation between menisectomy and early osteoarthritis.<sup>3-5</sup> Complete resection of meniscus on medial side if accompanied with anterior cruciate ligament injury is the beginning of the end of the knee. Anyhow partial medial menisectomy in selected patients may not be deleterious.<sup>6</sup>

Meniscal tears are very common in young patients and the sport's injury is usually the cause of this.<sup>7</sup> Medial meniscal injury may be associated with other injuries like anterior cruciate ligament, medial collateral ligament injuries or fractures.<sup>8,9</sup> Every effort should be made to preserve the medial meniscus

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in such cases. Meniscal repair is attempted both by open surgical techniques and arthroscopically, and has varying results.<sup>10</sup> Although meniscal repairs give better term outcome, yet meniscal repairs have a higher reoperation rate than partial menisectomies.<sup>11</sup> Anyhow meniscal repair has limitations, and if done in patients 30 years old or more, chances of osteoarthritis are more.<sup>12</sup>

Meniscal injury is a painful condition and usually cause locking and swelling of the knee. Wasting of thigh especially quadriceps's atrophy is common.<sup>13</sup> Careful history and thorough clinical examination is very important for diagnosis.<sup>14,15</sup> Investigations like X-ray, CT scan and MRI etc should be done to confirm the diagnosis. Arthroscopy is very useful aid both in diagnosis and treatment, if available and proper expertise are there. There are so many treatment options available ranging from conservative to arthroscopic management. Anyhow in underdeveloped areas partial menisectomy is said to be giving comparable results.

The objective of the study was to determine the demographic attributes of meniscal tears cases and to assess the radiological findings before and after partial medial menisectomy.

## MATERIAL AND METHODS

This cross-sectional study was conducted in department of Orthopedics, DHQ Teaching Hospital, DIKhan and DHQ Hospital Tank from January 2005 to December 2006. Sample size was 60 and sampling technique was non probability, consecutive. Adult, admitted patients with medial meniscus injury in whom conservative treatment failed to produce relief were included in the study. Patients with associated ligamentous injuries and those having grade 3 osteoarthritis were excluded. Proper history, thorough examination and necessary investigations were done. Surgery was done on routine list under general / spinal anesthesia with the help of pneumatic tourniquet. Routinely patients were discharged on second post-operative day, and followed up on second week, first month, and then every three months for one year. After that patient was advised to visit on need basis. At each visit patient was assessed both clinically and radiologically. An informed consent was taken from each patient at the start of study and permission was taken from ethical committee of the hospital.

The demographic variables were sex and age groups. Research variables were; presenting symptoms, types of meniscal tears, mechanism of injury, time interval between injury and surgery, duration of relief of symptoms after surgery and radiological findings before and after surgery. Types of meniscal tears were bucket handle, longitudinal, radial and flap. Mechanism of injury included slip, sports injury and unknown cause. Radiological findings before and after surgery were from grade 0-4. All

the variables being categorical, were calculated by frequency and percentages. SPSS Version 20 was used for data analysis.

## RESULTS

Out of 60 patients, 42 (70%) were males and 18 (30%) were females. Forty (66.7%) of our patients had age below 40 years. The presenting symptoms were pain in 37(61.7%), locking in 18(30%) and instability in 5(8.3%) patients. The types of meniscal tears is given in figure 1. The mechanism of injury was history of slip in 16(26.7%), sport's injury in 34(56.7%) and in the rest 10(16.7%) patients the cause was unknown. The right knee was found to be involved in 80% patients. Duration of time between injury and surgery is given in table 1.

**Table 1. Duration of time between injury and surgery. (n=60)**

Duration in months	Number of patients
Less than one month	20 (33.3%)
From 1-2 months	14 (23.3%)
From 2-4 months	11 (18.3%)
From 4-6 months	09 (15%)
From 6-12 months	05 (8.3%)
After one year	01 (1.7%)

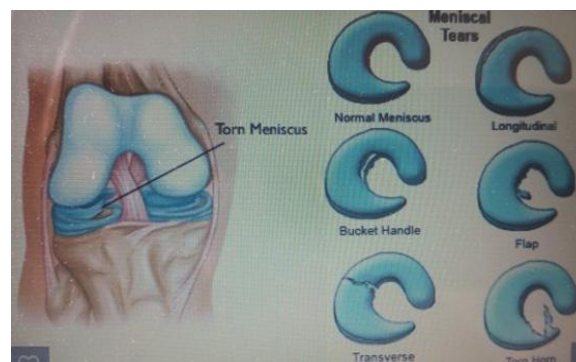
Figure 1. Types of Meniscal tears:

Bucket handle - 42 (70%).

Longitudinal - 08 (13.3%).

Radial - 07 (11.7%).

Flap - 03 (5%).



Duration of relief of symptoms after surgery is given in table 2.

**Table 2. Duration of relief of symptoms after surgery. (n=60)**

Time in months	Number of patients
Less than one month	40 (66.7%)
From 1-2 months	17 (28.3%)
More than two months.	03 (5%)

Radiological findings before and after 10 years of surgery are given in table 3.

**Table 3. Radiological findings before and after 10 years of surgery (n=60)**

Radiologically findings.	Before surgery	After 10 years of surgery.
Grade 0	55 (91.7%)	48 (80%)
Grade 1	2 (3.3%)	5 (8.3%)
Grade 2	2 (3.3%)	3 (5%)
Grade 3	1 (1.7%)	3 (5%)
Grade 4	0	1 (1.7%)

## DISCUSSION

Medial meniscus injury is much more common in male patients and also in our study 70% of patients were males.<sup>15</sup> This injury was found mostly in young patients and on right side. These factors may be explained because in our society males are more involved in outdoor activities and females get less chance in sports. The sports injury is responsible in 56.7% cases because flexion and rotational forces is the major cause of meniscal tears.<sup>7</sup> Patients are usually concerned about pain and locking in their knees. Initially conservative treatment was given to all our patients but these 60 patients were not relieved and surgery was advised. In 33.3% patients' partial medial menisectomy was performed through open anteromedial 3cm incision within first month of the injury. Bucket handle pattern of meniscal tear was observed in 70% patients. The symptoms relieved within first month of surgery in 66.7% cases, leading to early return to normal activities.<sup>16</sup>

The radiological findings before surgery was noted in both sides and recorded. There were two patients each with G1 and G2 and only one patient in G3, but none of our patient had G4 arthritis in the involved knee. After 10 years of surgery the findings were G1:5, G2:3, G3:3 and G4:1. This shows that the ratio of radiological findings is almost doubled and so the incidence of osteoarthritis may be increased after surgery.<sup>3-5</sup> But at same time joint space narrowing after 10 years was also noted in the opposite normal knee, like G1:5, G2:3, G3:1 and G4:1. This may be either due to time factor or genetic predisposition of osteoarthritis in these patients. This theory may be favored because most of G4 were found in patients aged more than 50 years old, as evidenced by other studies.<sup>17</sup>

As far as gender wise distribution of radiological narrowing of joint space is concerned, the male predominates in that. Preoperatively 4 male patients and only one female patient had joint space narrowing. While post operatively the findings are doubled i-e 9 males and 3 females has joint space narrowing. But none of our patient in this study

was symptomatic and this is very interesting and correlates other studies.<sup>6,16</sup> Anyhow as a whole partial medial menisectomy is a safe procedure when proper indications and protocol is followed.<sup>1,3,6,18,19</sup> Also the results of arthroscopic and open surgical procedures are not that much different regarding early recovery to work.<sup>20</sup> The procedures for meniscal repair are giving very promising results but require multiple surgeries and extra money loss.

## CONCLUSION

Mostly the right knees undergo meniscal tears in young males engaged in physical activities including sports. The major presenting symptom is pain. Partial medial menisectomy is an alternative procedure to treat meniscal tear, after conservative management fails and indication for meniscus repair is not there.

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**CONFLICT OF INTEREST**

Authors declare no conflict of interest.

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None declared.

**AUTHORS' CONTRIBUTION**

Conception and Design:	MSK, SR, MJK
Data collection, analysis & interpretation:	MSK, MJK, AJ, NR, WB
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