

Study Of The Functional Outcome Of Arthroscopic Management Of Meniscal Injury Of Knee Joint At Tertiary Care Centre.

Background

Meniscal injuries of the knee joint are common in sportsperson and athletes. In other individuals, meniscal injuries can also occur as a result of road traffic accident and mine workers involving rotational injuries of knee joint. Meniscal tears are the most common injury of the knee, with an incidence of meniscal injury resulting in meniscectomy of 66 per 100,000 population per year. Menisci are essential for the normal function of the knee joint.

AIM AND OBJECTIVE: To find Functional Outcome Of Arthroscopic Management Of Meniscal Injury . **Material and methods:** This prospective study was carried out among patients with meniscal injuries of knee joint and getting admitted under orthopaedic department at tertiary care center. Study was carried out for a period of 18 months. Patients aged between 18-60 years with clinically suspected meniscal injuries and suggestive MRI findings of meniscal lesion were included in the study. Patients with infective condition in and around the knee joint, meniscal injuries with tibial plateau fractures and/or distal femoral fracture and patients with medical contraindications was excluded from the study. Patients with both clinically suspected and MRI diagnosed meniscal injury were admitted. Data analysis was done with the help of appropriate software version. Quantitative data was presented with the help of mean, standard deviation, median and comparison among study group was done with the help of unpaired T test. Qualitative data was represented with frequency and percentage tables, association among study parameters was assessed with the help of chi- square test. P value less than 0.05 is taken as significant level. **Results:** Mean age in years was 48.56 ± 6.43 , ranging from 51 to 73 years. Majority 53.33% were females.

Common mode of injury was road traffic accident (56.6%). Medial meniscus was commonly involved (73.3%). Applying multiple regression to KOOS score r^2 value is 0.9 and p value was zero.

43.4% cases showed good functional outcome, 36.6% showed excellent and 20% showed fair outcome. Complications were seen among 17% cases. **Conclusion:** present study concludes that as meniscal tear is very common injury among adults. This should be diagnosed and treated at earliest. Arthroscopy gives good post-operative results. The functional outcome is good in arthroscopy treated patients and complications noted were also very less. So, arthroscopic meniscal repair can be considered as a good operational tool for meniscal repair.

Keywords: Functional Outcome, Arthroscopic Management, Meniscal Injury

Introduction

Meniscal injuries of the knee joint are common in sportsperson and athletes. In other individuals, meniscal injuries can also occur as a result of road traffic accident and mine workers involving rotational injuries of knee joint. Meniscal tears are the most common injury of the knee, with an incidence of meniscal injury resulting in meniscectomy of 66 per 100,000 population per year. Menisci are essential for the normal function of the knee joint. ¹⁻

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The menisci act as a joint filler, compensating for gross incongruity between femoral and tibial articular surfaces. The menisci prevent capsular and synovial impingement during flexion-extension movements. It is believed to have joint lubrication properties. The menisci have been shown to play a vital role in load transmission across the knee joint. The menisci have shock or energy-absorbing functions. ^{4,5} Meniscus injuries are produced most commonly by rotation as the flexed knee moves toward an extended position. The knee is a complex synovial joint allowing flexion, extension, anteroposterior gliding and internal-external rotation. The major articular surfaces are the medial and lateral condyles of the

femur and patellar surface. Four bands of tissue, the anterior and posterior cruciate ligaments, and the medial and lateral collateral ligaments connect the femur and the tibia and provide joint stability.^{6,7}

Meniscal injuries are very frequent which further decreases the joint stability. There are various methods to diagnose and manage meniscal injury, Arthroscopy is one of such. This study was carried out to see the effectiveness of arthroscopy in meniscal injury.⁸

Aim And Objective: To find Functional Outcome Of Arthroscopic Management Of Meniscal Injury .

Material and methods: This prospective study was carried out among patients with meniscal injuries of knee joint and getting admitted under orthopaedic department at tertiary care center. Study was carried out for a period of 18 months. Patients aged between 18-80 years with clinically suspected meniscal injuries and suggestive MRI findings of meniscal lesion were included in the study. Patients with infective condition in and around the knee joint, meniscal injuries with tibial plateau fractures and/or distal femoral fracture and patients with medical contraindications was excluded from the study. Patients with both clinically suspected and MRI diagnosed meniscal injury were admitted. All patients were operated under spinal anaesthesia and tourniquet was used. Most common combination used are anterolateral portal for arthroscope and anteromedial portal for the instrumentation. Arthroscopic meniscal repair was done by Outside-in technique. In this technique two 18 gauge spinal needles was passed from outside the joint to inside the joint under arthroscopic vision. After reduction of meniscal fragments, they was tied with nonabsorbable suture materials through the spinal needles. Postoperatively Jones type padded bandage was applied and physiotherapy was started from day 1. Dressing was checked on the 2nd and 5th post operative day. Suture removal was done after 12th post operative day. Patients was followed on 1st, 2nd, 3rd, and 6th months and there after yearly. Patients was allowed to bear full

weight on second postoperative day onwards in arthroscopic partial meniscectomy group. Weight bearing should be avoided for at least 6 weeks in meniscal repair group.

Sample size calculation:

Formula $4pq/l^2$

Study by Stein et al ⁽¹⁰⁾ showed that functional outcome after meniscal repair was 96.2%,

P=96.2%, q=100-p= 3.8% and l (allowable error)= 10.

Sample size = $4*96.2*3.8/ 100 = 14.62$

Thus total 30 sample was taken

Statistical analysis: Following the above procedure, the findings was recorded in the proforma. These findings was entered in Microsoft Excel 2010. The results was compiled by using suitable tables and graphs wherever necessary. The variation was analysed as a percentage of the total and reported. Data analysis was done with the help of appropriate software version. Quantitative data was presented with the help of mean, standard deviation, median and comparison among study group was done with the help of unpaired T test. Qualitative data was represented with frequency and percentage tables, association among study parameters was assessed with the help of chi- square test. P value less than 0.05 is taken as significant level.

Results: Mean age in years was 48.56 ± 6.43 , ranging from 51 to 73 years. Majority 53.33% were females. Common mode of injury was road traffic accident (56.6%). Medial meniscus was commonly involved (73.3%).

Table 1: Meniscus involved

Meniscus involved	Frequency	Percentage
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Medial	22	73.3%
Lateral	8	26.6%
Total	30	100%

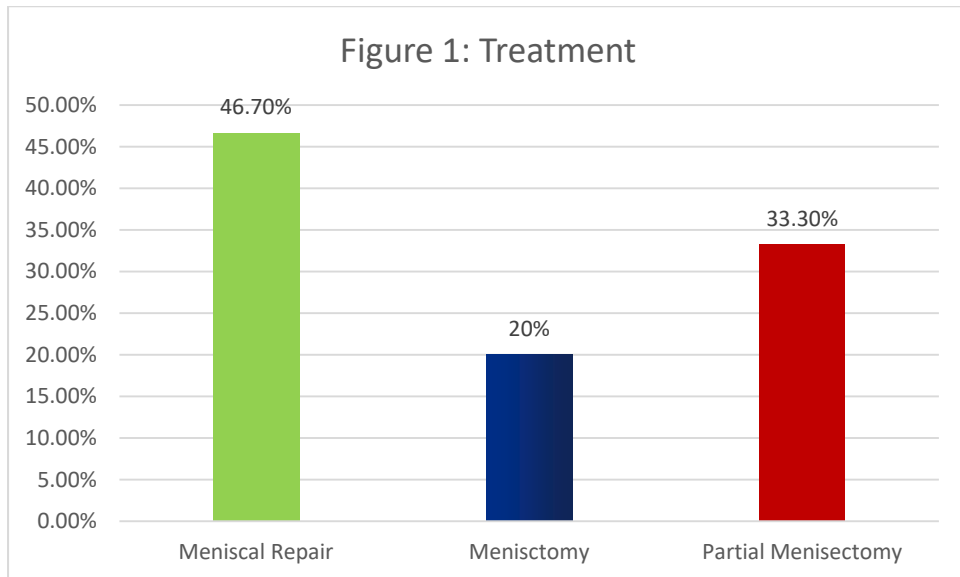


Table 2: KOOS score

KOOS score	Mean	SD	P value
Preoperative	65.96	6.8	<0.0001*
Day 2	69.4	7.5	
1 month	74.8	6.2	
3 month	77.93	6.7	
6 month	79.5	7	

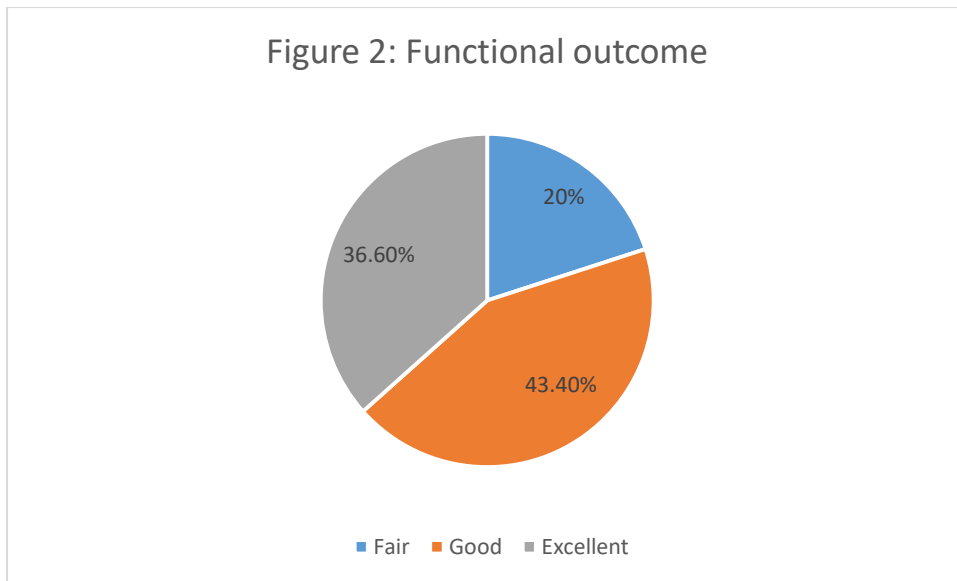


Figure 2 shows that on functional outcome 43.4% gave good outcome, 36.6% had excellent results, 20% had fair results.

Table 3: Complications

Complications	Frequency	Percentage
No complication	25	83.3%
Anterior Knee Pain	3	10%
Knee Stiffness	2	6.7%
Total	30	100%

Discussion:

Mean age in years was 48.56 ± 6.43 , ranging from 51 to 73 years. Majority 53.33% were females. Common mode of injury was road traffic accident (56.6%). Medial meniscus was commonly involved (73.3%). 46.7% undergo meniscal repair, 33.3% partial menisctomy and 20% menisctomy. Applying multiple regression to KOOS score r^2 value is 0.9 and p value was <0.0001 , which shows statistical significance.

43.4% cases showed good functional outcome, 36.6% showed excellent and 20% showed fair outcome. Complications were seen among 17% cases.

Study by Johnson et al ⁽⁹⁾ reviewed a consecutive series of 48 patients who had arthroscopically assisted repair of medial meniscal tears and found clinical success rate of 76%. Study by Stein et al ⁽¹⁰⁾ showed that pre-injury level of activity was achieved in 96.2% after repair compared with 50% after meniscectomy. Rockbom and Gillquist ⁽¹¹⁾ report on a 13 year follow-up of 31 patients who underwent open meniscal repair. They found an overall failure rate of 29%. However in a follow-up study ⁽¹²⁾ at 6.6 years, this success had declined to just 71.4%. Nepple et al ⁽¹³⁾ found similar results in a systematic review of 13 studies with a minimum of five year follow-up. A pooled rate of failure from 20.2% to 24.3% was found for all repair techniques. It was noted that modern all-inside repair devices were not included in the review and long term results are still awaited before firm conclusion on the best repair technique and device can be made. Drawbacks associated with suture based devices include, increased costs, retained polymer fragments, chondral injury and a significant learning curve with a high rate of anchor pullout during insertion.

Conclusion: Present study concludes that as meniscal tear is very common injury among adults. This should be diagnosed and treated at earliest. Arthroscopy gives good post-operative results. The functional outcome is good in arthroscopy treated patients and complications noted were also very less. So, arthroscopic meniscal repair can be considered as a good operational tool for meniscal repair.

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