

A Prospective Study of Comparing Functional Outcome in Case of Meniscal Injury Treated with Arthroscopic Meniscectomy Vs Meniscal Repair

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ABSTRACT

Background: A meniscal tear is the most common injury to the knee, occurring from both athletic events and activities of daily living. Generally, the results of repair have been good, with high long-term success rates. This study aims to compare the functional result of arthroscopic meniscal repair and arthroscopic meniscectomy.

Materials & Methods: This study was carried out in the Department of Orthopaedics, Mahatma Gandhi Medical College and Hospital, Jaipur for comparing the functional outcome of arthroscopic meniscectomy and meniscal repair. 47 of Meniscectomy and 35 of Meniscal Repair was done in our study. Statistical analysis was done using SPSS (Statistical package for Social science) 16.0 software. Categorical variables are expressed as frequencies and percentages.

Results: Our study showed that the mean age for Meniscal Repair was 32.86 vs 29.89 for Meniscectomy. There was no significant gender specific difference while comparing both groups with a p-value of 1.0. The mean follow-up for both the groups were same of 1.2 years with a non-significant p-value of 0.78. The duration of surgery was 84.5 minute in meniscal repair as compared to 45.6 minute. There is significant difference in surgical time required with p-value of 0.0001. No significant differences for Lysholm Score and Tegner activity

level reduction, hkss, womac and vas scores in such a short term follow up.

Conclusion: We concluded that more randomized studies with larger sample sizes and longer follow-up are needed to further show the benefits of meniscal repair in terms of patients perceptions of the outcome and prevention of posttraumatic osteoarthritis.

Keywords: Meniscal Repair, Meniscectomy, Functional Outcome, Arthroscopy.

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INTRODUCTION

The concept of meniscal preservation is based on three columns: as partial a meniscectomy as possible, thanks to arthroscopy, meniscal repair, and leave the meniscus alone. The first surgical repair of a meniscus was performed in 1885 by Annandale.¹ Now technique of meniscal repair has become more precise, advancing from open meniscal suture to combined open and arthroscopic techniques and then to arthroscopic all-inside techniques. The results have been analysed and indications are clearly refined, concerning the choice among meniscectomy, surgical repair, and meniscus sparing. In children meniscal lesions are subject of intensive investigation and comprise dysplastic and traumatic lesions. Meniscectomy in these young patients is abandoned in favor of conservative techniques. Meniscal replacement, with an allograft and recently with an artificial substitute, is a upcoming surgical concept, but the procedure must be carefully evaluated before generally adopted.

A meniscal tear is the most common injury to the knee, occurring from both athletic events and activities of daily living. Approximately two-thirds of all derangements of the knee joint are due to lesions or degenerative changes of the menisci.²⁻⁴

Meniscal tears occurring in isolation or in association with ligamentous injury, can result in marked physical impairment. The presence of clinical symptoms of pain, swelling, locking, catching, and loss of motion often require surgical intervention. Arthroscopic treatment of meniscal injuries has become one of the most common orthopaedic surgical procedures in the United States.⁵

To adequately evaluate and treat such injuries, appreciation of the types of tears and their significance in regard to treatment options is needed and accurate preoperative diagnosis of these injuries allows more effective patient management. The important role of the meniscus for load transfer in knee function is well documented.⁶⁻⁸ A loss of the meniscus will lead to cartilage

changes and, especially in conjunction with instability, the risk of osteoarthritis may be increased.⁹⁻¹¹ It has also been demonstrated that meniscectomy in unstable knees will lead to deterioration of knee function.¹²⁻¹⁴ Therefore, total meniscectomy as advocated by Smillie¹⁵ has been replaced by partial meniscectomy.¹⁶⁻¹⁸ Meniscus repair has been suggested where the rupture occurs within the vascular zone.¹⁹⁻²¹ Generally, the results of repair have been good, with high long-term success rates. This study aims to compare the functional result of arthroscopic meniscal repair and arthroscopic meniscectomy.

MATERIALS & METHODS

This study was carried out in the Department of Orthopaedics, Mahatma Gandhi Medical College and Hospital, Jaipur for comparing the functional outcome of arthroscopic meniscectomy and meniscal repair.

Sample Size: 47 of Meniscectomy and 35 of Meniscal Repair

Inclusion Criteria

- Meniscal injury
- Skeletal mature patient
- Unilateral or bilateral disease

Exclusion Criteria

- Skeletal immaturity
- Malalignments
- Patient not fit for SA/GA due to any reason (co-morbidities etc.)
- Loss to follow up
- Age<18yr

Protocols and Procedures

- X ray knee (AP and LATERAL views) and MRI knee would be taken along with routine pre operative blood investigations including CBC, ESR, RBS, Electrolytes, urea, creatinine USG/MRI.
- Care was taken not to get in to any sort of conflict of interest in the community.
- The patient and the concerned doctor were informed about the evaluation of the procedure as soon as the procedure is done.

Statistical Methods

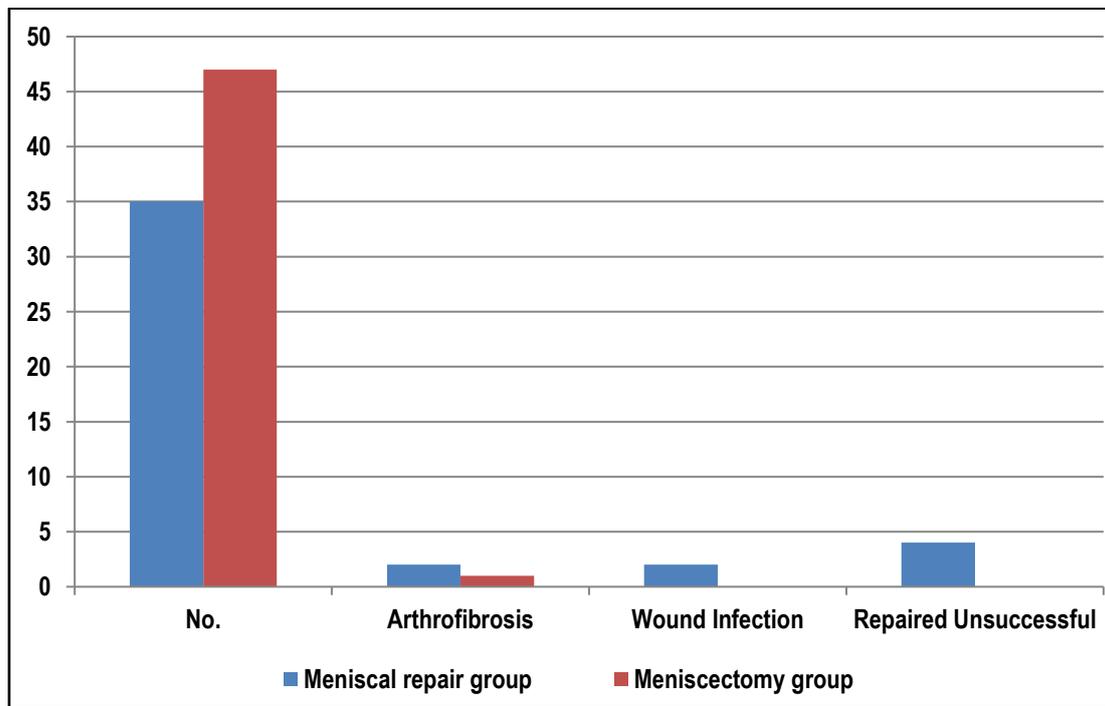
Statistical analysis was done using SPSS (Statistical package for Social science) 16.0 software. Categorical variables are expressed as frequencies and percentages.

Table 1: Demographic distribution of patients

Demographic distribution	Meniscal repair group (N=35)	Meniscectomy group (N=47)	P-value
Age			
Mean±SD	32.86±11.02 yrs	29.89±6.715 yrs	0.1358 NS
Gender			
Male	30	40	1.000
Female	5	7	
Follow-up (yrs)			
Mean±SD	1.237±0.2691 yrs	1.219±0.3160 yrs	0.7868 NS

Table 2: Characteristics of patients

Characteristics	Meniscal repair group (N=35)	Meniscectomy group (N=47)	P-value
Duration of surgery (Minutes)			
Mean±SD	84.51±4.755	45.62±7.064	<0.0001***
Tegner score			
Pre- operative	5.514±1.197	5.702±1.59	0.4763 NS
Post- operative	4.143±2.198	4.766±1.355	0.1174 NS
VAS score			
Mean±SD	2.520±0.3954	2.460±0.4205	0.5111 NS
Lysholm score			
Pre-operative	24.23±2.030	24.49±1.898	0.5520 NS
Post- operative	75.34±29.74	88.60±14.50	0.0094**
Womac score			
Pre- operative	18.51±1.147	18.47±1.120	0.8554 NS
Post- operative	6.943±5.368	4.702±2.321	0.0123*
HSSK score			
Pre- operative	25.60±2.546	24.81±2.787	0.1909 NS
Post- operative	65.11±19.33	70.17±14.39	0.1781 NS



Graph 1: Complications

RESULTS

Our study showed that the mean age for Meniscal Repair was 32.86 vs 29.89 for Meniscectomy. All patients involved in both the group are young without significant p-value of 0.1358. There was no significant gender specific difference while comparing both groups with a p-value of 1.0. The mean follow-up for both the groups were same of 1.2 years with a non-significant p-value of 0.78 (table 1). In our study the duration of surgery was 84.5 mins in meniscal repair as compared to 45.6 minute. There is significant difference in surgical time required with p-value of .0001.

Tegner score of 5.5 as mean for repair group vs 5.7 for meniscectomy in postoperative while in preoperative has a mean value of 4.1 in repair and 4.7 in meniscectomy group .All the value shows no significant p-value of 0.4 and 0.10 . VAS score mean of meniscectomy is 2.4 and repair is 2.5 with a p-value of .51 which is not significant.

Lysholm score shows significant score among meniscectomy group compared to repair group with a significant p-value of .0094. Lysholm shows meniscectomy to be better functional outcome with minor difference on score and womac score mean of preop repair as 18.51 and meniscectomy as 18.47. In postoperative the mean mean of repair is 6.9 vs 4.7 of meniscectomy with significant p-value of .012. Womac shows meniscal repair has an edge.

The HSSK score with a mean of 25.6 among preoperative meniscal repair group and 24.8 among meniscectomy group. Postoperative score mean is 65.11 for repair and 70.17 for meniscectomy with non-significant values which means that both groups have similar outcomes on hssk score (table 2). Our study showed that the 9 out 82 patient developed complications out of which 8 patient were of repair group and 1 out 47 was from meniscectomy group. 3 patient developed arthrofibrosis for which arthroscopic arthrolysis was done and 2 developed wound infection for arthroscopic debridement and lavage done. 2 patient had unsuccessful repair confirmed on second look arthroscopy for which meniscectomy was done later on (graph 1).

DISCUSSION

In our study the average age of patient were young with 28 years of meniscal repair vs 27 years for meniscectomy because this injury occurs in young sports person. Most of the patient in both the group are males 84% in meniscal repair and 81% in Meniscectomy group as males are most involved in outdoor activities seeking such injuries more frequently. 40% patient had Fall, 22% while playing football, 31% while vehicle trauma without contact at the knee, 5% by sudden hit while playing and sudden reflexive jerk, 5% while wrestling, 5% were performing taekwondo. None of has any contact injury to knee stating the fact all developing injury either because of excessive motion of femur over tibia causing trapping of menisci in between leading to tear.

In our study 24 patient were had Grade 0, 22 had Grade 1, 36 had Grade 2 changes of cartilage degeneration on preop MRI showing that patient with meniscal tear usually do not have a cartilagenous degeneration on initial presentation and after a followup of 1.7 years (mean) there were no sign of osteoarthritis while the long term study do state meniscectomy lead to early osteoarthritis compared to meniscal repair.²¹ Duration of surgery was 86 minutes for meniscal repair while 46 minute for meniscectomy showing significant difference with p-value of .0001 stating the time needed to perform meniscal repair was significantly higher than that of meniscectomy. All the score (Lysholm,Womac, HSSK,VAS) were falling the same value with non-significant difference in p-value for both the showing that there is no significant difference in functional outcome of both groups in a mean follow up of 1.7 year in our study while in long term there is a major difference and better score with meniscal repair.²²

Complication were there with 3 patient developed arthrofibrosis for which arthroscopic arthrolysis was performed, 2 developed wound infection needed arthroscopic debridement and antibiotic as per culture and sensitivity, 4 patient developed unsuccessful repair confirmed on second look arthroscopy and later on were converted to meniscectomy. To comment the complication rate

and unsuccessful repair further study with long term study with larger volume of patient is needed. Meniscal repair has long rehabilitation (6 months) compared to meniscectomy (6 weeks). If patient does not have time for such a long rehabilitation of 6 month for meniscal repair and wants early return to the sports activity than meniscectomy may be considered.

CONCLUSION

We concluded that functional outcome of meniscal repair and meniscectomy has no significant differences for Lysholm Score and Tegner activity level reduction, hkss, womac and vas scores in such a short term follow up. Functional outcome of both the groups were good with 90% success rate.

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