

Meniscal Tear at Knee: Repair or Resect? An Early Experience from a University Hospital in Nepal

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ABSTRACT

Background

The meniscus plays an important role in maintaining healthy articular cartilage. Meniscus tear, one of the common intra-articular knee lesions, is treated by either debridement or repair.

Objective

This study aims at identifying the early outcome of meniscus tears treated by debridement or repair. This study also elaborates on the spectrum of meniscal injuries presented in a tertiary care hospital in Nepal.

Method

A retrospective descriptive cross-sectional study was conducted at Orthopedic Department of Dhulikhel Hospital from February 2018 until January 2020 among patients who underwent knee arthroscopies for meniscal tears treated either by debridement or repair. Patients having intra articular fractures, osteochondral injuries and multi-ligament injuries were excluded. The meniscal tears were classified according to location and type of tear. Those patients who had at least one-year of follow up were evaluated with Lysholm score for functional outcome. Data were compiled and analyzed with Microsoft Excel 2011.

Result

One hundred and ten cases of meniscal tears were managed over the study period. Ninety-three cases could be traced for outcome evaluation, which included 50 cases of meniscal debridement and 43 cases of meniscal repair. The mean Lysholm score of the patients who received debridement was 81.5 (SD 10.4) and those who received meniscal repair was 84.9 (SD 9.1) ($p=0.105$). The population distribution was found to be similar in both the groups according to age and sex distribution and associated ligamentous injuries.

Conclusion

Good functional outcome was seen for meniscal tears managed with debridement or repair in at least one year follow up and could not establish one modality of management better than the other.

KEY WORDS

Arthroscopy, Debridement, Meniscus, Repair

INTRODUCTION

Meniscus play an important role in maintaining healthy articular cartilage by both increasing the joint congruity and contact area, and preventing the focal concentration of stresses.¹ Meniscal lesions represent the most common intra-articular knee injury, and are the most frequent cause of surgical procedures performed by orthopedic surgeons.^{2,3}

The standard of care for meniscal injuries has been debridement, however recent trend is towards repair.⁴ While debridement is claimed to be effective and cost effective, repair on the other hand, restores the anatomy, biomechanics and kinematics.^{4,5} There is paucity of evidence regarding the functional outcome among the cohort managed with debridement versus repair.

Hence, this study aimed at identifying the functional outcome between the two groups as evaluated by the Lysholm score. This study also elaborates on spectrum of meniscal injuries presenting in a tertiary care hospital in Nepal.

METHODS

A retrospective descriptive cross-sectional study was conducted at Orthopedic Department of Dhulikhel Hospital from February 2018 until January 2020 after obtaining the ethical clearance from Institution Review Committee (IRC) of KUSMS. Medical records of all the patients who received arthroscopic meniscal repair or debridement for meniscal tear, irrespective of isolated anterior or posterior cruciate ligaments reconstructions status, were included in the study. Patients having intra articular fractures, osteochondral injuries and multi-ligament injuries were excluded from the study. The demographic information and the per-operative findings were recorded. The meniscal tears were classified according to location and type of tear. The decision on debridement or repair of the tear was based on standard guidelines. Repair included either outside in suture shuttle technique as described by Joshi et al. or all-inside technique with use of a Lasso device.⁶ Those patients who had at least one-year of follow up were evaluated with Lysholm score for functional outcome. Data were compiled and analyzed with Microsoft Excel 2011.

RESULTS

There were 110 cases of meniscal tears managed over two years period. Among them, 93 cases could be traced for functional outcome evaluation, which included 50 cases of meniscal debridement and 43 cases of meniscal repair (figure 1 and 2). The mean Lysholm score of the patients who received debridement was 81.5 (SD 10.4) and those who received meniscal repair was 84.9 (SD 9.1). These were statistically not significant ($p=0.105$) showing there

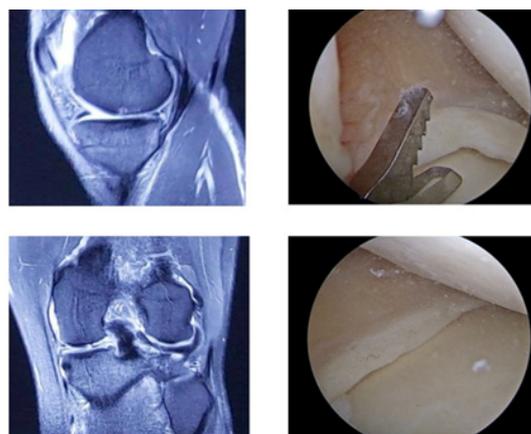


Figure 1. MRI and arthroscopic pictures showing meniscus tear that was debrided

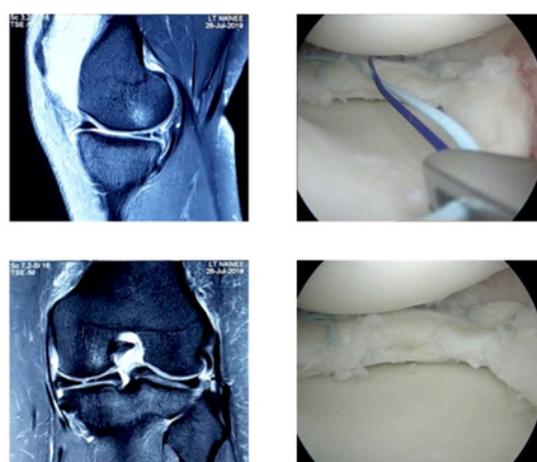


Figure 2. MRI and arthroscopic pictures showing meniscus tear that was repaired

was no differences in functional outcome evaluation in short term (table 1). The population distribution was found to be similar in both the groups according to age and sex distribution and associated ligamentous injuries (table 2).

Table 1. Functional outcome according to Lysholm score

Outcome (Lysholm Score)	Debridement Group (N=50)	Repair Group (N=43)	(P = 0.105)
Mean Score	81.5 (SD 10.4)	84.9 (SD 9.1)	
Excellent (100 to 91)	14 (28%)	9 (21%)	
Good (90 to 84)	9 (18%)	20 (46.5%)	
Fair (83 to 65)	25 (50%)	13 (30.2%)	
Poor (<65)	2 (4%)	1 (2.3%)	
Total	50 (100%)	43 (100%)	

Twisted knee injury while carrying out activities of daily living was the common mode of injury. Medial meniscus tear was the commonest seen in 71 (76.3%) cases in our series while lateral meniscus tear was present in 22 (23.7%) cases. Eight of the patients had both medial and lateral menisci tear. Posterior horn tear and longitudinal tears were the common types of meniscus tear (table 3).

Associated anterior cruciate ligament injury was seen in 50 cases and posterior cruciate ligament injuries were seen in five cases and all of them were managed appropriately.

Table 2. Characteristics of the two groups

	Debridement Group (N=50)	Repair Group (N=43)
Mean age	34 (SD 12.8)	34.3 (13.2)
Males	27	22
Females	23	21
Associated ACL injury (N=50)	27 (54%)	23 (53.4%)
Associated PCL injury (N=5)	3 (6%)	2(4.6%)

DISCUSSION

This study showed good outcome in both the groups and there were no statistical and clinical differences on the mean Lysholm score in at least one year of follow up. The reason why both the groups had better results could be explained by the fact that meniscal tear would cause symptoms due to mechanical effect of locking or consequently low grade inflammation owing to repeated micro injuries.⁷ Both the treatment modalities addressed these by removing the torn part or repairing it and hence improved the overall outcome. The current study, however, evaluated only postoperative outcome and did not compare the preoperative status to the postoperative outcome in either groups. The current study is in align with the study done by Stein et al. found surgical management, whether debridement or repair, benefitted all the patient and there was no differences in functional outcome between the groups in their study that comprised of 81 patients on either groups.⁵ At an average of 8.8 years of follow up they found progression to osteoarthritis knee was slightly more among the patients managed with meniscal debridement.⁵ They could not, however, deduce that repair was better than resection as treatment was not randomized but specifically chosen population depending on the type of

Table 3. Characteristics of Meniscal tear

Location	Types
Anterior: 5	Longitudinal: 43
Body: 18	Horizontal: 15
Posterior: 46	Radial: 6
Bucket Handle: 23	Complex: 15
Not documented: 1	Not documented: 14

tear. Shelbourne et al. in their retrospective study also demonstrated no differences in functional outcome as assessed by International Knee Documentation Committee (IKDC) Score among lateral meniscus tears debridement versus repair among ACL reconstructed groups in six to eight years of duration.⁸ In a study, Xu et al. found both the modalities of management were equally common and effective for managing meniscal tear however they showed the repair group had better functional outcome on average of seven years follow up.⁹ However their meta-analysis only included seven articles of variable study designs; only one was a prospective randomized control trial. The outcome evaluation tools they used were also not uniform. Eken et al. found better results in the meniscal repair group, however, this was significant at statistical level (99 versus 93 in IKDC scale) but at clinical level both groups had excellent outcome (table 4).¹⁰ The current study evaluated functional outcome at relatively shorter period i.e., one to two and a half years. Hence it will be too early to comment on the long-term outcome that depends upon the actual healing of meniscal tears and its effect on articular cartilage. The same cohorts when followed up for at least five to ten years, would distinguish the ‘true’ differences, if one exists, between the groups attributable to healing of the meniscus or its protective effects on articular cartilage. A prospective study with a long-term follow up study could be a future direction. Further studies with MRI evaluation of the knees at final follow up to evaluate healing of the tear or a second look arthroscopy would be more informative.

Table 4. Literature Review on the outcome of management of meniscal tears.

SN	Author	Year	Sample size	Study design	Tools used	Follow-up Duration	Outcome
1	Current study	2021	93	Retrospective Descriptive Observational	Lysholm	1 - 2.5 years	Both groups had a good outcome
2	Bidders et al. ¹¹	2000	40	Prospective Randomized	IKDC	1 - 3 years	Variable
3	Vinayaga et al. ¹²	2001	54	Retrospective Observational	Lysholm and Tegner scoring	3 - 7 years	The repair group had a better outcome
4	Shelbourne et al. ⁸	2004	81	Retrospective Descriptive observational	IKDC	6 - 8 years	Both groups had a good outcome
5	Stein et al. ⁵	2010	46	Retrospective Descriptive Observational	Lysholm	8.8 years	Both groups had a good outcome
6	Xu et al. ⁹	2015	367	Meta-analysis	Lysholm / IKDC / Tenger Activity	7 years	The repair group had a better outcome
7	Eken et al. ¹⁰	2020	30	Retrospective Observational	Lysholm / IKDC	3.6 years	The repair group had a better outcome

CONCLUSION

The current study showed good functional outcome for meniscal tears managed with debridement or repair in at least one year follow up and could not establish one

modality of management better than the other. Further study with standardization in patient selection and long term follow up of patients could give a firm conclusion.

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