



EVALUATION OF EFFECTIVENESS OF ARTHROSCOPIC MANAGEMENT IN MENISCAL INJURIES

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KEYWORDS :

INTRODUCTION

The menisci of knee joint play an important role in shock absorption. They are in shape of crescentic plates made of fibrocartilage on the articular surface of the tibia and help in deepening the surface. Therefore, the meniscal function is very essential to the normal function of the knee joint such as transmission of the load, absorption of the shock in the knee joint, acting as a secondary stabilizer of the knee joint as rotary stabilizers, and contributing to proprioception of the knee joint. They play crucial role for the smooth transmission as the knee moves from flexion to extension.

Traumatic lesions of the meniscus are commonly encountered in the practice of knee surgery. Meniscal tears commonly occur due to a shearing force between the femur and tibia. In younger patients, this injury is caused by a twisting force on a weight loaded flexed knee. Often these would result in bucket-handle tears, where there is either a vertical or oblique tear in the posterior horn running towards the anterior horn, forming a loose section which remains attached anteriorly and posteriorly. The posterior horn of the meniscus is the most common location, and longitudinal tears are the most common type of injury. The characteristics of tear like length, depth, and position of the tear depends upon the position of the posterior horn in relation to the femoral and tibial condyles at the time of injury. Usually in older patients, tears tend to be horizontal tears as a sequence of degeneration associated with ageing. The difference in tear type between the populations is explained by the three-dimensional fibrous structure of the meniscus, where horizontal delamination occurs in degenerative injuries, while the fibrous structure is ruptured in a vertical direction in younger patients. The incidence of meniscal tear is six per 1000 population with 2.5 to 4 times gender variation of male predominance with injury occurring at age peaks of 20 to 29 years.¹ Due to significant evolution of understanding the knowledge about the anatomy and function of the meniscus that evolved over the past few decades, trends in minimal invasive surgery in preventing extensive damage to the much complicated anatomy of the knee has been rising.¹ With the advent of advances of arthroscopic surgery these days, open total meniscectomy which was the preferred treatment, are now directed at meniscal preservation and even restoration.¹ Meniscal disorders are now commonly treated with either Arthroscopic partial meniscectomy or meniscal repair. Currently, efforts are being studied to replace and/or regenerate the meniscus in an effort to restore function hence there is need to have a study of this subject.¹

MATERIALS AND METHODOLOGY

This study includes 45 cases of meniscal injuries of knee treated by closed arthroscopic partial meniscectomy or repair at Gandhi Medical College & Hospital, Secunderabad. Follow up has been done up to 6 months. This is prospective time bound study conducted during the period from January 2017 to March 2019. The functional outcomes of the patients were recorded analysed and statistical analysis is done with the data collected by SPSS (Statistical package for Social Science) 26.0 software.

Inclusion Criteria

1. Patients aged between 10-40 years
2. Patients with clinically suspected meniscal injuries

Exclusion Criteria

1. Patients aged less than 10 years and more than 40 years
2. Patients with infective condition in and around the knee joint
3. Meniscal injuries with tibial plateau fractures and distal femoral fractures.

Protocols and Procedures

- X ray knee (AP and LATERAL views) and MRI knee were taken along with routine preoperative blood investigations including CBC, ESR, RBS, Electrolytes, urea, creatinine USG/MRI.
- Care was taken not to get into 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 was done.

STATISTICAL METHODS

Statistical analysis was done using SPSS (Statistical package for Social science) 26 software. Categorical variables were expressed as frequencies and percentages.

RESULTS

The study consisted of 45 cases of meniscal injuries with or without ACL tear, treated surgically by arthroscopic meniscal repair and partial meniscectomy. Age Distribution : The age ranged from 10- 40 years with mean age of 28.27 years in our series of meniscal injuries. Maximum incidence of meniscal injuries was found between 20-30 years age groups. Most of the patients had motor vehicle accidents and others were sports persons and manual workers. Sex distribution: 37 patients were male (82.2 %), 8 patients were female (17.8 %) in our series of meniscal injuries (). Meniscal injuries were more common in males which reflects male being more involved in sporting and manual activities that predisposes them to rotational injuries of the knee. Out of 45 cases in our study of Meniscal injuries the (Rt) knee was involved in 26 cases (57.8%) and (Lt) knee was involved in 19 cases (42.2%). 19 patients (42.2 %) had Meniscal injuries due to motor vehicle accident and 18 patients (40%) due to sports related injuries, 8 patients (17.8 %) due to other causes (). Out of 45 cases in our study of meniscal injuries were 33 cases of longitudinal tear (73.3 %), 7 cases of oblique tear (15.56 %), 3 cases of horizontal tear (6.7 %), 1 case of radial tear and one case of discoid meniscus with tear (4 %) (). Mean duration of hospital stay in our study of arthroscopic meniscal repair was average of 3.89 days and return to work 15.18 days. The functional outcome of patients assessed by Tapper and Hover showed 51.1% excellent results, 26.7% good, 10 % showed fair to poor results (). Lysholm knee scoring has a mean score of 79.96 with 8.54 Standard deviation). Our study showed that the 1 out 45 patients developed wound infection for which arthroscopic debridement and lavage was done.

DISCUSSION

The complex ultrastructure of the meniscus determines its vital functions contributing for the knee joint, the lower extremity, and the body. Different patterns of meniscus lesions have different implications. It is important to recognize the specificity of different meniscal tears in order to decide the best choice for treatment. There are three main methods of modern surgical management of meniscus tears in the current practice which includes: arthroscopic partial meniscectomy; meniscal repair with or without augmentation techniques; and meniscal reconstruction. Majority of our patients were male in an age range of 20 -30 years which is a reflection of male being more involved in sporting and manual activities which must be contributing to cause acute meniscal injuries. These were supported by a Systematic review with metaanalysis done by Snoeker BA et al in which the study showed male gender being the stronger risk factor for meniscal injuries. In our study majority of the cases were motor vehicle accidents with twisting injuries, followed by sports related injuries. Therefore, motor vehicle accident and sports related injuries are the common causes of Meniscal injuries. Similar studies done by G.I. Droso and J.L. Pozo¹ elicited the causes and mechanisms of meniscal injuries that demonstrated similar results. 24 meniscal injuries associated with ACL / PCL tear, 20 isolated Meniscal injuries were found in our series of study and one meniscal injury associated with discoid meniscus in lateral meniscus. Medial meniscal injuries were significantly greater than lateral meniscal injuries. Longitudinal (bucket handle) tear 33 cases (73.3%), oblique tear 7 cases (15.56 %), horizontal tear 3 cases (6.7%), radial tear one case (2 %), complex tear (Discoid meniscus) one case (2%) were found. These findings are consistent with rates in the literature.¹ Mean duration of hospital stay in our study of arthroscopic meniscal repair was average of 3.89 days compared to 2.4 days (range 1 to 7 days) as reported by Simpson D.A, Earlier return to work was very clearly evident. Majority of our patients returned to their premeniscalinjury activity in 15.18 days where as in series of RJA Tregonning mean time for return to work was 12.9 days and in series of DANDY D.J¹⁰ 10.5 days. During intra operative period there was no incidence of breakage of instrument in knee joint. One out of 45 cases got postoperative infection which was treated with arthroscopic debridement and lavage. There was no incidence of deep vein thrombosis (DVT). Arthroscopic partial meniscectomy was the most frequently performed surgical procedure for the treatment of meniscal tears. The short-term clinical results were found to be highly successful, but a high rate of progression to osteoarthritis at long term was also demonstrated.¹ Since the first arthroscopic meniscal repair procedure, reported by Hiroshi Ikeuchi in 1969, methods have progressed from outside-in, inside-out, and then all-inside. All-inside repair is now most widely used. The orthopaedic surgeon's responsibility to combine clinical information is very critical in determining radiological images and also clinical experience is essential in an effort to determine proper management in an individualized way, according to the factors related to the patient and the lesion.

Picture 1

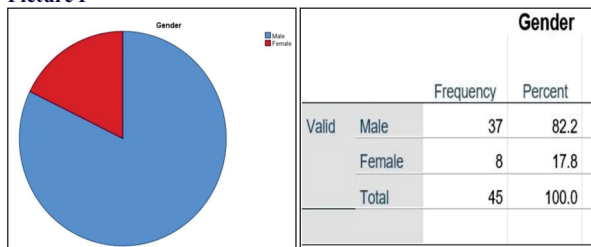
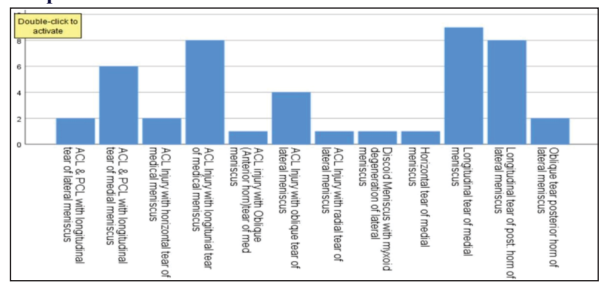


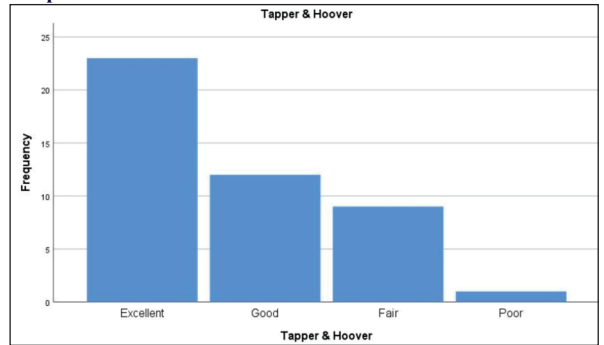
Table 1

Mode of Injury			
		Frequency	Percent
Valid	Fall by slip	6	13.3
	Fall from steps	2	4.4
	Road traffic accident	19	42.2
	Sports Injury	18	40.0
	Total	45	100.0

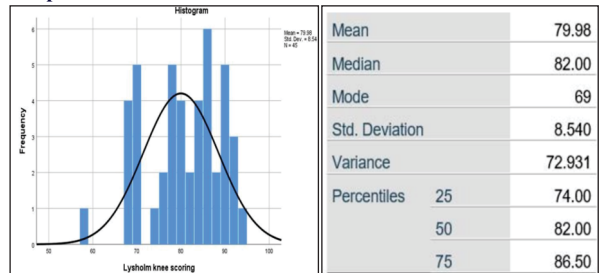
Graph 1



Graph 2



Graph 3



CONCLUSION

We concluded that the arthroscopic management of meniscal injuries showed better functional outcomes, advantage of early rehabilitation and return to work. Meniscal repair seemed to be superior over meniscectomy in terms of knee function. Therefore, the direction of meniscal repairs to protect, repair or reconstruct, in order to prevent early development of osteoarthritis by restoring the native structure, function, and biomechanics of the meniscus is being evolved in the current day practice.

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