KNEE ARTHROSCOPIC PROCEDURES AND COMPLICATIONS AT A TERTIARY CARE HOSPITAL

Syed Dil Bagh Ali Shah, Samir Khan Kabir, Sikandar Hayat, Muhammad Ayaz Khan, Wajid Akhtar

Department of Orthopedic Khyber Teaching Hospital, Peshawar - Pakistan

ABSTRACT

Objective: To determine the effectiveness of knee arthroscopic surgical procedures

Material and Methods: It is an observational prospective study conducted on 135 patients with torn anterior cruciate ligament and menisci who underwent arthroscopic partial meniscectomy and /or reconstruction of anterior cruciate ligament (ACL) at orthopedic department of Khyber teaching hospital Peshawar from November 2017 to June 2019. Patients demographics recorded. Pre-op and post-operative assessment done and results recorded.

Results: A total of 135 patients underwent knee arthroscopy. Out of this 72 (53%) patients had partially torn meniscus only, 8(7%) patients had combine meniscal tear along with ACL tear while 47(39%) patients had isolated ACL tear only. So, in total 80 patients underwent partial meniscectomy while, 55 patients underwent ACL reconstruction. So for description purpose we can divide all the patients into two groups, Group A: Arthroscopic ACL reconstruction Group B: Arthroscopic partial meniscectomy group

In Group A there were 54(98%) male and only 01(02%) female while Group B comprised of 77 male and 03 female patients. Mean age of both groups was comparable. Right side was mainly involved in ACL reconstruction group while left side in partial meniscectomy group. Sports injury was the principal underlying reason in the patients undergoing for partial meniscectomy while sports and road traffic accident (RTA) were equally responsible for the patient group underwent ACL reconstruction surgery. Similarly, in group A where patients underwent arthroscopic ACL reconstruction 91% became asymptomatic while, in group B where patients underwent arthroscopic partial meniscectomy about 94% turned out to be symptom free in comparison to preoperative status. There were intra-operative as well as post-operative complications. Among the earlier category, instrument breakage, technical faults in the arthroscopic machine, graft cut out and problem with fixation of tibial end of graft in ACL reconstruction were notorious. Postoperatively, knee joint infection, stiffness and pain were significant.

Conclusion: Knee arthroscopy is an effective and reproducible technique with decent and efficient outcome.

Keywords: Arthroscopy, Partial meniscectomy, Anterior cruciate ligament, Knee.

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INTRODUCTION

Arthroscopy of the knee is one of the utmost common surgical procedures universally[1] and the numeral of arthroscopic surgeries has significantly amplified over the preceding 03 decades[2]. Every year, there are around one million such procedures accomplished in the United States and in Sweden (population 9.5 million) the equivalent number is around 35,000[2,3]. Knee arthroscopy is extensively accredited to be a benign technique[4,6]. It has been formerly described that knee arthroscopy is connected with problems such as septic arthritis and venous-thrombo-embolism[4,7,8,9]. It is the treatment option for certain types of knee pain. Arthroscopic surgery is the method that includes introducing a few millimeter sized camera into the knee joint and which lets doctors to review the joint for injury. By means of other tiny incisions, gadgets can be introduced to patch-up or take away injured tissues. Arthroscopic knee surgery is named as “scoping the knee” or knee arthroscopy. Various dissimilar surgical techniques that are frequently accomplished arthroscopically today were formerly used to accomplish through the bigger incisions. The advantage of arthroscopy is being capable to accomplish those surgical procedures without damaging normal structures around the knee joint. By being less intrusive, the anticipation is there will be less discomfort and a quicker recovery. Knee arthroscopy operation has ascended to admiration for the reason that it generally necessitates little recovery times. The procedure typically takes less than 1 hour, and serious complications

Correspondence
Dr. Syed Dil Bagh Ali Shah
Assistant Professor
Khyber Teaching Hospital Peshawar - Pakistan
Email: drdilbagh@gmail.com
Cell: +92-312-6914030
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are infrequent.

Common Indications of Knee arthroscopy are:- Meniscal repair, partial meniscectomy, subtotal meniscectomy, ACL reconstruction, PCL reconstruction Plica excision to treat plica syndrome, Lateral release to treat recurrent dislocation/subluxation of patella and a variety of procedures to treat and manage chondral damage and Osteo-arthritis of knee joint comprising of micro fracture, autologous chondrocyte transplantation and cartilage transfer. Similarly, removal of loose body and washout of joint can be done satisfactorily by using arthroscopic technique[2-4,5]. Although Meniscal lesions are communal nonetheless linked with extremely mutable knee symptoms, signs, and radiological verdicts. Numerous meniscal tears are asymptomatic, and knee signs can frequently be accredited to additional pathologies like Osteo-arthritis[10, 11,12,13,14].

As soon as a meniscal lesion is arbitrated to be the reason of symptoms, surgical treatment to remove the un-balanced meniscal tissue—arthroscopic partial meniscectomy—is often suggested, and is one of the greatest mutual orthopedic surgical procedures universally[15,16]. Unlike open surgery arthroscopic procedures are associated with just a few risks like iatrogenic accidental damage to cartilage, bleeding inside the joint, instrumental breakage inside the joint and knee joint infection. However, these risks are uncommon, and most people recover without incident. The aim of this study was to assess the efficacy, safety, patient acknowledgment and economy of knee surgery arthroscopically in a tertiary hospital Peshawar.

MATERIAL AND METHODS

This prospective observational study was approved by the ethics committee of the hospital. Knee arthroscopy of 135 patients done with the examination finding of meniscal injury with or without intra-articular ligamentous injury. Major complaints of patient were pain, giving way or locking. The positive signs were joint line tenderness, pain on terminal flexion, positive Mcmurray +/- Lachman test. MRI Knee joint was done in all cases before embarking upon surgery. Informed consent of each patient was obtained. Study related data was collected between November 2017 to June 2019 in Khyber Teaching Hospital Peshawar. Patients with knee problems presenting to orthopedic OPD and accident and emergency department underwent arthroscopic surgery. Overall, study patients fell into 02 groups. Group A comprised of patients having ACL deficiency +/- meniscus lesion while, Group B consisted of pure meniscus lesion without any ligamentous laxity while. Group B comprised of about 80 patients while group A of 55 patients. All the patients underwent arthroscopic surgery of the knee joint. Out of which, 55 patients had their ACL reconstruction surgery done from January 2018 to June 2019. All the 55 patients were monitored and assessed in this prospective phase. The arthroscopic surgery was carried out under general/ spinal anesthesia. Detail arthroscopy was done to perform partial meniscectomy and in all cases healthy stable meniscus preserved whenever possible. Incidental removals of cartilaginous/osseocartilaginous loose bodies were also carried out. After surgery patients were taught isometric quadriceps exercises and allowed partial weight bearing on the affected limb as tolerated with crutches. Patients were re-examined in the OPD/clinic 02 weeks following surgery. Wound reviewed and skin stitches if any, removed. Resistive muscle strengthening and Range of motion (ROM) exercises were started. At the time of discharge from hospital, patients were advised for follow-up visits at 3 months and one year after surgery.

RESULTS

A total of 135 patients underwent knee arthroscopy. Out of this 72 (53%) patients had partially torn meniscus only, 8(7%) patients had combine meniscal tear along with ACL tear while 47(39%) patients had isolated ACL tear only. So, in total 80 patients underwent partial meniscectomy while, 55 patients underwent ACL reconstruction. So for description purpose we can divide all the patients into two groups as:

Group A: Arthroscopic ACL reconstruction group.
Group B: Arthroscopic partial meniscectomy group.

In Group A there were 54(98%) male and only 01(02%) female while Group B comprised of 77 male and 03 female patients (Table 01). Mean age of both groups is given in Table 02. Right side was mainly involved in ACL reconstruction group while left side in partial meniscectomy group Table 03. Sports injury was the principal underlying reason in the patients undergoing for partial meniscectomy while sports and road traffic accident (RTA) were equally responsible for the patient group underwent ACL reconstruction surgery Table 04. Similarly, Table 05 reflects outcome of arthroscopic surgery. In group A where patients underwent arthroscopic ACL reconstruction 91% became asymptomatic while, in group B where patients underwent arthroscopic partial meniscectomy about 94% turned out to be symptom free in comparison to preoperative status. Overall, arthroscopic complications are summarized in table 06. There were intra-operative as well as post-operative complications. Among the earlier category, instrument breakage, technical faults in the arthroscopic machine, graft cutout and problem with fixation of tibial end of graft in ACL reconstruction were notorious. Postoperatively, knee joint infection, stiffness and pain were significant Table-07

Table 1: Gender distribution of patients undergoing knee arthroscopy.

Arthroscopic ACL Reconstruction		Arthroscopic partial meniscectomy	
Gender	N (%)	Gender	N (%)
Male	54 (98%)	Male	77(96%)
Female	01 (2%)	Female	03(04%)
Total	55(100%)	Total	80(100%)

Table 2: Mean Age distribution.

Arthroscopic ACL Reconstruction		Arthroscopic partial meniscectomy	
Mean Age (years)	31.5	Mean Age (years)	30

Table 3: Involvement of side.

Arthroscopic ACL Reconstruction		Arthroscopic partial meniscectomy	
Side Treated	N (%)	Side Treated	N (%)
Right	40 (73%)	Right	20 (25%)
Left	15 (27%)	Left	60 (75%)
Total	55 (100%)	Total	80 (100%)

Table 4: Mode of injury in patients undergoing knee arthroscopy.

Arthroscopic ACL Reconstruction		Arthroscopic partial meniscectomy	
Mode of injury	N (%)	Mode of injury	N (%)
Sports	20 (36.36%)	Sports	32 (40%)
RTA	20 (36.36%)	RTA	25 (31%)
Falls	15 (27.27%)	Falls	23 (29%)
Total	55(100%)	Total	80 (100%)

Table 5: Outcome of surgery in patients undergoing knee arthroscopy.

Arthroscopic ACL Reconstruction		Arthroscopic partial meniscectomy	
Lachman's test		McMurray Test	
Negative	50(91%)	Negative	75 (94%)
Positive	5(9%)	Positive	5 (06%)
Total	55 (100%)	Total	80 (100%)

Table 6: Overall intra-operative Complications of Knee Arthroscopy.

S.No	Intra-Operative Complications	N (%)
1.	Instrument (Arthroscopic Hook) breakage	1 (08%)
2.	Graft cut out while tightening femoral interference Screw	5 (38%)
3.	Too anterior tibial hole with difficulty in fixation	5 (38%)
4.	Failure of arthroscopic machine needing extra time	2 (16%)
	Total intra-operative complications	13 (100%)

Table 7: Overall Postoperative Complications of Knee arthroscopic surgery.

S.No	Post-operative Complications	N (%)
1.	Infection of tibial screw	2 (14%)
2.	Post-operative Knee stiffness	4 (28%)
3.	Post-operative knee pain	5 (36%)
4.	Failed ACL needing re surgery	3 (21%)
	Total	14 (100%)

DISCUSSION

A total of 135 patients underwent knee arthroscopy. Out of this 72 (53%) patients had partially torn meniscus only, 8(7%) patients had combine meniscal tear along with ACL tear while 47(39%) patients had isolated ACL tear only. So, in total 80 patients underwent partial meniscectomy while, 55 patients underwent ACL reconstruction. In the current study overall arthroscopic partial meniscectomies were performed in 80 patients. Arthroscopic surgery was successful in 100% of the cases, therefore replacing and supervening an open technique. MRI is an exceedingly sensitive investigation for detecting high intensity signals in the menisci and intra meniscal degenerative injuries particularly in the posterior horn of medial meniscus might be established inaccurately as full thickness tears[17]. Of 80 patients with a meniscus tear on MRI, when arthroscopy was done, in about 5(06%) patients there was no meniscus tear. Due to the existence of untrue positive tears, partial meniscectomy must be limited to those cases where unsteady meniscus injury can be recognized arthroscopically. MRI should be done when the surgeon is uncertain of the judgement and necessity for arthroscopy. When a patient has unblemished history and characteristic signs of injured meniscus, timely arthroscopy will endorse the clinical findings and menisectomy can be done in the same procedure[17]. The over exploitation of this luxurious investigation ought to be efficient and kept for cases of ambiguous diagnosis merely. The early and late results of old-style open meniscectomy have been comprehensively documented[18-21]. The recapture of function is sluggish, enduring loss of motion, obstinate muscle waste and compromised function ensues in 15-20% of the patients. Gradual onset degenerative changes in the knee are well recognized on lengthy span follow-up[18,19,20]. Therefore, in 30% or higher, diminishing of function and incapacity on extended monitoring is described. Tapper and Hoover[19] and Cargill and Jackson[20] proposed that full meniscectomy created a larger amount of degenerative changes in comparison to partial meniscectomy in Bucket handle tears of meniscus. In 1954 Astrand[21] testified improved outcomes with partial meniscectomy in comparison to classical open technique. Mc Ginty[22] conveyed a like results in 1977. Nevertheless, limiting issue with open surgical technique was that open method was called just for expatriate bucket handle tears. Arthroscopic method gives the chance to examine and handle the whole menis-

cus and recognize thoroughly the magnitude of the injury before its cutting out. Arthroscopic method and distinct equipment sorts it conceivable to expunge the injury in any part of the meniscus. This discerning meniscectomy targets on conserving a working meniscus.

In this series, in patients having meniscal tear extending to articular surface it was possible to accomplish the goal of selective (partial) meniscectomy Arthroscopic partial meniscectomy is better than old-style open meniscectomy for the reason of decreased morbidity, speedy rehabilitation, greater patient reception and quick coming back to work and sporting. In the extended course of time, Arthroscopic meniscectomy must be done very carefully and gently in order to diminish the degenerative changes in the articular cartilage of the knee and evidence of long term outcomes are cheering.

Rockborn and Gilquist,[23] have reported a 13-year clinical and radiographic follow-up of 43 patients under the age of 23 years. On subsequent follow up, there was no difference among the operated and the non-operated knees regarding range of motion, strength of muscles or knee firmness and 90% had no functional deterioration. However, 40% of the knees presented with radiological worsening (Fairbank's changes) on the postoperative knees in comparison to just 10% of the non-operated knees, while merely 4% exhibited worsening.

In the present series, most of the patients with pure meniscus tear were 30 or below 30 years age. Partial meniscectomy in this young age group can be a risk factor for long term osteoarthritis. Covall and Wasilewski[24] have described radiologic vicissitudes in patients above 45 years of age following arthroscopic meniscectomy with five year follow-up. Operated knees of 60% presented with radiological advancement of Fairbank's changes in comparison to 20% of the non-operated knees.Ten to 20 years later following meniscectomy, there is a 10-fold rise in osteoarthritis, compared to controls[25, 26]. And after 2-3 decades, nearly three of four patients suffer from radiographic tibiofemoral osteoarthritis[27] and, as we very well recognize, knee osteoarthritis is a fore most funder to incapacity, worldwide[28]

Conversely, noteworthy radiologic advancement was prominent in 15% in the post-operative knees and 11% in the non-operated knees. However, at the moment we do not have long term follow up which will prove scientifically role of meniscus in prevention of degenerative changes

It is fairly flawless that post arthroscopic partial meniscectomy degenerative arthritis of the knee occurs on a long term follow-up, conversely inspiring improvement of symptoms, the lowest disease and preservation of upright function for several years rationalizes arthroscopic meniscectomy. The endoscopic method is preferably appropriate in Pakistani locales for the reason that intrusive surgery is linked with greater complications like infection and knee stiffness necessitating lengthy management and physiotherapy particularly for the reason that our medical services are not at equality with worldwide standards. There are note worthy price savings since abolition of prolonged hospital stay, IV antibiotics, rapid salvage and brilliant forecasts for complete recovery and timely coming back to work. As arthroscopic field is a highly specialized technology demands dexterity hand eye co-ordination, therefore, several orthopedic surgeons may by no means become skillful in arthroscopy. Arthroscopic meniscectomy is practically hard to do and necessitates distinctive training. Enough experience in diagnostic arthroscopy is essential before proceeding to endoscopic surgical meniscectomy. Composed and non-traumatic skill is essentials because it is easy to hurt and injure the refined articular cartilage with uncaring and awkward usage of tools through endoscopic surgery. Due to low morbidity connected with the technique, there is a danger of malpractice of this surgical technique. The usage of arthroscopy must be limited to well describe pathological situations and ought not to substitute decent medical decision as medical technology is a decent servant but anevil master.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Shah DBA: Idea Planning and organization

Kabir SK: Data analysis

Hayat S: Patient care

Khan MA: Data Collection

Akhtar W: Assisted in article Writing.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.