

# ARTHROSCOPY: A RELIABLE DIAGNOSTIC TOOL IN LESIONS OF KNEE JOINT

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## ABSTRACT

**Objective:** To evaluate the accuracy of clinical diagnosis in lesions of knee joint and to compare it with arthroscopy diagnosis.

**Material and Methods:** This comparative study was conducted in the department of Orthopedics Hayatabad Medical Complex, PGMI Peshawar. Duration of study was from July 2000 to, June 2002. Patients with symptoms of knee pain, clicking, locking and instability were admitted and proper history and clinical examination was done to reach a clinical diagnosis. This was followed by arthroscopy. The clinical and arthroscopy findings were compared.

**Results:** The total number of patients was 64. There were 52 males and 12 females with male female ratio of 4: 1. The age ranged from 18 to 50 years with mean age of 35 year. Right side was involved in 24 and left side in 40 patients. The results of the study showed that the accuracy of clinical diagnosis was 65.6%. On arthroscopy, medial or lateral menisci injury was found in 18(28.1%), cruciate ligament injury in 14(21.9%) and osteoarthritis in 6(9.37%) No major complication was observed in the study.

**Conclusion:** Arthroscopy is a valuable method of diagnosis in knee joint lesions.

**Key Words:** Knee joint, Arthroscopy, Meniscus, Cruciate Ligament, Injury.

## INTRODUCTION

Knee is the most commonly injured joint in the body and it has been estimated that the knee injuries account for 65% to 75% of orthopedic consultation.<sup>1</sup> Knee joint lesions are difficult to diagnose with simple clinical examination. Clinical examination leads to incorrect diagnosis in at least one in four cases.<sup>2</sup> Knee is the joint in which arthroscopy has its greatest diagnostic and surgical application. With the help of arthroscopy it is easy to examine, diagnose and treat the problem of knee joint.<sup>3</sup> Arthroscopy of knee joint may be carried out purely as diagnostic procedure as initial step before proceeding to operative procedure.

Kenji Takagi of Tokyo University first performed arthroscopy in 1918 with 22 F cystoscope on cadaver,<sup>4</sup> later the arthroscope 21F was introduced which was a standard instrument around the world till the development of advanced fiber optic arthroscopy with computerized television camera and other specifications.<sup>5</sup> Arthroscopy has changed the management of knee

lesions more than any other joint in the body. The diagnosis of various derangements of the knee can be confirmed with direct visualization of the pathology. There are many procedures, which are now easily done with arthroscopy without opening the knee joint. Meniscectomy, ligament repair, reconstruction and debridement can be done through arthroscopy.<sup>6-8</sup> There is still no substitute to clinical skills and most of the times an experienced clinician can clinch the diagnosis with thorough examination of the joint.<sup>9</sup> This study was designed to evaluate the accuracy of clinical diagnosis and its confirmation later with arthroscopic examination.

## MATERIAL AND METHODS

The comparative study was carried out in the department of Orthopedic Hayatabad Medical Complex, PGMI Peshawar. The duration of study was 2 years from July 2000 to June 2002. All patients were admitted through outpatient department, (OPD) their proper history, clinical examination and relevant investigations were done

**AGE DISTRIBUTION OF PATIENTS**

Age in years	No. of Patients	Percentage
10-19 years	8	12.5%
20-29 years	25	39.1%
30-39 years	15	23.4%
40-49 years	12	18.75%
50-59 years	04	6.25%
<b>Total</b>	<b>64</b>	<b>100%</b>

Table 1

and documented accordingly. The clinical diagnosis was made before arthroscopic examination. This clinical diagnosis was then compared with arthroscopic diagnosis to determine the accuracy of clinical diagnosis.

**Procedure:**

The patient was given General Anesthesia in supine position with tourniquet application. Preoperative antibiotic was given, clinical examination was done under anesthesia, the knee area was cleaned and draped, the tourniquet was inflated up to 350mm Hg, and time was recorded, the knee was filled with about 100ml of Ringer Lactate solution.

Anterolateral portal located 1cm above the lateral joint line and approximately 1 cm lateral to the edge of patellar tendon in 30° flexed knee was selected for initial introduction of Arthroscopy and marked. With the help of trocar Arthroscope 30° was introduced. Television camera and light source were connected. Continuously joint space was irrigated with Ringer Lactate solutions. The solution were kept hanging above the knee level to keep the constant flow. During arthroscopy examination, knee joint was examined in following order:

- a) Super patellar and patellofemoral joint.
- b) Medial gutter.
- c) Medial compartment.
- d) Intercondylar notch.
- e) Poster medial compartment.
- f) Lateral compartment.

After completion of examination the Arthroscope was removed, tourniquet was deflated. The incision was stitched and Robert Jones bandage was applied. The patients were given postoperative antibiotic and analgesic and discharged on the following day. The patients were asked to visit OPD on weekly basis for one month and then on monthly basis for another four months. During each visit, the patients were examined thoroughly to observe any complications

or limitation of movements and any other relevant information regarding this study.

**RESULTS**

There were 64 patients with clinical diagnosis of some type of knee derangement, which were selected for arthroscopy. There were 52 (81.2%) males and 12 (18.8%) females. The age ranged from 18 years 59 years as shown in table 1.

The clinical diagnosis of the 64 parents selected for the study was as follows: 19 (30%) suffering from a tear of ACL, 04 (6.25%) from posterior cruciate ligament injury, 20 (31.25%) from medial meniscus, 06 (9.37%) from lateral meniscus, 02 (3.12%) from chondromalacia patella. 08 (12.5%) from osteoarthritis and 06 (7.8%) synovitis (table 2).

All these patients underwent arthroscopic examination within two days of their last clinical examination. The arthroscopic examination showed the exact nature of lesions in the affected knee joints. The clinical diagnosis was confirmed in 42 cases 42/64 (65.6%). In cases in whom diagnosis was not confirmed were normal in most cases (11) and there was osteochondritis dissecan in 6 cases. The comparison is shown in table 2.

Few minor complications were recorded, 3 joint swelling and 2 joint stiffness with limitation of movement. All of these were relived with short course of NSAID's and physiotherapy.

**DISCUSSION**

Painful knee joint is the most common

**CLINICAL VS ARTHROSCOPY DIAGNOSIS**

Clinical Diagnosis	No. of Cases	Arthroscopic Diagnosis	No. of Cases
Medial meniscus injury	20	Confirmed diagnosis	14
		Else	06
Lateral meniscus injury	06	Confirmed diagnosis	04
		Else	02
Anterior cruciate injury	19	Confirmed diagnosis	12
		Else	07
Posterior cruciate injury	04	Confirmed diagnosis	02
		Else	02
Chondromalacia patella	02	Confirmed diagnosis	01
		Else	01
Osteoarthritis	08	Confirmed diagnosis	06
		Else	02
Synoviitis	05	Confirmed diagnosis	03
		Else	02
<b>TOTAL</b>	64	Confirmed diagnosis	42
		Else on Arthroscopy	22

Table 2

orthopedic problem nowadays. Many procedures have been suggested for its diagnosis by different researchers. Till the recent past clinical evaluation, orthography, arthrotomy, MRI, examinations under anesthesia, and arthroscopy have all been used for the diagnosis of knee joint problems.<sup>1,3,5,10</sup> After the series of papers published in the last three decades, the significance of MRI and arthroscopy has been accepted due to their high percentage of diagnostic accuracy. Arthroscopy is now well established as a method of diagnosing meniscal lesions.<sup>8,11,12</sup> Its advantages have been pointed out in several reports. Arthroscopy is now one of the primary means of diagnosis and treatment of knee lesions. Arthroscopy provides safe, quick and precise method of diagnosis.<sup>1,4,6</sup> Many researchers have tried to prove that MRI has an edge over arthroscopy for the diagnosis of knee joint problems. This may be true for developed countries where the cost of surgery and hospital stay is much higher.<sup>3,13</sup> Hence, a patient, after going through an MRI of the knee joint and showing no need for arthroscopy surgery, saves the relatively higher cost of arthroscopy examination. However, in Pakistan cost of MRI is almost the same as of diagnostic arthroscopy. In a government setup like ours, where the facilities to perform arthroscopy are available, arthroscopy is much cheaper compared to the private sector hospitals. Considering the above-mentioned facts it is more feasible to bypass MRI and opt for arthroscopy examination in case the clinical diagnosis fails to identify underlying pathology in a symptomatic knee joint. During diagnostic arthroscopy, if there is any need of surgical intervention the surgical procedures can be done as a continuation of diagnostic arthroscopy in the same setting without any additional arrangements.<sup>1,8</sup>

In this study, the role of diagnostic arthroscopy was reviewed in 64 patients with symptomatic knee joint. This study was conducted to highlight the significance of arthroscopy in diagnosis of knee joint problem. The result of our study show only 65.6% accuracy of clinical diagnosis so the need for performing arthroscopy before surgery is essential.

In this study, the comparison was done between clinical diagnosis and arthroscopy diagnosis in 64 patients with a correct clinical diagnosis of 65.6%. Mean age of patients was 34 years that is comparable with the study conducted by Carmichael, et al in 1979, in which they showed the mean age of 34 years. In a similar study male to female ratio was approximately 1:4. Spires et al<sup>14</sup> showed 77% clinical diagnosis accuracy rate that is higher than our results (65.6%). Suman et al reported a 55% accuracy rate of the clinical diagnosis in a similar study in

1984.<sup>3,13</sup> But their study comprised of the patients between ages 14 to 19 years. In a similar study by Anis et al in 1996 found 72% accuracy rate of the clinical diagnosis in comparison with arthroscopic diagnosis in 25 patients.<sup>9</sup> Only some minor complication were seen in our study that is comparable with the similar study conducted by Vangsness C. T. Jr. et al in 1994 reported no complications in their similar study of diagnostic arthroscopy in 36 patients.<sup>6</sup>

## CONCLUSION

It is concluded from the study that Arthroscopy of knee joint has proved to be safe reliable and useful diagnostic tool with little morbidity and minor complications. Knee joint with mechanical symptoms with locking should always be considered for arthroscopy. Clinical diagnosis alone should not be relied on without arthroscopy or MRI.

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