ORIGINAL ARTICLE

Arthroscopic Surgical Knee Plica Syndrome Excision

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ABSTRACT

Backgrounds: The medial plica of the knee during arthroscopy is between 22% and 80% and suprapatellar plica is between 10% and 87%.Management of the patients with pathological medial plica is controversial.
Aim: To determine clinical outcomes after arthroscopic excision in patients with medial and suprapatellar plica.
Patients: In this prospective study , the patients who are diagnosed with knee plica syndrome were underwent arthroscopic excision. The outcomes of the surgery were recorded at one month , at three and six months, and twelve months of surgery.
Conclusions: The arthroscopic plica excision has a successful outcome for most of the patients after 1, 3, 6, and 12 months with less noninvasive complication.
Keywords: Plica syndrome; patient, MRI,Arthroscopy; complications

INTRODUCTION

The persons with healthy plica have smooth elastic properties and slides freely over the femoral condyle with knee movement. But, an inflammation and fibrosis can cause a pathological medial plica. The patients who suffer from anterior knee pain are more likely to have medical aspects [1, 2]. The pain is escalated during physical activities by knee flexion. It could associated with symptoms of knee clicking or locking [3, 4]. The patients often have a history of reparative sporting activity [5].

There is a challenge to the diagnosis of medial plica due to having common incidental findings [6]. The symptoms of the patients are pathologically indistinguishable on clinical examination to other pathologies of knee injuries, such as torn menisci, inflammation, and osteochondral defects [7]. Also, the management of the patients with pathological medial plica is controversial [8]. The surgical [9] and nonsurgical treatment [10, 11] advantages.

The nonsurgical treatments are performed using analgesia and anti-inflammatory medications along with physiotherapy. But, the patients do not report the improvement in clinical symptoms. The arthroscopy may provide the improvement in the symptoms of the patients with knee plica syndrome.

The aim of this study was to determine clinical outcomes after arthroscopy in patients with knee plica syndrome.

PATIENTS AND METHODS

In this prospective study, the patients who are diagnosed with knee plica syndrome were underwent arthroscopic excision. The patients who attended the out-patient clinic of a public hospital in Erbil and had a history of anteromedial knee pain were assessed physically and clinically for the eligibility criteria. The diagnosis of knee plica syndrome was made by an orthopedic surgeon in a public hospital in Erbil city. The outcomes of the surgery were recorded immediately, at three and six months, and twelve monthsafter surgery.

The following general and clinical information was taken from the patients. The information was age and gender of patients, and type of the plica the expected date to start sample taking is from February of 2019 till June 2019 and patient will be followed up till June 2020The patients were recruited from orthopedic center in Hawler teaching hospital and one private clinic.

The definite diagnosis of the medial plica irritation was made by physical examination. The normal examination of the patellofemoral joint must include an examination of the patients' medial synovial plica fold to recognize any irritation inside. The clinical examination was performed when the patients were relaxed in supine position on the bed with both legs relaxed. The clinician palpated for the medial synovial plica through rolling fingers over the plica fold. The plica fold is located between the medial border of the patella and adductor tubercle region of the medial femoral condyle [12].And for suprapatellar plica clinical finding include palpable suprapatellar band . Patellar mobilization might be painful but most commonly appear normal .The MRI (Magnetic resonance imaging) was performed for non-specific diagnosis of plica syndrome [13].

The following inclusion criteria are applied to the patients:

- Aged over 18 years
- Patients with a history of anteriomedial knee pain
- Palpable medial band in clinical examination or medial plica and suprapatellar plica appearance on X-Ray and MRI

The following exclusion criteria are applied to the patients:

- Aged under 18 years
- Presence of one or more of the following diagnose osteoarthritis, osteochondritis dissents, meniscal injury, patella subluxation, pes anserinus bursitis, patellofemoral pain syndrome.
- Prior surgical intervention ,Infection ,fracture or patellar luxation concerning the relevant knee

The descriptive purposes of the study were determined in number and percentage, such as success rate of the surgery and prevalence of pain and clicking at one, three, six, and twelve months of the surgery. The statistical calculations are performed by Statistical Package for Social Sciences version 25 (SPSS 25; IBM Corp; USA).

The ethical approval of the present was obtained from Kurdistan Board for Medical Specialties (KBMS). The confidentiality of the personal information of the patients was protected throughout the study steps. The written informed consent form was taken from the patients prior to surgery.

Surgical Procedure: After patient taking anesthesia; either general anesthesia or spinal anesthesia in the supine Position on operation table. The tourniquet cuff inserted to thigh with protected material applied to skin to protect the skin, and then a standard anterolateral viewing portal and Anteriomedial working portal created we use a standard 30 degree arthroscopic and pumps System excision of medial plicawas carried out using sucker punch and or arthroscopy Shaver inserted through anteriomedial portal, the ligamentum mucosum was removed if its interfered with arthroscopy, care was taken to ensure the entire length of plica isremoved from its origin at suprapatellar plica (just proximal to patella)down to the fatpad, and for suprapatellarplica the complete suprapattelar plica is released by shaver. The released plica is removed piece by piece with a punch.

RESULTS

The mean age of the patients was 26.22 (SD: 7.47) ranged 18-42 years. The patients were males (62.5%) and females (37.5%). The types of knee plica syndrome were medial plica (81.3%) and supra patellar plica (18.8%). All patients had pain during presentation and 40.6% had clicking. More than half of the patients (59.4%) required physical activity to perform their occupation, while 40.6% did not require physical activities to perform their occupation . The study showed that the surgery of only one patient failed (3.1%) at one month; another patient at three months (6.3%), six months (6.3%), and twelve months (6.3%). The patients who had considerable complication such as (septic arthritis, neuropraxisas, neuromas or pain and or clicking) following immediately or after (1,3,6,9,12) months of surgery where considered failure of surgery . The number of patients who developed pain or clicking was between 1 and 2 at different time follow-up(Table 1)

Table 1: General characteristics of patients with knee plica syndrome

Patients' characteristics (n=32)	Statistics	
	Mean	Sta. Deviation
Age (Range: 18-42 years)	26.22	7.47
	Number	Percentage
Gender		
Male	20	62.5
Female	12	37.5
Type		
Medial plica	26	81.3
Supra patellar plica	6	18.8
Pain	32	100
Clicking		
Yes	13	40.6
No	19	59.4
Occupation		
Physical required	19	59.4
Physical non-required	13	40.6

The study showed that the surgery of only one patient failed (3.1%) and had pain (3.1%), and clicking (3.1%), as presented in Table 2.

The authors found that surgery of another patient failed at three months (6.3%). In addition, another patients obtained pain (6.3%) and clicking (6.3%), (Table 3),

Similar as three months, the authors found that the outcome of another patient failed at six months (9.4%) and had pain (9.4%). But, still two patients have clicking (Table 4).

The surgeons did not find the difference in the number of failure and clicking at twelve months compared to six months. But, another patient was added to those who had pain (12.5%), see table 5.

Table 2: Outcomes of arthroscopic surgical knee plica syndrome excision at one month

Outcomes (n=32)	Statistics	
	Number	Percentage
Outcome		
Success	31	96.9
Failure	1	3.1
Pain		
Yes	1	3.1
No	31	96.9
Clicking		
Yes	1	3.1
No	31	96.9

Table 3: Outcomes of arthroscopic surgical knee plica syndrome excision at three months

Outcomes (n=32)	Statistics	
	Frequency	Percent
Outcomes		
Success	30	93.8
Failure	2	6.3
Pain		
Yes	2	6.3
No	30	93.8
Clicking		
Yes	2	6.3
No	30	93.8

Table 4: Outcomes of arthroscopic surgical knee plica syndrome excision at six months

Outcomes (n=32)	Statistics	
	Frequency	Percent
Outcome		
Success	29	90.6
Failure	3	9.4
Pain		
Yes	3	9.4
No	29	90.6
Clicking		
Yes	2	6.3
No	30	93.8

Table 5: Outcomes of arthroscopic surgical knee plica syndrome excision at twelve months

Outcomes (n=32)	Statistics	
	Frequency	Percent
Outcomes		
Success	29	90.6
Failure	3	9.4
Pain		
Yes	4	12.5
No	28	87.5
Clicking		
Yes	2	6.3
No	30	93.8

DISCUSSION

The patients who were included in this study had the following types of knee plica syndrome; medial plica (81.3%) and supra patellar plica (18.8%). The study showed that most of the patients had pain during presentation and one-third had clicking. The study showed that most of the patients had successful outcomes following one , three, six, and twelve months of the surgery. The surgery of one of the patient with successful surgery failed following three and six months. But, another patient was added to those who had pain.

Surgical treatment is not without the risks. The patients are subjected to inherent risks of surgery such as anesthetic dangers and thromboembolic events. In addition, the risks could be the possibility of the surgery not improving symptoms [12]. Also, the surgery may cause some local complication such as haemarthrosis and swelling, increasing the patient's morbidity[14-16].

A meta-analysis included all types of knee plica and reviewed the outcomes of open or arthroscopic plica excision. They included Twenty-three studies that assessed the clinical outcomes of 969 cases after open or arthroscopic plica excision. The mean age of the patients was 25 years with equal male-to-female ratio. The cause of medial plica was trauma in 57% of the patients. The mean follow-up time of the patients was 27.5 months. The study showed that 64% of the patients had no clinical symptoms and 26% had improvement; and 10% had failed surgery [17].

A recent meta-analysis assessed the clinical outcomes following surgical intervention for medial knee plica and suprapatellar plica. The primary outcomes were reported as "good" and "excellent". The study reported that overall rate of good and excellent outcomes were 84.2% (95% CI: 72.8–91.4). the rate of good and excellent outcomes in patients who had nonsurgical therapy before the surgery was 76.1% (95% CI, 60.1–87)[6].

The success rate of the medial and suprapatellar plica surgery in this study was obtained in most of the patients. However, one patient had failed surgery at three months and another one after at six months. The exact reasons for this outcome is unclear, but incidents of trauma and overuse could result in becoming edematous and fibrotic, and overtime leading to tighten or bowstring[2].

One of these patients who had failed success in surgery at three months of follow-up had the job that requires physical energy. Another patient with physically required occupation developed failure at six months and one without physically required occupation at twelve months. A study reviewed 118 knees of 93 patients treated by arthroscopic excision for painful medialplica. The outcomes were evaluated based on the scoring scale 0-100. They reported that after an average of 2 years (1-4 years), 109 of the knees had little pain. The average improvement score was 41 points[18]. We feel that physically working or other medical conditions could have a role in failure of the patients at six and twelve months of the follow-up.

A study conducted in Erbil city evaluated the findings of twelve months arthroscopy practice. They included 160 patients aged 39.5 years between 21 and 70 years old. The authors reported outcomes following twelve months; including excellent result (24.5%), good result (38.5%), fair result (20.0%), and poorresult (18.0%). The arthroscopy was suggested due to excellent and early recovery [19].

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