ORIGINAL ARTICLE

Meniscal Cysts Associated with Mensical Tears in an Asiatic Population- Outcome of Arthroscopic Debridement

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ABSTRACT

Objective: To study the outcome of arthroscopic treatment of meniscal cysts in patients diagnosed with meniscal tears in an Asiatic population.

Methods: The study was conducted from May 2011 to Jan 2014 in 25 patients including 10 males and 15 females with mean age of 30.88 years. Patients were regularly followed up to a minimum period of 6 months ranging from 6-18 months. There were 21 cysts of lateral meniscus and 4 involving medial meniscus.

Results: All patients of meniscal cysts had associated meniscal tears most commonly horizontal tears, which were present in 21 radial tears in 3 and oblique in 1 patient. The mean time to return to work after arthroscopic treatment of cysts was 17.1 days. There were 3 cases of fluid extravasation, 4 cases of knee effusion, 2 cases of portal site pain and one case of locking. There was no case of cyst recurrence. The mean preoperative Tegner activity level in our study was 1.9 and Tegner activity at final follow up was 3.4. The mean Lysholm score before surgery was 63.2 and at final follow up was 93.4.

Conclusion: We conclude that arthroscopic treatment of meniscal cysts is a well-established and effective method of treatment with less complication rate and early return to work.

Keywords: Meniscus; tear; cyst; arthroscopy; decompression

INTRODUCTION

The menisci are fibro cartilaginous structures lying between tibial and femoral articular surfaces. Though once regarded as vestigial structures that served no function but advances in knowledge of anatomy and functions of the meniscus have led to development of meniscus preserving surgeries because menisci play role in load transmission, shock absorption, joint lubrication and joint nutrition and stability[1]. A meniscal cyst first described by Ebner in 1904 is a focal collection of synovial fluid within or adjacent to the meniscus typically at meniscocapsular junction, most being parameniscular[2].

The typical parameniscular cyst is characterized by an endothelial lining with synovial like contents. Most contain septations and present with lobular appearance[3,4]. Most of meniscal cysts are seen in young men in their 2nd and 3rd decades. They are 3 to 10 times more common in lateral meniscus than medial meniscus and are usually associated with horizontal cleavage tears[5]. Various factors thought to be responsible for development of meniscal cysts include trauma, degeneration with age, developmental inclusion of synovial cells within the substance of menisci or a metaplastic event and displacement of synovial cells into the substance of the menisci through microscopic tears in the fibrocartilage[2,3,4].

Symptoms consist of pain swelling or both. Small cysts may disappear with the knee joint in flexion (Pissani sign). Classic symptoms of meniscal tear like catching, snapping and giving way may be present when meniscal cyst is associated with meniscal tears[3,6,7].

Treatment of cysts of the meniscus usually requires surgery. Previously meniscal cysts were treated with excision of cyst and total menisectomy but were associated with significant morbidity however recent treatment has been arthroscopic partial menisectomy and decompression of the cyst[8,9,10,11].

METHODS

We studied the outcomes of arthroscopic management of meniscal cysts in 25 adult patients of either sex after

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a minimum follow up of six months ranging from 6 to 18 months. All the knees were stable but symptomatic. Patients who were having ligamentous laxity, any bony injury around knee, medical contraindications for surgery and conditions where knee arthroscopy will not be possible for example knee ankylosis were excluded from study. Detailed history with particular emphasis on level of sports activity, trauma around knee, duration of pain and swelling and mechanical symptoms like locking and catching was taken from patients. After thorough examination of knee MRI of knees confirmed clinical diagnosis. Knee radiographs AP weight bearing, lateral, Notch view and skyline views were done to rule out any bony pathology around knee. Detailed and informed consent was taken from every patient before surgery. The surgery was performed under spinal or general anesthesia in supine position under tourniquet control. Pre operative prophylactic antibiotics were given at the time of induction of anesthesia. A lateral post or leg holder was used to stabilize the leg and to provide valgus stress to open up the medial compartment for visualization and safe instrumentation. Knee was again examined under anesthesia and limb was prepared and draped. Gravity flow of NS into knee was used with inflow connected to the sheath of the arthroscope. Standard portals_ anterolateral and anteromedial were mainly used for performing the procedure. Accessory portals were used whenever required. After introducing the arthroscope through the anterolateral portal diagnostic arthroscopy of the knee was performed first. Presence, extent and type of meniscal tear as well as cyst were confirmed. If there was no meniscal tear only arthroscopic decompression of the cyst was carried out. In case of tears the tear was appropriately dealt with, for example in radial tears it was trimmed to a stable peripheral rim. In case of horizontal tears only the inferior leaf was resected after gently trimming the superior leaf. The cyst was palpated externally to push the cyst material into the joint and decompress the cyst allowing identification of cyst communication. Sometimes a percutaneous spinal needle was passed to identify the cyst tract. Sometimes a motorized shaver was introduced into the cyst to break up loculations to assist in cyst decompression and to stimulate inflammation and scarring of cyst tract. The joint was a thoroughly lavaged and portal site closed. A sterile compressive dressing was applied after removal of tourniquet. Postoperatively limb was kept elevated and static quadriceps exercises and foot and ankle pumping exercises were encouraged from first postoperative day. Physiotherapy was continued and partial weight bearing started within one week progressing to full weight bearing in second week. Patients were followed periodically and final follow up was done at six months using Tegner activity level and Lysholm scoring.

RESULTS

Our patients varied in age from 18 – 50 years with a mean age of 30.8 years. There were 10 males and 15 females. 12 patients had cysts on right side and 13 on left. 8 patients were having history of trauma while in rest there was no history of trauma. Pain was the most common symptom and was seen in 23 patients other signs and symptoms included swelling, locking, tenderness, a positive McMurray's or Apley's grinding test, thigh wasting or a positive Pisani's sign. (Table 1)

Table 1: Distribution of symptoms/signs

Symptoms/signs	No. of patients	Percentage
Pain	23	92
Swelling	20	80
Locking	6	24
Tenderness	23	92
Mc Murray's Test	21	84
Apley's Compression Test	20	80
Thigh Wasting	18	72
Pisani sign	16	64

Table 2: Types of Meniscal tears on MRI

Meniscal Tear	No. of Pts	Medial Meniscus	Lateral Meniscus	% Age
Horizontal Tear	21	2	19	84
Radial Tear	3	1	2	12
Longitudinal Tear	0	0	0	0
Bucket Handle Tear	0			
Oblique	1	1		4
Total	25	4	21	100

Lateral meniscus was involved in 21 cases and medial meniscus in only 4 cases. Various tears associated with meniscal tears as per their frequency

included horizontal, radial, longitudinal, bucket handle and oblique tears. (Table 2)

Table 3: Complications

Complications	No of Patients	Percentage
Fluid extravasation	3	12
Effusion	4	16
Pain (portal site)	2	8
Locking	1	4

The average duration of surgery in our study was 63.2 minutes and average hospital stay was 3.4 days. The mean time to return to work was 17.1 days. Postoperative knee effusion was most common complication in our study and was found in 4 patients in our study; other complications included fluid extravasation in 3 portal sites, pain in 2 and locking in one patient (Table 3).

The mean preoperative Tegner activity scale in our study was 1.9 and mean Tegner activity at final follow up after arthroscopic management of meniscal cysts was 3.4. The mean preoperative Lysholm score was 63.2 and at final follow up the mean Lysholm score was 93.4. At final follow up 88% of patients had good to excellent results, 8% had fair results and 4% poor results.

FIGURE LEGENDS:

(a)

(b)

T1 Image:Coronal section showing Lateral meniscal cyst with tear

T2:image showing Lateral meniscal cyst

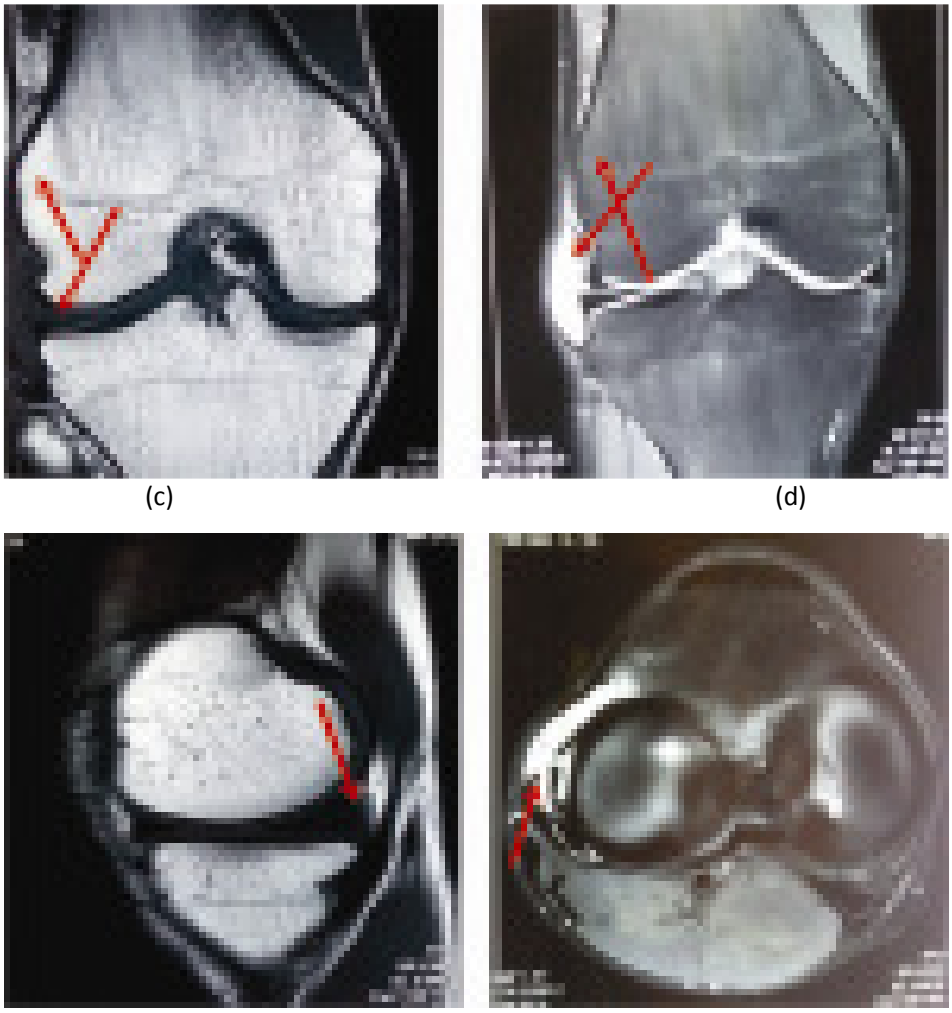
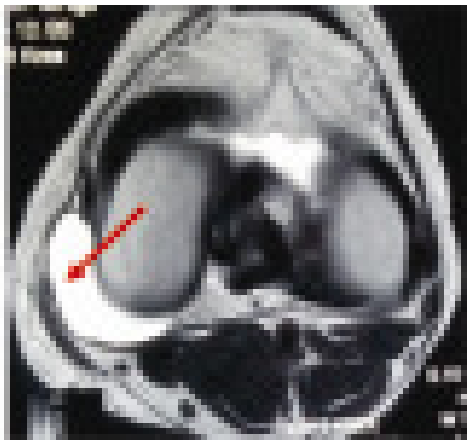


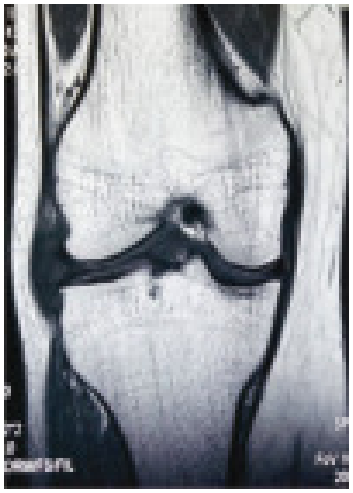
Fig. 1: Images showing lateral meniscal cyst (b and c) with disappearance in images (a) and (d); Pisani's sign.

Fig. 2: MRI images

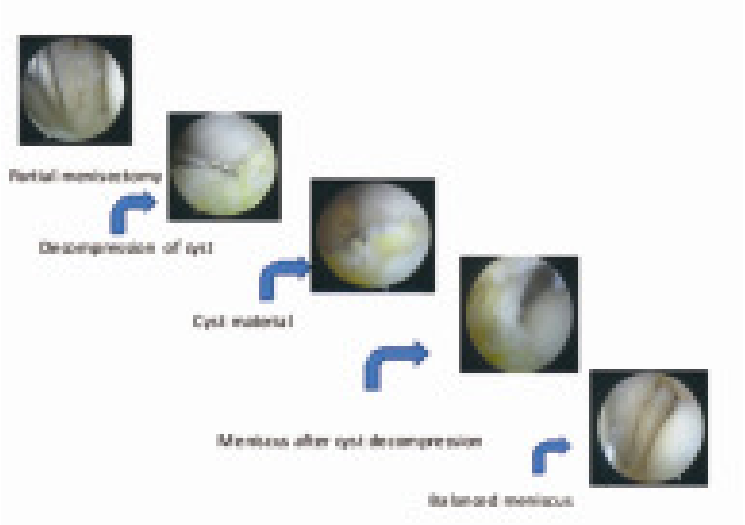
Sagital image showing meniscal tear



Axial image showing meniscal cyst



T1 image showing medial meniscal cyst with tear



T2 Section Sagittal image showing medial meniscus cyst with tear

T2 Section Axial image of medial

T2 image showing meniscal tear with cyst

Arthroscopic management of cyst

Coronal image showing meniscal tear with cyst

DISCUSSION

Management of meniscal cysts has evolved over time from excision of cyst and total meniscectomy to minimally invasive procedures like arthroscopic decompression of cyst and partial meniscectomy[8,9,10]. Since majority of meniscal cysts are found in young and active adults, treatment should be directed at relief of symptoms with maximum preservation of function and least possible morbidity as well as early return to work[5]. In our study majority of patients presented with pain, which was seen in 92%, swelling in 80% and locking in 24% of patients. Richard et al found in their study that pain was present in 100% and swelling in 83% and locking in nil while Cosimo et al found pain was present in 98% and swelling in 78%[12,13].

In our study all patients of meniscal cysts were associated with meniscal tears and horizontal cleavage tears were the most common type of meniscal tear associated with meniscal cysts and was seen in 84% of patients, 12% had radial tears and 4% oblique tear. Glasgow et al also found that all of their patients had meniscal tears and 69 out of their 72 patients had horizontal tears[14]. Barrie et al suggested that lateral meniscal cysts were invariably associated with meniscal tears[6]. Preoperative MRI gives best information regarding site, size, location, meniscal pathology and other co existent knee problems[14]. Arthroscopic management is standard procedure to deal with cyst as it deals with primary pathology that is meniscal tear. It alleviates knee pain, results in improved knee function and has negligible recurrence besides good patient satisfaction[14,15]. Horizontal tear was most common type of tear associated with meniscal cysts and was seen in 88% of cases in a study conducted by Campbell et al[16].

In our study 68% of patients were atraumatic whereas only 32% of patients were traumatic. Ferrer Roca et al also found in their study that 75% of their patients were having no history of trauma[17]. Parision, Lan et al found history of trauma and associated pain in majority of cases and arthroscopic partial menisectomy along with decompression of cyst with no recurrence of cyst[18]. Extravasation of fluid, which was seen in 3 patients, was managed by compression bandage and limb elevation. In all the three patients it subsided within one week. Persistent effusion was seen in 4 patients and was managed by limb elevation, restriction of activities and NSAIDS and effusion subsided over 3- 4 weeks. We found portal site pain in one patient and locking in one patient. There was no recurrence of cyst in our study. Most of our patients started weight bearing within 2-4 days and full weight bearing and range of motion exercises in by 2 weeks. Patients were encouraged return to work by 3 weeks and sports by 4-6 weeks. M M S Glasgow et al reported few complications with 20 % of patients had slower recovery than usual after arthroscopic surgery. One patient had cyst recurrence and one patient developed synovial fistula in their series[13].

Deliwala Ujjival H et al described a modified suture technique designed for the vertical repair of the anterior horn of meniscus after arthroscopic decompression of a large meniscal cyst. Four out of 9 patients in their study needed repair because menisci were unstable after decompression. They found that if the size of meniscal detachment from peripheral

capsule is more than 2 cm the meniscus should be repaired to prevent instability. They found that modified outside in suture technique has advantage of easier penetration of capsule by spinal needle and this technique yields anatomic reduction and provides good coaptation[19]. 88% of patients in our study had good to excellent results at final follow up 8% had fair and 4% poor results. Glassgow et al had good to excellent results in 89% of patients, fair in 4 and poor in 7%[14].

CONCLUSION

We conclude that arthroscopic treatment of meniscal cysts is a well-established and effective method of treatment with less complication rate and early return to work.

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