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Research Article

35 Lateral Meniscal Cysts Treated Arthroscopically with Cystectomy: A Two Year Follow Up

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Abstract: The purpose of this study was to evaluate clinical outcome, we performed a retro-spective review of 35 lateral meniscal cysts that were treated arthroscopically at our institution which was a retrospective study. From a series of 1000 knee arthroscopies, 41 patients who had lateral meniscal cysts were selected. 2 of the 35 patients were lost to follow-up and 4 patients had associated other pathology; therefore, 35 lateral meniscal cysts on stable knees were included in this study. Average follow-up was 2 years (range, 12 months to 42 months). The mean age was 33 years (range, 12 to 69 years). All patients had complained of tenderness over the joint line with a palpable mass. All patients underwent a complete physical examination and all cases were treated arthroscopically before surgery and at last follow-up. Lateral meniscal tear was found in all patients at the time of surgery and 20(57%) had a horizontal cleavage component. For meniscal tears, arthroscopic partial lateral meniscectomy was performed in 34 cases and meniscal repair was done in 1 case. , intraarticular debridement was performed for cyst in 2 cases and open cystectomy in 33. Two cysts recurred and a second arthroscopy was required. The clinical results, including those cases with recurrent cysts, were excellent or good in 87% of cases. In conclusion, when there was a cyst and no other intra-articular damage, the prognosis was excellent. For lateral meniscal cysts, arthroscopic partial meniscectomy with intra-articular debridement yields predictable results.
Keywords: Knee, Lateral meniscus cyst, Arthroscopy, Meniscectomy

INTRODUCTION

Lateral meniscal cysts are more common than medial . Maffuli *et al*. [1] in their series found a 5 to 1 ratio while Seger and Woods [2] a 10 to 1 ratio. The incidence rate of lateral meniscal cysts varies from 1.9% to 19.5%.

In early descriptions, Nicaise [3] in 1883 and Ebner [4] in 1904 described as cysts being hernia of the synovial membrane. Most authors [5-7] have described the cyst formation to be of degenerative origin. Myxoid degeneration of collagen leads to intrameniscal cyst formation that progresses from the center peripherally and then outside the meniscus.

These studies explain the association of lateral meniscal cysts and meniscal damage.

Barrie 5 found horizontal cleavage in 100% of his 112 cysts. Smillie [8] reported a large series of 448 cysts of the lateral meniscus and found 86% were associated with meniscal damage (overall incidence rate, 7.4%). The cyst generally develops insidiously, but Wroblewski [9] found a trauma component in significant proportions (50%).

In the earliest reports, total surgical meniscectomy with excision of the cyst was recommended [8, 10, 11]. Others recommended simple cyst excision [12-14]. Then the advent of arthroscopy [15] modified the therapeutic approach. All authors now agree that the associated lesion should be treated arthroscopically [16-19] the cyst is treated by direct surgical excision with an arthrotomy [20, 21] or during meniscectomy by intraarticular drainage of the cyst contents [1, 2, 17-19, 22, 23]. The purpose of this

retrospective study of a series of arthroscopically treated lateral meniscus cysts was to determine the incidence of meniscal damage and the midterm clinical outcome at intermediate length follow up.

MATERIALS AND METHODS

From a series of 1000 knee arthroscopies, 41 patients with lateral meniscal cysts were selected. 2 of the 35 patients were lost to follow up and 4 patients had associated pathology; therefore, 35 lateral meniscal cysts on stable knees were included in this study. There were 20 men and 15 women. The right knee was involved in 19 cases. Average follow up was 2 years (range 12 months to 42 months). The mean age was 33 years (range, 12 to 69 years). All patients presented with tenderness over the joint line with a palpable mass. All cases were treated arthroscopically and all patients underwent a complete physical examination before surgery and at last follow up. Radiographic evaluation was available at final follow-up for 35 cases.

The clinical status at final follow-up was classified into 4 categories as per Reagan *et al.* [20]. Excellent (no pain, no swelling, full range of motion, full return to athletics of choice), good (occasional discomfort, no swelling, full return to athletics of choice but not at the same level), fair (pain with strenuous activity with or without occasional swelling and return to modified athletics), and poor (pain with daily living, locking, painful catching, and cessation of athletics).

Surgical Technique

Arthroscopy was performed in all cases, alone or in association with surgical excision of the cyst. These arthroscopies were performed under spinal anesthesia in all cases. A pneumatic tourniquet used in all. Para patellar, anteromedial, and anterolateral portals were used. Immediate weight bearing was allowed after surgery and all patients performed isometric rehabilitation exercises of the quadriceps. All patients were discharged the evening of the operation. Skin sutures were removed between day 12 and day 14.

RESULTS

A lateral meniscal tear was associated with all 35 cysts. In 34 out of 35 cases, the meniscal tear opened into the articulation, as evidenced by hook palpation, and required meniscectomy. In 1 case, a 21 -year-old patient, arthroscopy did not detect any meniscal tear opening into the articulation. Direct assessment of the cyst revealed a horizontal cleavage point issuing from a peripheral position. For this young patient, the cyst was excised and the incomplete meniscal tear was sutured laterally to medially. . For cysts, intra-articular debridement was performed in 2 cases and open cystectomy in 33. Two patients required repeat arthroscopy for recurrence. Partial lateral meniscectomy was performed in all the reoperations with cystectomy. The most frequently observed meniscal tear was a horizontal cleavage, alone or associated with another type of lesion (57%of the cases) (Table 1). Vertical slits were rarely seen (5.7%). The middle third of the lateral meniscus (71.4%) was most commonly involved (Table 2). Anterior extension was observed in 22.8 % of cases. Associated lesions included four medial meniscal tears (11.4%) treated by partial meniscectomy (8 vertical tears and 3 degenerative lesions); in 88.6% of cases, the medial meniscus was normal. The anterior cruciate ligament was intact in 100% of cases. Among the 35 cases, the clinical results, including those cases with recurrent cysts, were excellent or good in 88.6% of cases(31 patients), 8.5% (3 patients) were rated fair and 2.8% (1 patient)was rated poor at final follow up. There were 2 post operative complications: 1 reflex dystrophy, and 1 recurrent hydrarthrosis. These 2 complications had no impact on the midterm out-come.

Table 1: Types of menisceal tear

Meniscal pathology	N	%
Horizontal cleavage	20	57
Radial split	10	28.5
Vertical split	2	5.7
Complex lesion	3	8.8

Table 2: Topography of meniscus tear

Localization	Anterior	Mid portion	Posterior
Menisceal tear	8	25	2
percentage	22.8	71	6.2

Fig. 1: Intra-op photograph showing incision

Fig. 2: Intra-op photograph showing cyst

DISCUSSION

A total of 35 lateral meniscal cysts were clinically reviewed.

The incidence of lateral meniscal cysts varies in different series reported. Appel [28] Barrie [5] and Smillie [8] found a 5% to 19.5% incidence. For 1,160 arthroscopies, Passler *et al*. [19] reported an incidence of 1.2% lateral meniscal cysts. In our series incidence of 4.1% (41 cysts for 1000 arthroscopies) is higher than that reported in these studies.there were no medial meniscal cysts in our study.

Histologic examination [5-7] has found evidence of myxoid degeneration of the ultrastructure collagen fibers leading to formation of microcysts within the meniscus which further progresses to give rise to the swelling over lateral aspect of the knee. Reagan *et al*. [20] suggested that there are several stages in the development of lateral meniscal cysts. The discovery of indirect clinical and arthroscopic signs supports the hypothesis that these cysts are of degenerative origin. Arthroscopic findings with a majority of horizontal cleavage were also in favor of a degenerative etiology. Lesions are predominately located in the middle segment and mainly presented as horizontal tears as were in our study. In 4% of our cases, vertical splits were seen as classically described in traumatic lesions. For elderly patients, the meniscal tear is associated with cartilage lesions and is part of a more general compartmental degeneration.

Ferriter and Nisonson [17] reported the first series on arthroscopic treatment of meniscal cysts, all the series reported over the last 10 years have used arthroscopy for the treatment of meniscal cysts and meniscal tears. There was a cyst-tear relationship in 100% of the cases in our series [2, 18, 22]. Among the different type of meniscal tears [1, 19, 22, 23] the predominant form is a horizontal component presenting as a cleavage. In series reported by Glasgow *et al*. [22]. 72 tears were described of which 30 were simple horizontal cleavages, 23 oblique horizontal cleavages, and 4 discoid menisci. Reagan *et al*. [20] reported 32 cysts with 27 meniscal tears and only found 6 horizontal cleavages. In our series, the lesions showing a horizontal component (horizontal cleavages and complex lesions) accounted for 57% of the cases. The majority of these lesions were radial slits (44%). Horizontal cleavage is the most frequently encountered tear in lateral meniscal cysts. Meniscal cysts are located in the mid portion of the lateral meniscus with an extension to the anterior portion in 22% of the cases.

Ferriter and Nisonson [17], Glasgow *et al*. [22] and Parisien [18] found the same localization between the collateral fibular ligamentand the popliteal hiatus posteriorly. Therapeutic management of meniscal cysts varies [12-14, 23]. Like Glasgow *et al*. [22] and Parisien [18] intra articular debridement of the cyst during the arthroscopy with 85% excellent results was proposed. Reagan *et al*. [20] advocated surgical excision. With a purely arthroscopic treatment (12 cases), Reagan *et al*. [20] obtained 50% excellent or good results compared with 80% after surgical excision associated with arthroscopy (20 cases). Surgical experience is highly important because no arthroscopic criteria are established that can reliably determine the point of junction between healthy and pathologic tissue. Our clinical results at 2 year follow up are same as published in the literature [1, 22, 31, 32] with 85% excellent and good outcomes. The arthroscopic findings in our 2 cases of recurrence are the same as in the series of Maffuli *et al*. [1]. An excessively conservative resection is a potential factor of recurrence.

CONCLUSION

When a symptomatic lateral meniscal cyst is suspected,magnetic resonance imaging(MRI) is the non invasive test of choice [33]. MRI is very useful tool in detecting any other pathology as well as to precisely delineate the lateral meniscal tear and the cyst. If the tear is clearly opened into the joint, arthroscopic partial meniscectomy and cyst decompression are indicated. If the tear is not opened into the joint, arthroscopy should be performed to search on both surfaces of a meniscus tear, followed by an open cystectomy. In all cases, meniscal tissue should be preserved as much as possible so as not to derange the knee biomechanics. Cysts of the lateral meniscus are most commonly the consequence of a meniscal tear situated in the medial third. The most common type of tear is the horizontal cleavage tear. The meniscus tear is usually a primary lesion and results from a degenerative breakdown of the ultrastructure of the meniscal collagen. Sometimes microtrauma plays a role in the formation of the meniscal tear. Arthroscopic partial meniscectomy is the method for the treatment of lesions to the lateral meniscus. Meniscal tissue preservation is critical for the function of the knee. At 2 year followup, function and prognosis appears to be good. A longer follow-up would be needed to further assess long-term radiographic outcome.

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