Original Paper

A complex assessment of patients with knee osteoarthritis and Baker’s cyst: observational study

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Abstract
In our observational study, we performed the clinical and functional examination, analyzed imagistic and histological findings and evaluated the correlation between previous aspects in patients with primary knee osteoarthritis (PKOA) and Baker’s cyst (BC). The correlations were made to better understanding of BC in patients with PKOA and optimal choosing for treatment. Seventy patients with painful PKOA (ACR criteria) and BC were assessed. We evaluated knee pain using a 100 mm VAS and functional status using the pain, stiffness and functional subscales of WOMAC index. All patients were imagistic examined (ultrasonography and MRI). Thirty-eight patients with PKOA and simple BC respond to conservative treatments. Thirty-two patients with PKOA and complex BC need surgical removal (arthroscopic decompression ± open excision in larger cysts). For these patients, it is performed histological assessment. Any medical team that manages a PKOA patient with BC may develop the treatment plan based upon not only the size of BC, symptoms and other associated conditions but also on the WOMAC scoring and complex anatomic and histological data about BC.

Keywords: Baker’s cyst, knee pain, preoperative survey, histological study.

Introduction
Chronic osteoarthritis (OA), a major public health problem, is a highly prevalent disease with markedly increasing impact worldwide because of the aging of populations [1].

Knee osteoarthritis (KOA), a degenerative knee disease and a major cause of disability among the aging population, with prevalence approximately 30% in those over 65-year-old [2], is the most common type of arthritis associated with Baker’s cysts (BC) [3].

The most important definitely aspects correlated with Baker’s cyst (a medical term in the memory of William Morrant Baker, the British surgeon who originally described it, in the late 1800’s) in KOA are:

Definition
BC or synovial cyst or popliteal cyst is described as a synovial popliteal herniation (its matrix is the bursa of the semimembranosus muscle underneath the medial head of the gastrocnemius muscle and the joint capsule lined by a true synovium, as it is an extension of the knee joint) or a bursopathy (inflammation of the bursa, occurring in the back of the knee joint) [4, 5]. In older patients, it is commonly part of a chronic knee joint effusion, which herniates between the two heads of the gastrocnemius, and is most commonly secondary to degenerative or meniscal pathology. This popliteal cyst may serve as a protective mechanism for the knee. The knee effusion, described in intrinsic intra-articular disorders, is displaced into the BC, thus reducing potentially destructive pressure in the joint space.

Prevalence
The frequency of OA as a cause of Baker’s cysts in adults varies widely in different series, ranging from 6% to 45% [6]. The prevalence of BC is significantly higher in people over 50-year-old, without predilection for race or sex.

Anatomic aspects
The gastrocnemio-semimembranosus bursa is a complex of two other bursae: a bursa anterior to the medial gastrocnemius tendon (the subgastrocnemius bursa between the medial head of the gastrocnemius and the knee capsule) and a bursa between the tendons of the gastrocnemius and semimembranosus tendons. The posterior extension of a BC represents the second bursa, that commonly communicates with the subgastrocnemius bursa and often communicate with the knee joint [7], according to Gray’s Anatomy of the Human Body [8].

BC is located in the postero-medial aspect of the popliteal fossa because the synovial capsule does not provide anatomical support in this region; it is extended between the deep fascia and the medial head of the gastrocnemius muscle [9].

Pathogenic mechanism
BC is not an isolated pathology; it can be caused by virtually any cause of joint swelling described in many
joint abnormalities (arthritis and other joint derangement: joint effusion, meniscal tear, joint capsule herniation into the popliteal region) [10, 11]. It was mentioned a strong association between popliteal cysts and the severity of isolated medial compartment osteoarthritis, emphasizing the importance of cartilage degeneration for the distension of Baker’s cysts [12]. In patients with KOA, BC is a secondary cyst; this synovial cyst communicates directly with joint cavity (a phenomenon of a “one-way valve” between the articular cavity and cyst) [13]; the presence of a valve-like mechanism may allow joint fluid to communicate in only one direction [14]. Joint effusion and fibrin are pumped from the knee joint into the popliteal cyst; fibrin serves as a one-way valve blocking return of effusion into the knee joint; trapped effusion with a normal viscosity in the cyst is reabsorbed through the semipermeable membrane, leaving behind concentrations of fibrin. This explains the difficulty aspirating the thick, glutinous contents of these cysts.

**Clinical aspects**

The clinical problems are largely proportional to the size and location of the cyst. The most common symptoms include: popliteal mass or swelling 76%, pain 32%, knee effusion 32%, thrombophlebitis 13%, clicking of the knee 11%, buckling of the knee 11%, locking of the knee 3% [15, 16]. The pain and discomfort in the posterior knee region are mentioned in distended BC [17].

**Positive diagnosis**

The positive diagnosis of BC after clinical evaluation is made based upon imagistic investigation: conventional radiography – a popliteal cyst appears as a soft tissue mass in the posteromedial knee joint or it is suggested by the presence of multiple calcified loose bodies; arthrography is more sensitive than ultrasonography (US) in detecting popliteal cysts. Due to its ability to distend the bursa, US is the most frequently helpful imaging technique in the evaluation of a BC and can exclude a coexisting deep venous thrombosis. Magnetic resonance imaging (MRI) defined exactly the BC as a homogeneous high signal intensity cystic mass behind the medial femoral condyle, and a thin fluid-filled neck interdigitates between the tendons of the medial head of the gastrocnemius and semimembranosus muscles) [16].

**Differential diagnosis**

The complicated cysts with extension or rupture into the calf mimic deep vein thrombosis, phlebitis and other vascular masses or soft tissue tumor (benign, malignant) [4].

**Treatment aspects**

The asymptomatic BC, diagnosed incidentally, has no treatment. The treatment in symptomatic BC depends on the clinical and functional patient status and is based upon intra-articular corticosteroid injections, other non-steroidal anti-inflammatory agents, physiotherapy measures, ice-therapy exercises, orthosis. Rarely, arthroscopic treatment or surgical excision are necessary, approached in a number of different ways (the cyst is dissected by means of sharp and blunt dissection until its communication with a capsule is seen; the base is excised, and the defect is usually closed) [11] when the previous methods fail. All prescribed programs are applied to obtain functional and painless knee joint.

**Evolution**

Rarely, BC may rupture or dissection (pseudothrombophlebitis syndrome), hemorrhage, infection, posterior compartment syndrome and trapped calcified inside cyst bodies [16].

**Patients and Methods**

The first part of our observational study consists of a preoperative survey concerning the symptoms, clinical and functional status in KOA patients with BC.

The second part comprises a histological follow-up examination of BC after postoperative intervention (knee arthroscopy) and a correlation between studied parameters (clinical and functional parameters) and type of BC (simple or complex cyst).

During the period 2010–2012, we performed an observational study. Seventy Caucasian patients (34 females, 32 males), over the age of 65 (average age 72.4 years, between 65 and 80 years), diagnosed with KOA in accordance with American College of Rheumatology (ACR) criteria for osteoarthritis, were complete examined (clinical, functional and imagistic evaluation) in the Physical Medicine and Rehabilitation Department in two Craiova hospitals. All patients were previous diagnosed with BC, using imagistic (US and/or MRI) methods.

Only 32 patients were unilateral operated on for a BC (in four cases for a recurrence; eight patients had bilateral cysts, but they were unilateral surgical treatment only for the complicated BC) in the Department of Orthopedics, Emergency County Hospital of Craiova, Romania. These 32 patients were available for the histological assessment.

The Ethical Committee of the Hospitals approved all the procedures of this study and all patients signed a consent form.

Studied patients were complete assessed before treatment program (rehabilitation or surgical – arthroscopic intervention). Parameters measured and the used scales were:

- Pain: visual analogue scale (VAS);
- Stiffness, pain and physical function (self reported disability): the important clinical and functional defined parameters of osteoarthritis (Western Ontario McMaster Universities Osteoarthritis Index – WOMAC). WOMAC index (24 items – two items for stiffness, five items for pain, 17 items for physical function) is a well-validated scale designed to express the problems experienced by lower limb osteoarthritis patients; higher scale score expressing a greater reported disability [18];
  - Ultrasound aspect of BC (simple or complex BC) and other ultrasound finding of knee (effusion and/or synovitis): the US examination was performed with the HD 11 XE Ultrasound System Philips, 12.5 MHz linear sound; we examined 140 knees, including Doppler signal for popliteal vessels;
  - Histological exam of BC.
Treatment

Thirty-eight patients with simple BC performed only rehabilitation program (we applied conservative treatment: anti-inflammatory medications, ice, iontophoresis, massage, range of motion and strengthening exercises); this type of therapy was effective in reducing symptoms related to the BC and improving the functional status.

The other 32 patients with complex BC have to be a surgical treatment solution for their complicate clinical and functional status (with a significantly impact on their daily independence and quality of life).

The medical team used two surgical procedures: arthroscopy procedure for relative small BC and open excision via a limited arthrotomy for other BC.

The statistical analysis was performed with the use of a SPSS (Windows version 6.1). The standard statistical methods were used to compute the means and standard deviations. We used the Pearson’s product moment to establish the correlation between the average values of studied parameters. Statistical significance was accepted at the level of $p<0.05$.

Table 1 – Correlation of all studied parameters

<table>
<thead>
<tr>
<th></th>
<th>VAS</th>
<th>WOMAC function</th>
<th>WOMAC pain</th>
<th>WOMAC stiffness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean value (and standard deviations) of all patients</td>
<td>6.64±1.52</td>
<td>64.84±14.98</td>
<td>24.94±9.49</td>
<td>9.41±2.89</td>
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<tr>
<td>Mean value of simple BC patients (and standard deviations)</td>
<td>2.82±1.16</td>
<td>60.94±14.47</td>
<td>22.36±8.59</td>
<td>7.81±1.53</td>
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<tr>
<td>Mean value of complex BC patients (and standard deviations)</td>
<td>7.69±1.59</td>
<td>77.18±19.25</td>
<td>35±6.41</td>
<td>12.68±1.83</td>
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<tr>
<td>VAS</td>
<td>Pearson’s correlation</td>
<td>1</td>
<td>-.114</td>
<td>.039</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.</td>
<td>.348</td>
<td>.750</td>
</tr>
<tr>
<td>WOMAC function</td>
<td>Pearson’s correlation</td>
<td>-.114</td>
<td>1</td>
<td>.245</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.348</td>
<td>.</td>
<td>.041</td>
</tr>
<tr>
<td>WOMAC pain</td>
<td>Pearson’s correlation</td>
<td>.039</td>
<td>.245</td>
<td>1</td>
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<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.750</td>
<td>.041</td>
<td>.</td>
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<tr>
<td>WOMAC stiffness</td>
<td>Pearson’s correlation</td>
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<td>.723</td>
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<td></td>
<td>Sig. (2-tailed)</td>
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<td>.002</td>
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</tr>
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<td>Baker's cyst type</td>
<td>Pearson’s correlation</td>
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<td>.345</td>
<td>.703</td>
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<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.075</td>
<td>.003</td>
<td>.</td>
</tr>
<tr>
<td>No. of patients</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
</tr>
</tbody>
</table>

Results

Our investigation was performed in the patients with knee OA, the most common knee disorder. We do not presented our results for males and women because is not described consistence difference in frequency between the sexes.

Clinical assessment

In our study, most Baker’s cysts (58 patients) were associated with knee pain (tightness or aching behind the knee, when the joint is extended or fully flexed), stiffness and gait disability. In operated patients, BC was visible as a bulge behind the knee, on standing and it was palpable; the Foucher’s sign was positive. The other 12 patients had BC asymptomatic and clinically unapparent, with negative Foucher’s maneuver; their knees were pain status due to the osteoarthritis process. Other aspects of the knee exam revealed crepitus and joint line tenderness. The mean values of VAS for the studied patients were mentioned in Table 1.

Imagistic assessment

Conventional radiography detected the KOA findings, especially adjacent bony involvement and diminishing of joint space.

Ultrasound assessment

The US findings were BC (simple – an anechoic mass, well-defined limits, with posterior acoustic enhancement – Figure 1A, and complex – multilocular, with hypechoic content, inhomogeneous, with mobile internal calcification particles and shadow signal – Figure 2, A and B), synovitis (44 knees – 31%) and effusion (54 knees – 40%) (Figure 1B).

Ultrasound images of the popliteal fossa showed dimensions of a cystic mass, with or without echogenic particles within a primarily clear fluid. The cyst is in close relation to the knee joint; a clear communication with the synovial space of the joint is not clear revealed when the cyst is too large or complex (it may obscure visualization of the fluid-filled connection to the joint space proper, leading to a false-positive diagnosis).

Color Doppler imaging confirmed the absence of
vascular flow within the BC (we excluded a popliteal artery aneurysm) (Figure 3, A and B).

Because we could not establish a true connection to the joint space proper, which is essential for arthroscopy intervention we recommended the MRI.

![Figure 1](A) ![Figure 1](B)

**Figure 1** – *(A and B)* Ultrasound images: anechoic mass with well-defined limits and posterior acoustic enhancement.

![Figure 2](A) ![Figure 2](B)

**Figure 2** – *(A and B)* Ultrasound images: complex – multilocular, with hypoechoic content, inhomogeneous, with mobile internal calcification particles and shadow signal.

![Figure 3](A) ![Figure 3](B)

**Figure 3** – *(A and B)* Doppler ultrasound: absence of vascular flow within the BC.

In patients with significant degenerative joint sufferance, with significant damage of the articular cartilage, there was observed a tendency of the cyst wall to rupture, histologically supported by the existence of hematic infiltration in its thickness, as well as vascular ectasia at this level (Figures 4 and 5) or hematic material accumulation within the cyst (Figure 6).
**Histological assessment**

During arthroscopic surgery and limited arthrotomy under regional anesthesia, the physician removed the 32 partially hemorrhagic soft tissue specimen that leads to the cyst formation, with various measuring (with the minimal 2×1.4×1 cm and maximal limits). We review joints-normal histology (synovial membrane, synoviocytes, hyaline cartilage, chondrocytes, and collagen) previous to analysis the BC.

Of the 32 histological specimens, 18 showed slight fibrosis and 14-marked fibrosis with thickening of the bursal wall. In 10 cysts, the walls were normal, in nine there was moderate inflammation and in a further 13 there was marked chronic unspecific inflammation.

Baker’s cyst is microscopically represented by banded synovial structures, covered with a unistratified-flattened epithelium, which present in their thickness hyaline areas proving the existence of a chronic injury being reconstructed (recovered).

Inside the cyst, we can frequently observe the presence of fibrin deposits, with uneven thickness, unsteadily adhering to synovial epithelium.

These fibrin bands usually develop, within the primary cyst, folds, which block synovial liquid circulation through a valve mechanism (Figures 4–6).

In patients with significant degenerative joint sufferance, with significant damage of the articular cartilage, there was observed a tendency of the cyst wall to rupture, histologically supported by the existence of hematic infiltration in its thickness, as well as vascular ectasia at this level (Figures 7 and 8) or hematic material accumulation within the cyst (Figure 9).

In the four patients with surgical intervention for Baker’s cyst relapse, the histologic examination evidenced the existence of a chronic inflammatory infiltrate in the synovial cyst wall thickness, composed of numerous lympho-plasmocytes and histiocytes (Figure 10) that certify the chronic inflammatory process.

After histological examination (Hematoxylin–Eosin stained slides prepared from this tissue), we could confirm the literature data about microscopic definition aspects of the “old” anatomic entity: BC. Usually, the BC is lined with synovial epithelium and enclosed by a smooth walled, lined by a single layer of a very flat epithelial cells; the cyst has a thick wall of collagenous connective tissue with small isomorphic fibrocytes (morphological-like bursa). In the surrounding area, there is the loosened, lightly myxoid connective tissue of the soft parts of the knee joint.
Discussion

In our study, we made a complex assessment of patients with KOA and BC (clinical, functional, imagistic and histological assessment), and realized a correlation between disability and ultrasound aspect of BC. We did not found in the medical literature other similar studies.

In medical literature, a large group of various studies is published about BC – a common occurrence in PKOA that affect older patients frequently, without regard to sex (prevalence, risks factors, mechanisms of formation – pathophysiology, symptoms and clinical features, diagnosis and treatments) [11, 20].

Some data has reported on its morphology and function. Since more 20 years ago, BC was considered like a primary and secondary causative factor of chronic effusions in correlation with a chronic synovitis and disturbed hydraulic system of the knee [21]. Histological examination of the BC revealed chronic synovialitis, in the context of a herniation of synovial membrane through posterior joint capsule [22].

In our patients, all operated BC were located in the medial side of the popliteal space, between the medial head of the gastrocnemius muscle and the semimembranosus muscle. It respects the commonest position of the classical popliteal cyst in the postero-superior aspect of the medial femoral condyle; the majority of BC extends between the deep fascia and the medial head of the gastrocnemius muscle and represent a fluid distension of a bursa between the gastrocnemius and semimembranosus tendons through a communication in the knee joint. [23]. Anatomical knowledge of BC position may be important for medical practice, especially for the imagistic [24] and arthroscopic examinations.

We had not to take into consideration the other pathologic aspects of the knee posterior region due to the imagistic assessments previous surgical or rehabilitation assistance. Without the ultrasound or MRI examination, we must to do the differential diagnosis of BC with the aneurysm of popliteal artery, thrombophlebitis, deep vein thrombosis, hematoma, xanthoma, ganglion cyst, abscess or soft tissue tumor of the popliteal region and of the calf [6]. A cyst may cause pseud thrombophlebitis and cellulitis due to leakage or rupture [25] and deep venous thrombosis [26] or ischemia [27] because of direct compression of the popliteal vein and artery, respectively. These pathologic conditions can frequently mimic unusual presentation BC, occurring in the postero-superior aspect of the lateral condyle [9].

The histological assessment is important to make the distinction between BC (a synovial cyst) and ganglion cyst.

The main histological difference is the synovial lining that is presence in BC and incomplete or absence in ganglion cyst. In contrast to synovial cyst, ganglion cyst is often juxta-articular, does not communicate with the joint cavity, involves myxoid degeneration in soft tissue and is filled with myxoid material [28]. The two different terms, ganglion and synovial cyst, are inexacty applied because secondary changes in the capsule may make histologic differentiation difficult. The cyst arising from the semimembranosus gastrocnemius bursa almost never calls a ganglion, even when it has typical histologic features [29].

The typical histological findings of the BC (the presence of granulation tissue characterized by active chronic productive inflammation, organizing hemorrhage, and dense fibrous connective tissue coat with eosinophilic
depositions) may be compatible with pigmented villonodular synovitis (PVNS: a rare hyper-proliferation of the synovial lining). We must to make the differential diagnosis between BC and PVNS but we take into consideration the possibility of the pathology coexisting – a PVNS spreading into the popliteal cyst [30]. The histological features of PVNS are synovium contains hemosiderin deposits, giant cells and histiocytes [31, 32].

The histological findings are important to clinicians to understand the mechanism of cyst formation proposed by some authors [33, 34] and the recurrence of BC after surgical intervention [35].

The mechanism of cyst formation as proposed by Lindgren PG and Willén R (1977) supports the view that degeneration of the knee joint capsule contributes to the formation of a popliteal cysts as shown by the increased prevalence with age of a communication between the joint and the bursa [33].

Synovial cysts may form due to increased pressure in the joints causing protrusion of the synovial lining through a defect or weakness in the capsule, degenerative defects in the joints causing herniation of the synovium, myxoid degeneration of collagen tissue, metaplasia of pluripotent mesenchymal cells, or increased hyaluronic acid secretion by fibroblasts in response to repeated trauma [34].

The lack of support from surrounding structures (a morphological aspect of knee joint) which leads to a gradual disturbance in the mechanics of movement and the production of excess fluid in a synovial membrane is another theory for the development of BC [9].

Since 30 years ago, the surgical attitude was a radical excision of the whole cyst, an aspect difficult to realize. The remnant fragments will be left in the deep portion, which by outgrowth of synovial lining cells could form a new cyst. The synovial fluid out of the joint might stimulate the mesenchymal cells of the interstitial tissue to become transformed into synovial lining cells to form an encapsulating barrier. The recurrent wall cavity structure has numerous diverticulae and wall contour might be due to postoperative changes such as scar formation [35].

In our study, almost half of patients had asymptomatic or little pain BC in the complex symptomatic KOA. This aspect is explained through an anatomic detail: communications between the gastrocnemio-semimembranosus bursa and the knee joint are present in approximately half of all asymptomatic persons [11, 36].

The various inflammatory changes seen at histopathological assessment had no impact through the clinical status of our operated patients.

Certainly, the pain status is determinate from all the structures of and near the joint that contain pain fibers – all periarticular lesions occur around the knee joint, including popliteal Baker’s cyst (BC) [12]. This aspect is sustained by the observation that the presence of popliteal cysts among patients with OA was unrelated to the radiographic severity of the arthritis [37].

The complex pain status of KOA with BC is reflected into a various disabilities aspects, monitoring with WOMAC scale. Using a physical therapy assessment tool simply known as the WOMAC, our patients were guided their therapy regimen effectively, so the 32 patients accepted the surgical intervention.

In other studies was mentioned the WOMAC scale reflects not only the regional knee or hip abnormalities but also the constitutional status of patient (that represents a direct result of the morphological particular determinants) [38]. The results of WOMAC are thus strongly influenced by factors other than quantitative parameters of the lower extremity (knee and hip) [39]. The findings of all researches provide support for including an objective assessment of activities of daily living in OA patients together with a subjective self-report.

The imagistic findings of BC were obtained through two fundamental types of imagistic assessment: US and MRI. Taking into consideration the fact that ultrasound identification of fluid between the semimembranosus and medial gastrocnemius tendons in communication with a posterior knee cyst indicates Baker’s cyst with 100% accuracy [40], we recommended the MRI examination only in patients that ultrasound assessment could not established a true connection between BC and the joint space – an essential criteria for positive diagnosis of BC. MRI imaging provided better soft tissue contrast and multi-planar assessment; we could evaluate the anatomical relationship to the knee and surrounding tissues and identify associated intra-articular lesions [41].

In our imagistic evaluation, we took into consideration the main data of knee ultrasound examination, and BC especially:

- Ultrasonography is a very helpful imaging technique in the evaluation of a popliteal mass whether it is a pure cystic structure or a complex cyst and/or solid mass. The modality is an easy-to-use, rapid, relatively inexpensive examination; studies determining the effectiveness of sonography in the diagnosis of Baker’s cysts are limited by small sample sizes, lack of gold standards, and undefined sonographic criteria [40];
- Baker’s cysts are a common ultrasonographic finding in knees with chronic osteoarthritic pain and found that they are associated with synovial inflammation and its grade [23];
- Fluid distention of the gastrocnemio-semimembranosus bursa is characteristic on sonography, similar to that on MR imaging [42];
- A study comparing MUS scanning with MRI showed a high correlation [40].

The original aspects of our study was the correlations established between ultrasound BC aspects and WOMAC subscale scores, through we can demonstrated the functional impact of a morphological abnormality into the quotidain activities of life in PKOA patients.

The complete imagistic assessment was necessary due to the importance of the communication between bursa with the joint space of the knee. The communication invariably took the shape of a transverse slit separating the capsule from the undersurface of the gastrocnemius tendon. Recent studies of the pathogenesis of popliteal cysts have shown that they are dependant on a varulvar mechanism. The presence of a valve, along with the existence of an effusion, allows a unidirectional flow of the synovial fluid from the articular cavity to the bursa,
determining the appearance and persistence of the cyst [43, 44].

An arthroscopy treatment was available for the relative small BC, with capsular septa. This surgical procedure is a less invasive and the recovery is easier and quicker than excising the cyst. In the patients with large cyst and without a specific cause for the fluid a surgical excision was performed.

Because surgical removal is often followed by recurrence (the high frequency of recurrence after open excision [45]), several studies about different surgical techniques had been performed. All concluded that there are two keys of a successful therapy. First, the treatment of the associated intra-articular lesions of the knee responsible for the persistence of the cyst [46, 47] and second, the re-establishing normal bidirectional communication between the cysts and the articular cavity with correction of the valvular opening (restoring the parophysiological situation of the gastrocnemio-semimembranosus bursa communicating with the knee joint) [46].

Conclusions

Popliteal cyst more commonly know as Baker’s cyst is a fluid filled sack that is located in the back of the knee and is common in knee OA.

BC must integrated in the anatomical paradox of the popliteal area – simplicity in description but a complexity in function of knee joint and lower limb.

In the future, studies may report more histological and morphological aspects correlated with the chronic knee effusion as one of the requirement for synovial cyst formation.

The treatment of BC in patients with knee OA is mainly conservative but arthroscopic treatment is large performed, for repairing the intraarticular abnormality and removal the cyst, with avoiding the large open knee wounds.

We concluded that any medical team that manages a KOA patient with BC may develop the treatment plan based upon not only the size of BC, symptoms and other associated conditions but also on the WOMAC scoring and complex anatomic and histological data about BC.

References


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