Popliteal cyst - a case report

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Abstract

The authors report a case of popliteal cyst which was detected during the routine dissection of a cadaver in Anatomy Department, Government Medical College, Thrissur, Kerala. The cyst was identified in the right popliteal fossa in a female cadaver arising from the interior of knee joint. It measured 6 cm in length and 3 cm in width. Thick synovial membrane was forming the cyst wall. On deep dissection it was found communicating directly with the synovial lining of knee joint.

Key words : *synovial cyst, intra-articular, Baker's.*

Introduction

Popliteal Cysts occur typically secondary to an intra-articular pathology in adults but may occur as primary lesions unrelated to knee injury. The Popliteal cyst, also known as a Baker's cyst, is caused by one of the bursae in and around the popliteal fossa[1]. Synovial cysts are defined as benign soft tissue tumors that arise from deep serous bursae and cause symptoms by rupturing or by putting pressure on adjacent structures. Synovial cysts occur frequently in adults and are accompanied by symptoms such as hindered movements and pain after physical exertion[2]. Bursa enlargement may be primary or secondary, and is believed that most cases in adults are secondary to some type of internal derangement of the knee[3].

Case Report

A cyst was identified in the right popliteal fossa in a female cadaver during the routine dissections at the Dept. of Anatomy, Government Medical College, Thrissur, Kerala. On deep dissection of the Popliteal fossa we found that it was arising from the interior of knee joint. As the cadaver was an unclaimed body obtained from our hospital, we could not trace the medical history as the lady was handed over by police.

Observations on the specimen were as follows : There was a synovial sac extension from the interior of knee joint to the superficial level. It measured 6cm in length and 3 cm in width. Thick synovial membrane was forming the cyst wall. The interior was empty as the fluid already leaked out during dissection. On deep dissection it was found communicating directly with the synovial lining of knee joint. It was posterior to the popliteus muscle and between semimembranosus and the medial head of gastrocnemius deep to the bifurcation of popliteal artery into its terminal branches. (Figures 1&2).

Discussion

Anatomy of the popliteal region : The popliteal fossa is an intermuscular space posterior to the knee joint. The boundaries are biceps femoris proximolaterally; semimembranosus and the overlying semitendinosus proximomedially; the lateral head of gastrocnemius with the underlying plantaris distolaterally, and the medial head of gastrocnemius distomedially. The anterior boundary of the fossa is formed, in proximodistal sequence, by the popliteal surface of the femur, the oblique popliteal ligament, and the posterior aspect of the proximal tibia covered by popliteus and the fascia overlying popliteus. Its contents are largely hidden, especially in its distal part, where the heads of gastrocnemius are in contact with each other.

Numerous bursae are associated with the knee. Anteriorly, there is a large subcutaneous prepatellar bursa, a small deep infrapatellar bursa, a subcutaneous

Figure1 - Popliteal Cyst

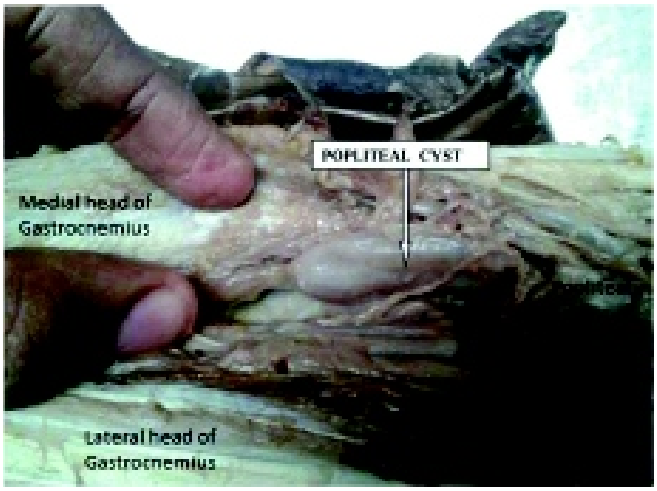
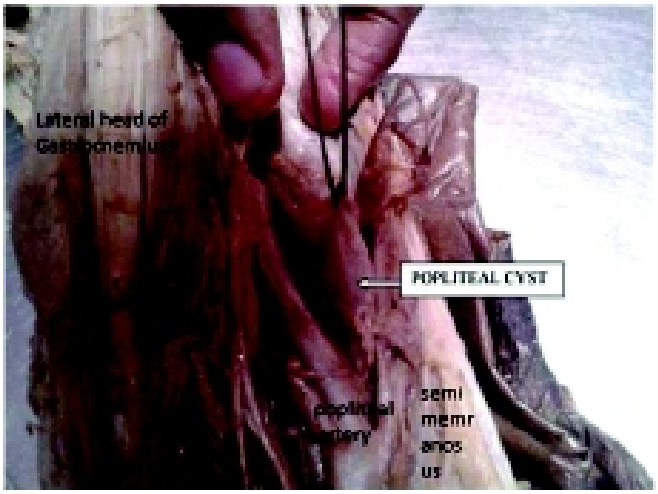


Figure 2 - Popliteal Cyst



infrapatellar bursa and a large suprapatellar bursa which is the superior extension of the knee joint cavity. Posterolaterally, there are bursae between the lateral head of gastrocnemius and the joint capsule (this bursa is sometimes continuous with the joint cavity); the bursa between the tendon of popliteus and the lateral femoral condyle, which is usually an extension of the synovial cavity of the joint. The last two bursae may communicate with each other.

Medially, the arrangement of bursae is complex. The bursa between the medial head of gastrocnemius and the fibrous capsule is prolonged between the medial tendon of gastrocnemius and the tendon of semimembranosus (the semimembranosus bursa) and usually communicates with the joint. The bursa between the tendon of semimembranosus and the medial tibial condyle and the medial head of gastrocnemius may communicate with this bursa. There is a bursa between the medial collateral ligament and the tendons of sartorius, gracilis and semitendinosus (the 'pes ansarina bursa'). Bursae that vary both in number and position lie deep to the medial collateral ligament between the capsule, femur, medial meniscus, tibia or tendon of semimembranosus. Occasionally there may be a bursa between the tendons of semimembranosus and semitendinosus. Posteriorly, bursae associated with the knee are variable.

In adults, bursal inflammation producing a popliteal fossa swelling commonly occurs secondary to degeneration within the knee joint: regardless of size and position, it almost always arises from the plane between semimembranosus and the medial tendon of gastrocnemius[4].

Adams originally described the popliteal cyst in 1840, and in 1877, Baker detailed it further as being caused by trapping of fluid in bursa related to the semimembranosus tendon. Synovial cyst usually connects with the knee joint by way of a slit-like opening lined with synovium[5]. Baker's cysts (popliteal cysts) commonly arise as an abnormal distension of a communicating gastrocnemio-semimembranous bursa in patients with knee effusions[6]. Only a small proportion of Baker's Cysts are diagnosed clinically and can complicate the course of several underlying conditions that produce recurrent arthritic flares, including inflammatory, degenerative, and crystal-induced arthropathies as well as internal derangements of the knee joints . Baker's Cysts can appear clinically as a posterior mass, mimicking a true soft tissue mass[7].

Any intra-articular process associated with effusions may lead to distension of bursa through a one-way valve mechanism. Intra-articular pressures in patients with knee effusions as high as 1,000 mmHg with the knee

completely bent have been reported. Although most synovial cysts remain asymptomatic or are associated with only mild localized symptoms, a variety of complications have been reported[8]. Multiple extra-articular synovial cysts complicated with rheumatoid arthritis was reported by Yohei et al[9].

When the cystic swelling is visible or palpable, there is little difficulty in making the diagnosis clinically. However, ganglion cysts, inflamed bursa around the knee, synovial inflammation, arthritic spurs, loose bodies, meniscal tears, and tumors should be considered in the differential diagnosis[10].

Secondary popliteal cysts are associated with knee pathologies like meniscal lesions, articular cartilage lesions, synovitis and anterior cruciate ligament injury among common derangements[11].True synovial, extra-articular cysts of the knee joint are quite rare, and a posttraumatic synovial cyst is even more unusual[12].

It is reported that most frequently associated arthropathy of Baker's Cysts was Osteoarthrits (50.6%), followed by Rheumatoid Arthritis (20.6%). However, in the cases of ruptured Baker's Cysts, the inflammatory pathology (66.7%) is more frequent than the degenerative one (33.3%)[13].

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