



## CASE STUDY

### UNUSUALLY LONG ANTERO-LATERAL, BAKER'S CYST DIAGNOSED ON CYTOLOGY

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#### ABSTRACT

Baker's cyst is a synovial fluid filled cyst found in the popliteal fossa. It usually presents as a localized swelling in the popliteal fossa. We present an unusual case of long Baker's cyst located antero-laterally in the leg, extending from the popliteal fossa to the lateral malleolus, diagnosed on fine needle aspiration cytology. Rupture of Baker cyst can lead to medical emergency like acute compartment syndrome. Fine needle aspiration cytology along with radiology can establish the diagnosis of unusually presenting Baker's cyst and can prevent complications like posterior compartment syndrome due to rupture of these cyst.

## INTRODUCTION

Baker's cyst is named after the surgeon William Marrant Baker who first described it. Baker's cyst is distended pseudocyst arising from gastrocnemio-semimembranosus bursa behind the medial head of gastrocnemius (Fritschy *et al.*, 2006). Intra-articular processes that are associated with effusion like rheumatoid arthritis may lead to distension of this bursa. Clinically they present as a well defined localized swelling in the popliteal fossa and resolves by themselves. Baker's cyst in this case was presented with unusual clinical presentation as ill defined, diffuse, painless swelling in the antero lateral aspect of right leg with imaging techniques like ultrasound and MRI only revealed the extent and cystic nature of the lesion (Ward *et al.*, 2001).

### Case Report

A 40 year old male presented to cytology department with a vague ill defined swelling on the lateral aspect of right leg for past six months. A history of fall was given by the patient 3 months before. On examination a diffuse, firm swelling measuring 10x4 cm on the antero lateral aspect was noted with normal overlying skin. A clinical diagnosis of an old hematoma or lymphangioma was made. Patient was advised fine needle aspiration cytology and radiological investigation like color

doppler ultrasound and MRI. The color Doppler of right leg swelling showed a long tract of cystic fluid collection seen running from patella to lateral malleolus along the antero-lateral aspect of leg in the muscle plane with smooth and well defined margins. No abnormal vascularity was seen. An impression of Baker's cyst or an old hematoma was made. MRI revealed a well defined, oval shaped lesion with tapering ends along the lateral aspect of right leg within the peroneus muscle, surrounding structures were normal. An impression of cystic lesion with few septation, possibly lymphangioma was made and fine needle aspiration cytology was advised for confirmation (Figure 1). Fine needle aspiration cytology (FNAC) was performed on the swelling with a 22 gauge needle along with syringe. 10 ml of gelatinous fluid was aspirated and two giemsa stained slides were prepared. The smear showed a hypocellular smear with occasional singly occurring histiocytes like cells (synoviocytes) in a thick mucoid background (Figure 2). In view of the available radiological findings and cytological findings a diagnosis of Baker's cyst was rendered.

## DISCUSSION

Baker's cyst is a synovial cyst in the popliteal fossa. The cysts may be bursal or synovial in origin. The etiopathogenesis involves accumulation of synovial fluid in a non-communicating bursa by multiple intra-articular causes. Intra-articular pathology including degenerative joint disease like osteoarthritis, rheumatoid arthritis (Handy, 2001) can lead to increased synovial fluid, increasing the intra-articular pressure

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leading to distension of the bursa and herniation of the posterior part of capsule. (Meyerding and VanDemark, 1943)



Figure 1. MRI showing well defined, oval shaped cystic lesion with tapering ends along the lateral aspect of right leg within the peroneus muscle

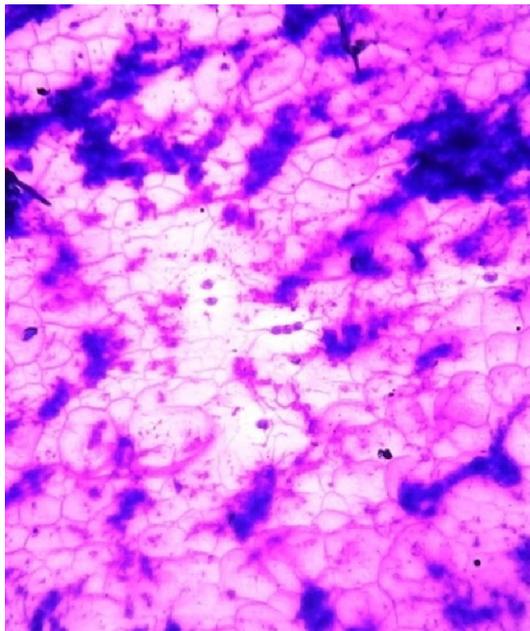


Figure 2. Hypocellular smear with occasional histiocyte like cell (Giemsa: 10x)

The cyst usually presents in the postero-medial aspect of knee joint superficial to popliteal vessels, tibial nerve and extends distally into the calf. Baker's cyst with unusual presentations are relatively uncommon. (Buckwalter *et al.*, 1979; O'Dell *et al.*, 1984) Baker's cyst often disappear itself in older people and children and rarely causes any major discomfort to the patients. The cyst can be managed conservatively without need

of excision in every patient. However complication like rupture baker's cyst leads to leaking of fluid in to closed facial plane leading to marked rise in pressure; severe ischemia of leg muscle and can precipitate medical emergency like acute compartment syndrome which can mimic to pseudothrombophlebitis. Isolated case reports have revealed the unusual presentation like lateral presentation of popliteal cysts, cyst located to the posterior aspect of lateral condyle of femur and extended proximally in the region of thigh, anterior presentation of cyst, intramuscular cyst located within the vastus lateralis in MRI studies and lateral Baker's cyst herniating through the iliotibial tract. (Handy, 2001) The cyst in this case was present in the location like antero-lateral aspect of right leg and extended from the popliteal fossa to lateral malleolus with unusual clinical presentation of a diffuse vague generalized swelling making the clinical impression difficult. Radiological investigation like color Doppler gave out possibility of old hematoma or baker's cyst while MRI defined the extent of lesion. FNAC provided the exact diagnosis of Baker's cyst by presence of occasional singly occurring synoviocytes in predominantly hypocellular smear in mucoid background (Punia *et al.*, 2002). FNAC is often an easy and rapid way of confirming the diagnosis of Baker's cyst as it prevents the more cumbersome procedures likes excision and histopathological examination for diagnosis. This paper highlights the importance of FNAC in diagnosing the unusually presenting Baker's cyst that can significantly help clinicians and orthopedic surgeons and prevent complication like compartment syndrome.

## Conclusion

This case provides an insight in to the unusual presentation of Baker's cyst and role of FNAC in providing easy, rapid and definitive diagnosis without causing much discomfort to the patients.

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