

Recurrent Paediatric Baker's Cyst: Its Management and Comprehensive Literature Review

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ABSTRACT

Introduction: Baker's cyst, also known as popliteal synovial cyst, is a rare benign cystic swelling found in popliteal fossa in children. In children, most often these cysts are not associated with meniscal tears and degenerative joint pathology, so the prognosis is good when managed properly.

Case Description: Here, we are presenting this rare case report of paediatric Baker's cyst with failed conservative management. Finally, it was managed surgically with satisfactory aesthetic and functional outcome.

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INTRODUCTION

Baker's cyst is a fluid-filled sac found behind the knee, also known as popliteal cyst or popliteal synovial cyst. In children, Baker's cysts are mostly idiopathic & less frequently associated with juvenile arthritis or other diseases. These can develop after a knee injury or inflammation of the membrane lining of knee joint. Baker's cysts are mostly asymptomatic and mostly, found by the parents incidentally.

The natural history of true juvenile Baker's cysts appears to be more favourable and these cysts require only conservative treatment if they are small in size. These cysts may resolve spontaneously as well. Surgical treatment is warranted only if cyst causes significant discomfort or there is failure of spontaneous resolution.

Baker cysts are a common finding in adult imaging studies with a reported prevalence ranging from 10% to 41%.² and are commonly due to underlying inflammatory or degenerative arthropathy in this age group. In contrast, patients from paediatric populations rarely exhibit Baker cysts.

CASE REVIEW

A 5-years-old boy presented to the plastic surgery outpatient-department (OPD) with swelling of the back of the knee for approximately 9 months. It progressively increased in size and became painless. Initially, his parents consulted an orthopedist who performed needle aspiration of the swelling, following which it was reduced in size but recurred. There was a history of multiple aspirations (transparent jelly-like material) in the past, and now it has attained the present size. There was no history of trauma, fever, joint pain, and any other associated complaint.

On clinical examination 4x3 cm cystic, non-tender swelling was present in the posteromedial aspect of the right popliteal fossa, overlying skin was normal in colour and temperature. Margins were well-defined, and trans-illumination test was positive. Swelling was more prominent when knee joint was extended.

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Figure 1: Right sided Baker's cyst (Preoperative photograph)



Figure 2: MRI showing large Baker's cyst



Figure 3: Intraoperative photograph showing large Baker's cyst

X-ray showed no abnormalities. Magnetic Resonance Imaging showed a well-defined cystic lesion measuring $\sim 30 \times 32 \times 45$ mm in the right popliteal fossa region with a thin neck to the deepest extent insinuating into the joint space between the semimembranosus tendon and medial head of the gastrocnemius; suggestive of Baker's cyst.

Surgical excision was planned and a pre-anesthetic check-up was done.

Surgical Technique

Under general anesthesia with tourniquet control, the patient was placed in the prone position. The cyst was approached through the popliteal region using a transverse, lazy, S-shaped incision. A protruding cyst was identified in the area between the medial head of the gastrocnemius muscle and semi-membranosus tendon under the superficial fascia. While flexing the knee, the medial head of the gastrocnemius muscle was retracted to demonstrate the extent of the cyst and to identify the communication between the cyst and intra-articular joint space. With blunt and sharp dissection, the cystic sac was freed all around and down to its connection in the posterior aspect of the knee capsule. The cyst was completely exposed and excised over the stalk & the residual orifice was closed with purse string stitches using absorbable



Figure 4: Post operative day 2 photograph after drain removal

(P.D.S. 5/0) suture. Tourniquet was released and haemostasis was achieved.

Then the wound was closed in layers with drain, and a compression dressing was applied



Figure 5: Post operative day 10 photograph after suture removal.

with an elastic bandage. The affected limb was immobilized and protected for a period of one week. Drain was removed on post-op day 2 and sutures were removed on post-op day 10. The post-operative period was uneventful.

DISCUSSION

Baker's cyst is a rare entity in children.^{1,2} Baker's cysts may be detected at any age but one-third of cases were reported to occur within the first 15 years of life.² Smith *et al.* reported that the condition is mostly unilateral, more common in boys, and has a peak age of occurrence between 2 to 14 years.⁵ Often, there is no history of prior knee injury or symptoms of intra-articular pathology in children suffering from Baker's cysts.³

Diagnosis is suspected clinically with a palpable mass in the popliteal fossa that transilluminates. Baker's cysts are usually located medially and distal to knee crease and become more pronounced with knee extended. Ultrasound is a valuable non-invasive tool and can be used to visualize the cyst and guide aspiration of the fluid.⁴ MRI can confirm the diagnosis of a cystic lesion and is considered as the gold standard in diagnosis of Baker's cyst.^{2,3}

Treatment is observation as the majority of paediatric Baker's cysts resolve spontaneously.⁶⁻⁸

Mansour *et al.* (2021) suggested conservative treatment if cyst size is less than 3 cm & surgical treatment if the size is more than 3 cm.⁹

The original surgical procedure described by Van Demark and Meyer involved the removal of the cyst and the primary closure of the pedicle connecting the cyst with the joint capsule.⁸ Despite surgical excision, recurrences are common if the connection between the cyst and joint capsule is not obliterated properly.

CONCLUSION

Children with Baker cysts should be assessed for underlying arthritis and inherited joint hypermobility, while sporadic Baker's cyst is also common. Surgical intervention may be necessary for the successful treatment of Baker's cyst in children with persistent symptoms and not responding to conservative management.

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