SCLEROTHERAY AS MINIMALLY INVASIVE TREATMENT OPTION FOR BAKER'S CYST: A RARE CASE REPORT

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DOI: https://doi.org/10.32896/tij.v5n1.7-12
Submitted: 12.02.2025
Accepted: 29.03.2025
Published: 31.03.2025

ABSTRACT:
Baker's cyst, or popliteal cyst, is a fluid-filled swelling in the popliteal fossa, commonly associated with joint disorders in adults, leading to discomfort and restricted knee movement. In children, it is less common and typically linked to juvenile idiopathic arthritis, though it can also occur idiopathically. Treatment for Baker's cyst include conservative management, surgery, and minimally invasive techniques such as aspiration and corticosteroid injections, which are often associated with recurrence (5%-70%).
Sclerotherapy has emerged as a promising minimally invasive treatment, involving the injection of a sclerosant into the cyst to induce inflammation, occlusion, and fibrosis. We present a rare case of a symptomatic Baker's cyst successfully treated with bleomycin sclerotherapy in a 5-year-old boy, diagnosed via ultrasound.
Despite limited studies, this case demonstrates positive outcomes, adding to the evidence supporting sclerotherapy as a safe and effective alternative to invasive procedures, particularly when other treatments fail or are contraindicated.

Keywords: Baker's cyst, popliteal cyst, sclerotherapy

INTRODUCTION

Baker's cysts are fluid-filled swellings arising in the popliteal fossa between the medial head of the gastrocnemius and the semimembranosus tendon via communication with the knee joint (1). It commonly occurs in adults with high incidence (94%) due to underlying knee condition such as inflammation or injury (2,3). Less commonly occur in pediatric group, and it is typically linked with juvenile idiopathic arthritis but can also be idiopathic (4). Symptoms can include discomfort, knee pain, swelling, and restricted movement in the affected knee (5). Minimally invasive method of treatment is preferred compared to surgical method in the current evolving the healthcare landscape (1). Standard minimally invasive treatments such as aspiration and corticosteroid injections, aim to reduce inflammation and fluid accumulation, but there is a chance of recurrence (3). The long term outcome of corticosteroid treatment is not known (6). Sclerotherapy offers an alternative treatment method to the existing armamentarium of conservative treatments and surgical options, offering potential benefits such as reduced recovery time and minimal scarring (7). In contrast, surgical treatment requires more time for wound healing, which may prolong hospitalization.

Sclerotherapy is the targeted injection of a chemical irritant/sclerosant into the targeted lesion to produce inflammation, occlusion, and eventual fibrosis. It is an established treatment for venous malformations especially on head and neck. Comparing with pre-existing literature review, there is limited literature regarding sclerotherapy treatment of Baker's cyst, thus limited sample size obtained. This report discusses a case where sclerotherapy was employed to treat a Baker's cyst successfully.

CASE REPORT

We report a 5-year-old boy with no known medical illness who presented with painless swelling over the back of left knee for the past 6 months. The swelling did not increase in size. There was no history of fall or trauma. Physical examination revealed a palpable mass in the popliteal fossa. Ultrasound examination showed a cystic lesion within the left popliteal fossa suggestive of Baker's cyst (Figure 1).

No periosteal reaction or lytic changes on the left knee radiograph (Figure 2).

The guardian of the patient consented to undergo sclerotherapy. The procedure was done under local anesthesia, with infiltration at the left posterior knee region. Under ultrasound guidance, 20 mL of clear, thick, gel-like fluid was aspirated from the cyst. Subsequently, 3 mL of bleomycin (4.5 mg) was injected into the cyst cavity as a sclerosing agent. Ultrasound guidance was maintained throughout the procedure to ensure precise placement and prevent leakage of bleomycin outside the cyst. No compression was applied post procedure. The procedure was uneventful with no immediate complication. The patient was observed for a few hours and discharged on the same day. No post-injection complications, such as fever, intolerable pain, or transient hyperpigmentation, were observed in this case.

Ultrasound follow-up at 11 months post-procedure showed significantly smaller cystic lesion in the left popliteal fossa between the left semimembranosus and medial head of gastrocnemius muscles, associated with a thickened sac wall (Figure 3).

RESULTS AND DISCUSSION

Sclerotherapy treatment is a safe and effective alternative to corticosteroid injection and surgery for the treatment of Baker's cyst, particularly for paediatric patients and patients with comorbid conditions that may increase surgical risk as well as when conservative measures fail. Although corticosteroid injection is effective in reducing inflammation, it may lead to deterioration of cartilage in the joint (8). Conversely, experimental studies on intra-articular sclerotherapy have shown no significant impact on the joint cavity or ligaments (9).

Sclerotherapy is a well-established treatment for venous malformations, particularly in the head and neck region. A systematic review and meta-analysis evaluating various sclerosing agents

found that bleomycin, a mild sclerosing agent, demonstrated a superior safety profile compared to sodium tetradecyl sulfate (STS). Additionally, it resulted in higher patient satisfaction (10).

Another literature review documented a study in which a ganglion cyst was successfully treated with bleomycin, reducing the need for invasive surgery (11).

A few studies have reported using ethanol (12) and hypertonic dextrose solution (13) as sclerosing agents for Baker's cyst treatment, showing favorable outcomes. However, none have documented the use of lmycin. Given its superior safety profile and availability at our center, we opted to use bleomycin for treating the Baker's cyst in a 5-year-old boy. Ultrasound guidance played a crucial role in ensuring optimal cyst aspiration and precise sclerosant delivery, minimizing complications. The positive outcome of this case, along with others, reinforces sclerotherapy as a primary treatment option for symptomatic Baker's cysts and contributes to the growing evidence supporting its effectiveness and safety profile.

CONCLUSION

This case report highlights the potential of sclerotherapy as a safe and effective treatment for Baker's cysts, offering symptomatic relief and cyst size reduction. Therefore, it can be considered a first-line treatment, providing a viable alternative to surgery.

CONFLICTS OF INTEREST

The authors have declared no conflicts of interest.

FUNDING

The authors received no funding for this work.

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FIGURE LEGENDS:

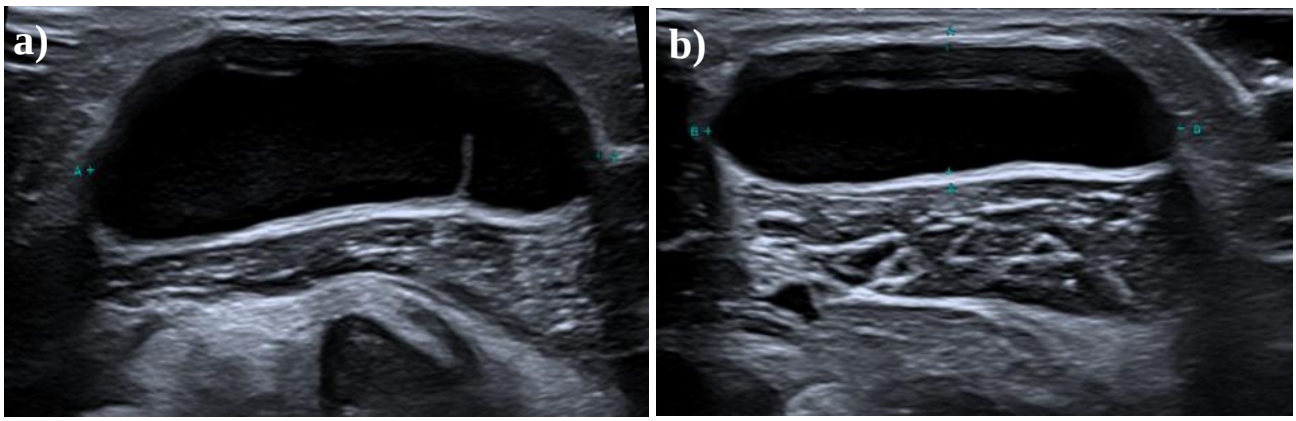

Figure 1: Axial (a) and sagittal (b) ultrasound images of pre-treatment of the Baker's cyst within the left popliteal fossa of the 11-month interval.

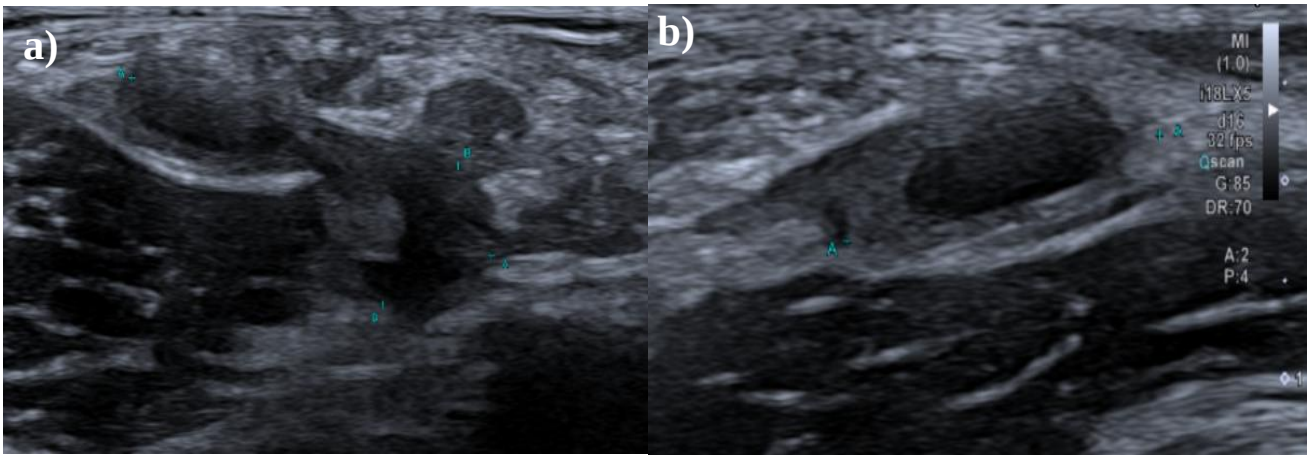

Figure 2: Axial (a) and sagittal (b) ultrasound images of post-treatment of the Baker's cyst within the left popliteal fossa of the 11-month interval. The rest significant reduction in size of the cyst from 1.0cm x 4.0cm x 4.6cm to 0.9 x 1.6 x 1.0 cm, associated with a thickened wall.

Figure 3: Left knee radiograph (AP and lateral view) showed soft tissue swelling at the popliteal fossa of left knee. No calcification or gas lucency within. The bony structure and joint space are intact.