

Sclerotherapy as a Primary or Salvage Procedure For Aneurysmal Bone Cyst: A Case Report

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Learning Point of the Article:

Sclerotherapy showed a high potency to achieve healing or stable disease and a low rate of adverse events in our case. We can recommend it as standard treatment both for primary and recurrent Aneurysmal Bone Cyst(ABC). Our patient with a proximal humerus ABC underwent sclerotherapy which was effective in preventing recurrence and achieving a good clinical outcome. Keeping in mind that randomized multicenter studies would be needed to provide more evidence to support this.

Abstract

Introduction: A benign and locally aggressive tumour, aneurysmal bone cysts (ABCs) can develop in any bone but are more common in the metaphysis of long bones.

Case Report: A 10 year old Female patient arrived at our outpatient department two years ago with a history of recurring discomfort, edema, and limited movement in her right shoulder and proximal 1/3 of her right arm. X-ray and Magnetic Resonance Imaging (MRI) of the humerus was performed and was diagnosed as aneurysmal bone cyst of proximal humerus. Patient was managed with sclerotherapy with polidocanol injections. The patient experienced significant symptoms improvement was seen two months after starting treatment, and there were no post operative side effects. Monthly progress reports were started, and after three months, physiotherapy was added to improve shoulder range of motion because there were no indications of a recurrence. A two-year follow-up showed improvement and no indications of a relapse.

Conclusion: Percutaneous Sclerotherapy can be used as a primary procedure for aneurysmal bone cyst.

Keywords: Sclerotherapy, Aneurysmal bone cyst, Polidocanol injections

Introduction

A benign and locally aggressive tumour, aneurysmal bone cysts (ABCs) can develop in any bone but are more common in the metaphysis of long bones. They are distinguished by fibrous septa that divide blood-filled compartments. Particularly when they affect bones such as the proximal humerus, ABCs can result in discomfort, edema, and functional restrictions. High rates of morbidity and recurrence have been reported with curettage and bone grafting, the conventional treatment.[1-4] Because of this, a number of other therapeutic methods have been investigated, including radiation, embolisation, broad excision, sclerotherapy

using various agents, and more.[5] Comparing percutaneous sclerotherapy to open surgery, it has demonstrated excellent outcomes in recent years, with similar recurrence rates and lower morbidity, especially when combined with polidocanol, alcohol, or doxycycline.[6].

Case Report

Patient:- A 10-year-old Female patient arrived at our outpatient department with a history of recurring discomfort, edema, and limited movement in her right shoulder and proximal 1/3rd of her right arm.

Access this article online

Website:
www.jocr.co.in

DOI:
<https://doi.org/10.13107/jocr.2024.v14.i10.4826>

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Submitted: 25/07/2024; Review: 10/08/2024; Accepted: September 2024; Published: October 2024

DOI: <https://doi.org/10.13107/jocr.2024.v14.i10.4826>

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Figure 1: Pre op xray ap view.



Figure 2: Pre op xray lateral view.

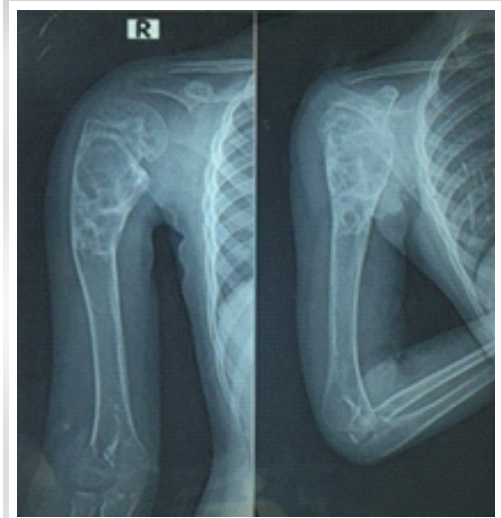


Figure 3: 3 months follow up x ray.

Clinical History

Over the course of several months, the patient's right shoulder gradually became more uncomfortable and occasionally painful. The patient's activities of daily living and sleep were disrupted due to an increase in the intensity of pain and discomfort. She had trouble reaching behind her back and lifting her right arm over shoulder level. She experienced pain over the right arm while doing daily activities.

Diagnostic Workup

Physical Examination

On palpation, tenderness was felt over the right proximal humerus during the clinical examination. A gentle, non-fluctuant enlargement that measured around 5 cm in diameter was confirmed by palpation, starting with a peanut size to current

size. There was no bruit and the swelling was not pulsatile. Restricted shoulder flexion, abduction, and external rotation were found during range of motion assessment.

Radiological Investigations

X-ray and MRI were done. X-ray showed a lytic, well-defined lesion involving the proximal humerus that is expansile (Fig. 1). The lesion appeared like soap bubbles, indicative of an aneurysmal bone cyst (Fig. 2). No signs of a pathological fracture or cortical breach. Magnetic Resonance Imaging (MRI) showed a cystic lesion involving the proximal humerus that is multiloculated. Fluid-filled levels in the lesion were compatible with the presence of serous fluid and blood. The lesion appeared to be divided into several compartments by thin septae. Absence of soft tissue involvement or extraosseous extension.



Figure 4: Adduction at shoulder {2 year follow up}.



Figure 5: Flexion at shoulder {2 year follow up}.

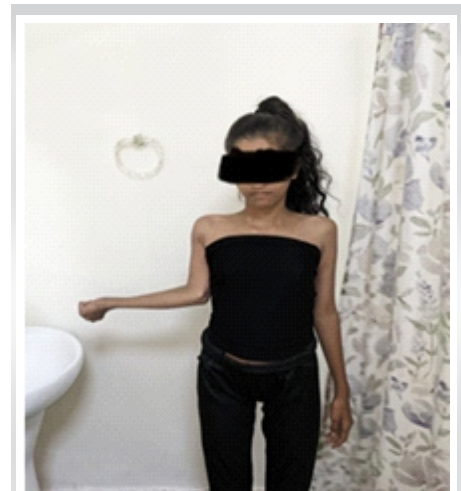


Figure 6: External rotation at shoulder {2 year follow up}.



Figure 7: Abduction with external rotation at shoulder {2 year follow up}.

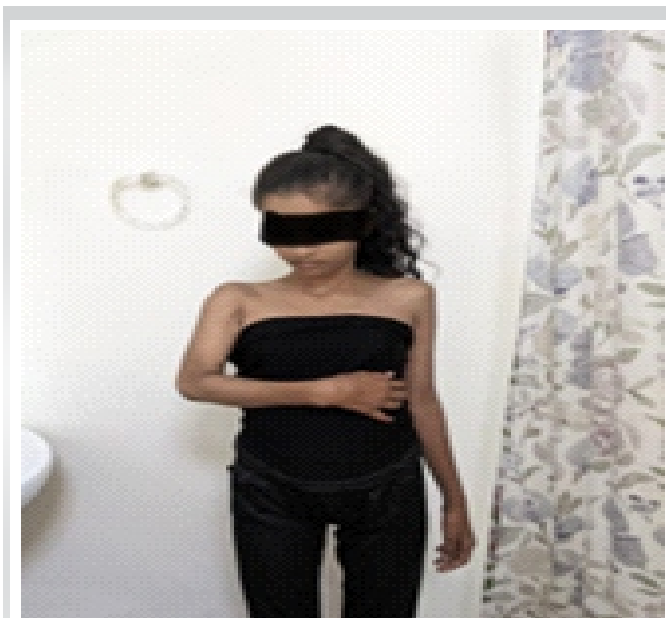


Figure 8: Internal rotation at shoulder {2 year follow up}.

Patient Selection for Percutaneous Sclerotherapy

The patient was considered a good candidate for percutaneous sclerotherapy due to her age, the location and size of the lesion, and her general health. After carefully evaluating her situation, the multidisciplinary team—which included radiologists and orthopaedic surgeons—decided that sclerotherapy presented the best possibility of a successful outcome with the least amount of invasiveness.

Management

It was managed with percutaneous sclerotherapy with a polidocanol injection due to the lesion's benign nature. General anaesthesia was used for the sclerosing procedure. Under fluoroscopic supervision, a 1.0 or 1.2 mm trocar needle was used to puncture the cyst percutaneously. According to Brosjö et al., 4 mg of Polidocanol per kilogram of bodyweight was injected into the cyst along with the contrast agent Iohexol. The trocar-tipped needle was inserted into each cystic area prior to injection in order to rupture any potential septae. To make sure the entire cyst was treated, a contrast agent was employed during the injection. In order to stop extravasation, pressure was applied to the injection site for at least two minutes after the needle was removed and flushed with saline or previously aspirated blood. The course of treatment comprised three injections spaced four months apart, all done with a C-arm radiological guidance. Polidocanol regulate the vascularity of the ABC because of its ability to cause endothelial damage those results in thrombosis.

Follow-up

The patient experienced significant symptom improvement after the injection and there were no acute post-operative problems. Monthly progress reports were started, and after three months, physiotherapy was added to improve shoulder range of motion because there were no indications of a recurrence.(FIG. 3)

Two-Year Follow-up

The important two-year follow-up showed continued improvement and no indications of a relapse. The patient had a good range of motion, her shoulders demonstrated how well percutaneous sclerotherapy had worked to relieve symptoms and promote functional recovery, serial x rays were done and it was satisfactory.(FIG. 4-10)

Discussion

The effectiveness of polidocanol-based percutaneous sclerotherapy in treating ABCs has been thoroughly investigated, with encouraging results and a favourable safety profile. (7-8)

Rastogi et al. (2022) conducted a retrospective analysis of seventy-two individuals receiving polidocanol sclerotherapy for primary ABC which showed 75% success rate after a year and a 97% success rate after two years. No significant problems were noted. Otte et al. (2021) reported a prospective investigation using repeated injections of polidocanol to treat



Figure 9: A 2 year follow up clinical picture.

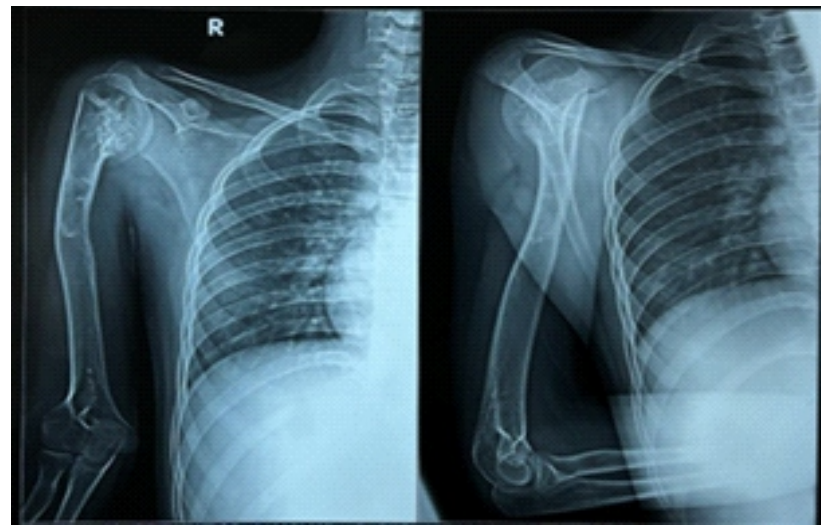


Figure 10: 2 year follow up xray.

38 patients with ABC. After a median of four polidocanol instillations, all lesions but one healed. Minimal adverse effects and high efficacy were noted. Batisse et al. (2020) did a retrospective analysis of 19 ABC patients who received sclerotherapy. At three months' follow-up, 85% of patients had complete ossification, and the remaining 15% had incomplete ossification. At the two-year follow-up, no recurrence was noted.

Liu et al. (2019) conducted a meta-analysis encompassing 12 studies and 421 ABC patients undergoing polidocanol sclerotherapy. At a mean follow-up of 28.5 months, the total success rate was 87.2%. Wang et al. (2018) did a comprehensive analysis of ten studies with 302 ABC patients receiving polidocanol sclerotherapy. The combined success rate at a mean follow-up of 26.4 months was 89.1%.

All of these studies support the use of polidocanol in percutaneous sclerotherapy as a management strategy for ABCs. For patients who have lesions in easily accessible places or who are paediatric patients, this procedure is a helpful therapeutic option due to its positive safety profile, minimum invasiveness, and high success rates. (9-10)

Conclusion

For paediatric patients with proximal humerus aneurysmal bone cysts, percutaneous sclerotherapy combined with polidocanol is a safe and efficient therapeutic option that relieves symptoms while maintaining shoulder function. Since it reduces the chance of problems and maintains bone growth and function, this minimally invasive procedure is especially beneficial for kids and teenagers. To achieve the best results, a multidisciplinary approach and careful patient selection are crucial.

Clinical Message

This case underscores the potential role of sclerotherapy as a primary treatment option for ABCs, especially when considering the advantages of reduced surgical morbidity and functional preservation in key anatomical areas like the shoulder joint.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

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Conflict of Interest: Nil
Source of Support: Nil

Consent: The authors confirm that informed consent was obtained from the patient for publication of this case report

How to Cite this Article

Saraf A, Kumar SK. Sclerotherapy as a Primary or Salvage Procedure For Aneurysmal Bone Cyst: A Case Report. *Journal of Orthopaedic Case Reports* 2024 October;14(10): 102-106.

