Percutaneous decompression, sclerotization, and injection of bone marrow concentrate can heal aneurysmal bone cysts

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INTRODUCTION: Aneurysmal bone cysts (ABCs) are benign bone lesions with a locally expansive behavior.
Their growth can cause deformity and reduce bone resistance to the point of causing
pathological fractures. ABCs' treatment is primarily surgical and depends on size and location. While curettage represents the treatment of Choice for the majority of ABCs, lesions that arise from deep areas or in skeletally immature patients might benefit from less aggressive treatments to control or even eradicate the disease. In this study, we present our experience in treating aneurysmal bone cysts by combining percutaneous decompression, sclerotization, and the injection of bone marrow concentrate.
METHODS: We retrospectively recorded all the patients with histological diagnoses of aneurysmal bone cysts treated in our institution between 2016 and 2024. All patients were treated with percutaneous approaches, consisting of X-ray-guided intralesional decompression with trocars, followed by brushing with Lauromacrogol, Ascorbic acid, and Methylprednisolone acetate. Finally, autologous bone marrow concentrate is injected into the cavity, and trocars are removed. The procedure was performed one to three times, depending on the size of the lesions and the age of the patient. For each patient, the X-rays taken before surgery and six months after the last procedure were compared, and the evolution of the cystic lesion was assessed according to the modified Neer classification for cystic lesions.
Intraoperative and post-operative complications were recorded.
RESULTS: Sixty cases were included in our study. No intra-operative or post-operative complication directly correlated with the treatment was recorded. At their final follow-up, 41 patients healed with a Neer type II appearance (Cyst healed with radiolucent area < 50% of diameter and enough cortical thickness), and sixteen healed with a type I appearance (Cyst healed with radiolucent area < 1 cm). Three cases had type III behavior (Persistent cyst with radiolucent area > 50% of diameter with thin cortical rim).
DISCUSSION AND CONCLUSION: The combination of percutaneous decompression, sclerotization, and injection of bone marrow concentrate represents a promising therapeutic option for aneurysmal cysts in children. In most cases, it increases the quality and quantity of healed bone, suppressing the disease or easing a subsequent curettage in the years to come.