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Case Report

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Ollier's disease presenting as progressive finger stiffness in an adolescent: surgical management of a dominant enchondroma with one-year follow-up in a resource-limited setting

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ABSTRACT

Ollier's disease is a rare non-hereditary skeletal disorder characterized by multiple enchondromas that may result in deformity and functional impairment. We report a case of a 13-year-old left-hand-dominant boy presenting with progressive stiffness of the left index finger over two years, leading to difficulty in daily activities. Clinical and radiological evaluation revealed multiple enchondromas, with a dominant lesion in the middle phalanx. Magnetic resonance imaging demonstrated a well-defined lobulated lesion without aggressive features. Histopathological examination confirmed benign enchondroma. Given the functional limitation, surgical curettage of the dominant lesion was performed using a dorsal approach without bone grafting. Postoperative rehabilitation included short-term immobilization followed by physiotherapy. At one-year follow-up, the patient showed significant improvement in grip strength (from 40–50% to 80–85% of the contralateral hand) and near-normal range of motion, with no evidence of recurrence or malignant transformation. This case highlights the importance of early surgical intervention in symptomatic cases, particularly involving the dominant hand, and demonstrates that satisfactory functional outcomes can be achieved even in resource-limited settings.

Keywords: Ollier's disease, Enchondroma, Paediatric bone tumour, Curettage, Hand function

INTRODUCTION

Ollier's disease, also referred to as multiple enchondromatosis, is a rare developmental skeletal disorder characterized by the presence of multiple benign cartilaginous tumors within the medullary cavity of bones. The condition typically manifests during childhood and exhibits an asymmetric distribution, most commonly involving long bones and the small bones of the hands. Although benign in nature, enchondromas may progressively enlarge, leading to cortical thinning, deformity, limb-length discrepancy, and functional impairment. Additionally, there exists a variable but significant risk of malignant transformation into chondrosarcoma. Hand involvement presents a unique clinical challenge due to its impact on fine motor skills and daily functional activities. Early diagnosis and appropriate intervention are therefore crucial, particularly when the dominant hand is affected. This report describes a case managed in a tribal healthcare setting, highlighting diagnostic considerations and functional outcomes following surgical treatment.

CASE REPORT

A 13-year-old left-hand-dominant boy presented with a two-year history of gradually progressive swelling of the left index finger. The swelling was associated with mild discomfort and increasing difficulty in performing daily activities such as writing, gripping objects, and buttoning

clothes. There was no history of trauma, systemic symptoms, or similar complaints in the family.

Table 1: Imaging summary.

Imaging modality	Findings
X-ray	Expansile lytic lesions, cortical thinning
MRI	Lobulated lesions, T1 hypointense, T2 hyperintense
Histopathology	Benign chondroid tissue

Table 2: Clinical and functional assessment.

Parameter	Preoperative	One-year follow-up
Grip strength	40–50%	80–85%
Range of motion	Reduced (~30%)	Near normal
Pain	Mild	None
Daily activities	Impaired	Independent

On clinical examination, multiple firms, non-tender bony swellings were noted over the phalanges of the left index finger, resulting in visible deformity. Grip strength was reduced to approximately 40–50% compared to the contralateral hand. Flexion at the interphalangeal joints was decreased by nearly 30%, with associated stiffness. Neurovascular examination of the hand was unremarkable.

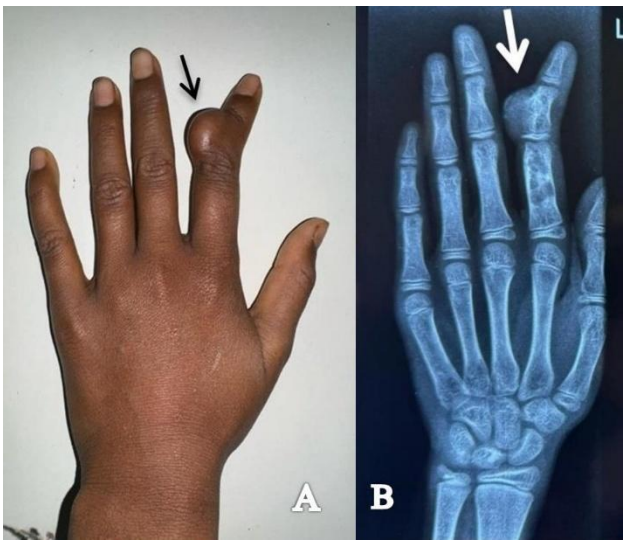

Figure 1: (A) clinical photograph of the left hand showing visible bony swellings over the index finger causing mild deformity and (B) preoperative radiograph demonstrating multiple expansile lytic lesions with cortical thinning and endosteal scalloping.

Plain radiographs of the left hand demonstrated multiple expansile radiolucent lesions involving the phalanges, with features of cortical thinning and endosteal scalloping. Magnetic resonance imaging (MRI) revealed a well-defined lobulated lesion in the middle phalanx measuring 1.2×1.7×1.7 cm, showing cortical expansion and thinning with mild soft tissue extension. Additional similar lesions were identified in the proximal phalanx and the third metacarpal. The lesions appeared hypointense on T1-weighted images and hyperintense on T2-weighted images, with no evidence of perilesional edema or aggressive radiological features.

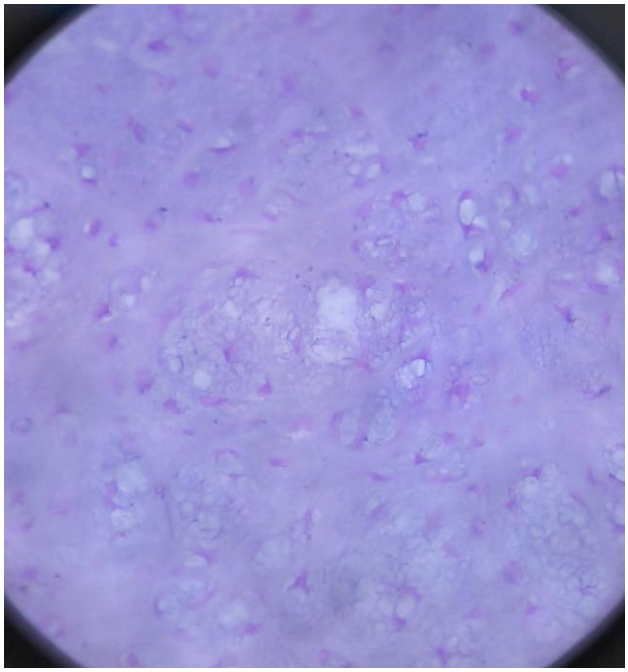

Figure 2: Histopathological image showing benign chondroid tissue without atypia or increased mitotic activity, consistent with enchondroma.

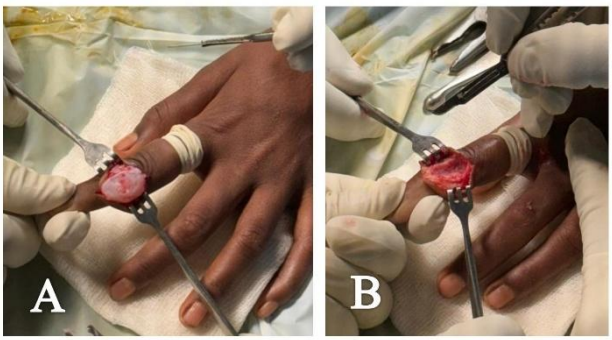

Figure 3: (A) intraoperative image showing dorsal surgical approach to the middle phalanx and (B) curettage of cartilaginous lesion with preservation of cortical integrity.

An open biopsy was performed to confirm the diagnosis. Histopathological examination revealed benign chondroid tissue without nuclear atypia, pleomorphism, or increased mitotic activity, consistent with enchondroma. Based on the clinical, radiological, and histopathological findings, a diagnosis of Ollier's disease was established. In view of

the progressive functional limitation and risk of structural compromise, surgical intervention was planned. Curettage of the dominant lesion in the middle phalanx was performed under regional anesthesia using a dorsal approach. The cartilaginous tumor was thoroughly removed, and the cavity was irrigated. Cortical integrity was preserved, and no bone grafting or internal fixation was required. Postoperatively, the finger was immobilized for two weeks using strapping, followed by gradual mobilization. A supervised physiotherapy program focusing on range of motion and strengthening exercises was initiated.

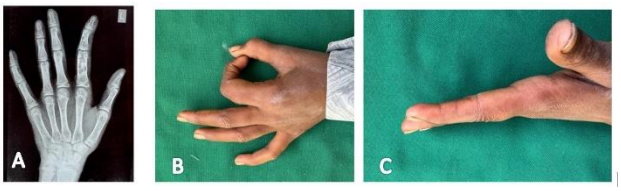

Figure 4: (A) one-year postoperative radiograph showing no recurrence and maintained cortical structure, (B) clinical image demonstrating improved finger flexion and (C) clinical image demonstrating improved finger extension and functional recovery.

At one-year follow-up, the patient demonstrated significant functional improvement. Grip strength improved to approximately 80–85% of the contralateral hand, and the range of motion was near normal. The patient regained independence in daily activities without pain. Follow-up radiographs showed no evidence of recurrence or progression of the lesions, and there were no signs suggestive of malignant transformation.

DISCUSSION

Ollier's disease is a rare, non-hereditary skeletal disorder characterized by multiple enchondromas with asymmetric distribution, most commonly affecting the metaphyseal regions of long bones and the small bones of the hands. The condition typically presents in childhood and may lead to progressive deformity, limb-length discrepancy, and functional impairment. Recent literature continues to highlight the clinical heterogeneity of the disease and its variable progression patterns, emphasizing the importance of individualized management strategies.[1-3]

Hand involvement poses a unique clinical challenge due to the intricate biomechanics and the essential role of the hand in fine motor function. Even relatively small enchondromas can significantly impair dexterity and grip strength. While most studies focus on deformity correction or malignant transformation, functional limitation as a primary indication for surgical intervention remains underreported. In the present case, involvement of the dominant hand resulted in substantial impairment of daily activities, thereby justifying early operative management.[2-4] Radiographic evaluation remains the cornerstone of diagnosis, typically demonstrating expansile lytic lesions with cortical thinning and endosteal scalloping. Magnetic resonance imaging further aids in delineating lesion extent and excluding aggressive features. Histopathological confirmation is recommended in symptomatic or atypical cases to rule out malignancy. Recent reports reaffirm the importance of combining imaging with histological evaluation for accurate diagnosis and management planning.[1-3] The risk of malignant transformation to chondrosarcoma in Ollier's disease has been variably reported in the literature, necessitating long-term surveillance. Recent case reports have documented such transformations even in lesions involving the hand, reinforcing the need for careful follow-up.[6]

Management of enchondromas is largely individualized and depends on symptomatology, lesion size, and functional impact. Surgical intervention is generally indicated in cases of pain, deformity, or functional limitation. Curettage remains the mainstay of treatment, particularly in pediatric patients. Recent studies have demonstrated that curettage alone, without bone grafting, can yield satisfactory functional outcomes in selected cases, especially when cortical integrity is preserved.[2-7] The present case is notable for several reasons, including involvement of the dominant hand, significant functional limitation as the primary indication for surgery, and management in a resource-limited tribal healthcare setting. Delayed presentation is common in such environments due to limited access to specialized care. Despite these challenges, timely surgical intervention combined with structured rehabilitation resulted in excellent functional recovery at one-year follow-up.

Limitations

This study has several limitations. As a single case report, the findings have limited generalizability. Baseline pre-disease functional data were not available, which restricts objective comparison of functional recovery. The follow-up duration of one year is relatively short to fully assess long-term outcomes, including recurrence and potential malignant transformation. Additionally, the progression of the disease prior to presentation was assessed retrospectively, which may introduce recall bias.

CONCLUSION

Ollier's disease involving the dominant hand can lead to significant functional impairment in pediatric patients. Early diagnosis and timely surgical intervention are essential for preserving hand function. Intralesional curettage without bone grafting can yield excellent outcomes when cortical integrity is maintained. Structured rehabilitation and long-term follow-up are crucial, particularly in resource-limited settings.

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