Osteoblastoma of the Hamate: A Case Report

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Learning Point of the Article:

Despite its rarity, osteoblastoma should be considered in the differential diagnosis of persistent, non-traumatic wrist pain, particularly in young adults.

Abstract

Introduction: Osteoblastomas are rare, benign, osteoid-producing primary bone tumors that typically occur in adolescents and young adults. They constitute only 1% of all bone tumors and are exceptionally rare in the hand and wrist. Carpal bone involvement is exceedingly uncommon, with only 9 cases reported in the literature involving the hamate. This case is important to report because the occurrence of this neoplasm in the fifth decade of life is extremely rare, making it one of the very few reports of hamate osteoblastoma in late adulthood.

Case Report: A 51-year-old male presented with a 2½ year history of persistent pain and progressive swelling over the dorsal aspect of the ulnar side of the left wrist. The pain was unrelieved by painkillers and worsened after minor trauma. Clinical examination revealed a firm, tender swelling accompanied by joint stiffness. Radiographs showed a well-defined lytic lesion with a sclerotic rim in the hamate, whereas further imaging demonstrated blood-fluid levels. Histopathology confirmed the diagnosis of osteoblastoma. He underwent extended curettage followed by filling the defect with an autologous cancellous bone graft. The patient experienced rapid symptomatic relief, returned to routine activities with full range of motion, and showed no signs of recurrence at the 18-month follow-up.

Conclusion: This case report demonstrates that despite its rarity, osteoblastoma should be considered in the differential diagnosis of persistent, non-traumatic wrist pain, even in older adults. This original case is of particular interest to the orthopedic specialty, as it advances our clinical knowledge by proving that joint-preserving methods can ensure structural stability and resolve symptoms. Early recognition and meticulous surgical management with extended curettage and bone grafting provide excellent long-term outcomes while minimizing recurrence risk and avoiding radical resections that significantly impair wrist mobility.

Keywords: Osteoblastoma, hamate bone, wrist joint, curettage, bone transplantation.

Introduction

Osteoblastomas are rare, benign, osteoid-producing primary bone tumors, occurring most commonly in adolescents and young adults in the second and third decades of life. First described as "giant osteoid osteoma" by Dahlin and Johnson in 1954 [1] and later renamed by Lichtenstein and Jaffe in 1956 [2,3]. They constitute only 1% of all bone tumors and are exceptionally rare in the hand and wrist [4,5]. Predominantly affecting adolescents and young adults, approximately 30–40% arise from the posterior elements of the spine, including the

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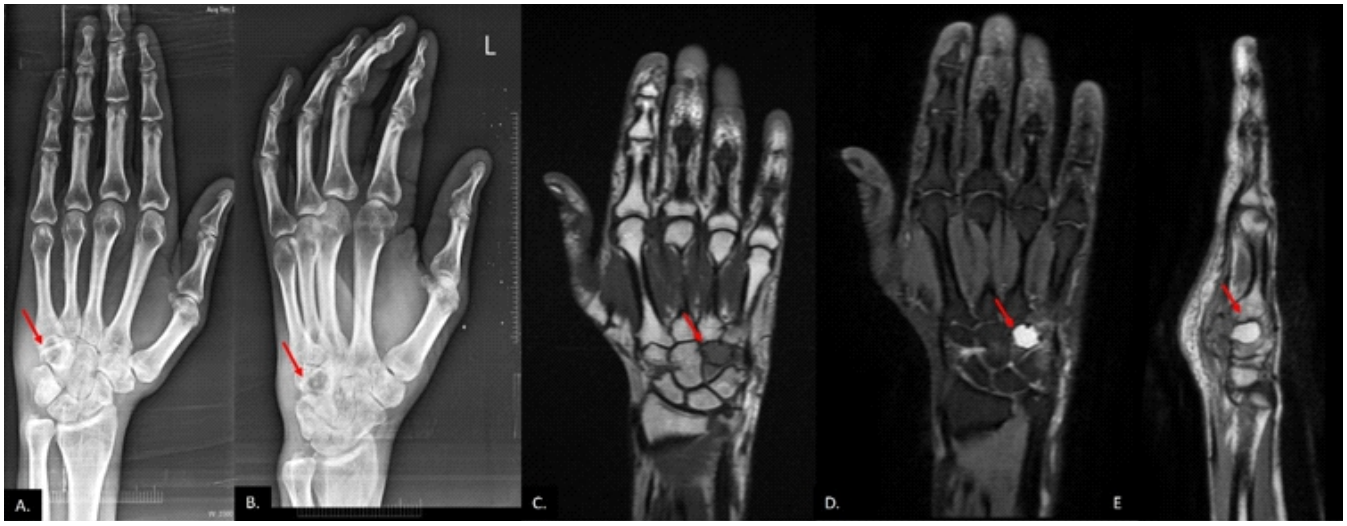

Figure 1: X-ray of the hand shows (a) anteroposterior and (b) oblique views showing a lytic lesion in the hamate (red arrow). Magnetic resonance imaging shows (c) a coronal T1-weighted image showing a hypointense lesion in the hamate (red arrow), (d) a coronal fat-saturated T2-weighted sequence showing a hyperintense lesion in the hamate (red arrow), and (e) a sagittal T2-weighted image showing blood fluid levels in the lesion (red arrow).

sacrum [6, 7]. Due to their rarity in the hand and wrist, osteoblastomas are seldom considered in the differential diagnosis of bone tumors in these locations. Literature reports only a few cases in carpal bones, mostly in the scaphoid.

We present a rare case of hamate osteoblastoma in late adulthood. He underwent extended curettage with cancellous bone grafting, resulting in a favorable functional outcome with complete healing and restoration of the full range of movements of the wrist joint.

Case Report

A 51-year-old right-handed male with no significant medical history presented with a 2.5-year history of pain over the dorsal aspect of the ulnar side of the left wrist. The pain, unrelieved by painkillers and worsened after minor trauma, led to progressive swelling. Clinical examination revealed a firm, tender, and poorly defined swelling on the dorsal aspect of the ulnar side of the wrist, accompanied by wrist joint stiffness.

Radiographs showed a well-defined lytic lesion with a sclerotic rim in the hamate, which was mildly expansile and occupied half of the bone, with a cortical breach (Fig. 1a and b). Magnetic resonance imaging (MRI) demonstrated a well-defined, T1-hypointense, T2/PD-hyperintense expansile lesion with a sclerotic rim and blood-fluid levels, with no soft tissue extension (Fig. 1c, d, e). Histopathology confirmed osteoblastoma, characterized by interconnecting, delicate woven bone trabeculae rimmed by plump osteoblasts. The stroma was loose, richly vascularized, and contained stellate and plasmacytoid cells, along with interspersed osteoclastic giant cells. No anaplasia or significant mitotic activity was observed (Fig. 2).

Extended curettage using a high-speed burr was performed by dorsal incision, carefully preserving the ulnar neurovascular bundle (Fig. 3), followed by filling the defect with autologous cancellous bone graft harvested from the ipsilateral iliac crest. Following surgery, the patient experienced rapid symptomatic relief, with a significant reduction in pain, swelling, and stiffness. The incision exhibited good healing (Fig. 4a). The wrist was immobilized in a splint for 6 weeks. The patient resumed routine daily activities within 2 months post-surgery with full range of motion at the wrist with unrestricted flexion-

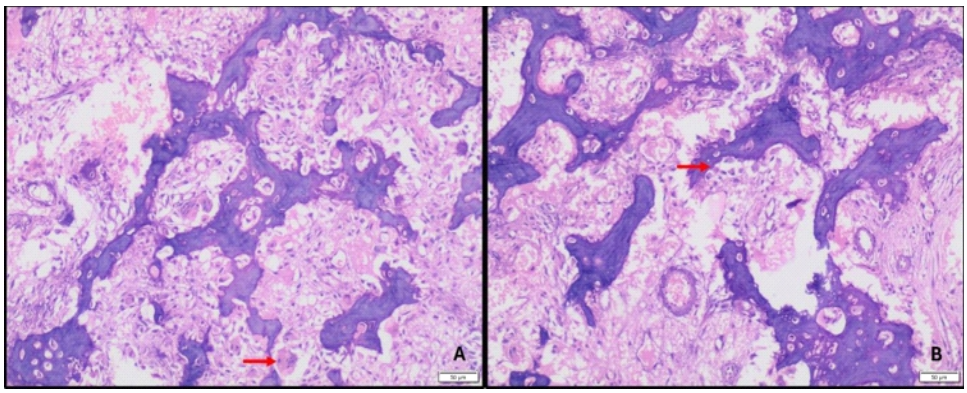

Figure 2: Histopathology demonstrates (a) inter-anastomosing trabeculae of woven bone in a loose edematous fibrovascular stroma. Occasional osteoclast-type multinucleated giant cells are present (red arrow) (hematoxylin and eosin, ×100), (b) bony trabeculae lined by osteoblasts (red arrow) (hematoxylin and eosin, ×100).

Table 1: Literature review of cases with osteoblastoma of the hamate bone

Authors	Age at presentation (in years)/Gender	Onset of symptoms to radiological diagnosis	Initial treatment	Recurrence	Revision surgery	Follow-up
Menon *et al*.(1988) [11]	Not known	Immediate	Curettage; grafting	11 months	Excision of the hamatum Carpo-metacarpal arthrodesis	48 months
Apergis *et al*. (1993) [12]	52/M	15 months	Curettage; grafting	-	No	12 months
Maréchal (1999) [13]	54/M	Not known	Curettage; grafting	-	No	Not known
Van Dijk *et al*. (1999) [8]	13/F	Not known	Curettage	6 months	Wide resection Wrist arthrodesis	3 months
Gdoura *et al*. (2010) [6]	28/N/K Manual labourer	15 months	Curettage	-	No	24 months
Dunda *et al*. (2013) [14]	54/M	48 months	Wide resection of the hamate, metacarpal bones, distal radius, and ulna	-	No	6 months
Ayan and Serinsöz (2014) [10]	39/F	12 months	Curettage; grafting	-	No	12 months
Repáraz Padrós *et al*. (2016) [15]	28/M	12 months	Curettage; grafting	-	No	48 months
Zyluk*et al*. (2017) [7]	26/F	2 months	Resection of the hamate	-	No	12 months
Our Case (2025)	51/M	30 months	Curettage; grafting	-	No	18 months

extension and supination-pronation (Fig. 4b, c, d). Plain radiographs were conducted during follow-ups, revealing no signs of recurrence (Fig. 5). Patient wrist function score as per the disabilities of the arm, shoulder and hand questionnaire was 1.7 at the latest 18-month follow-up.

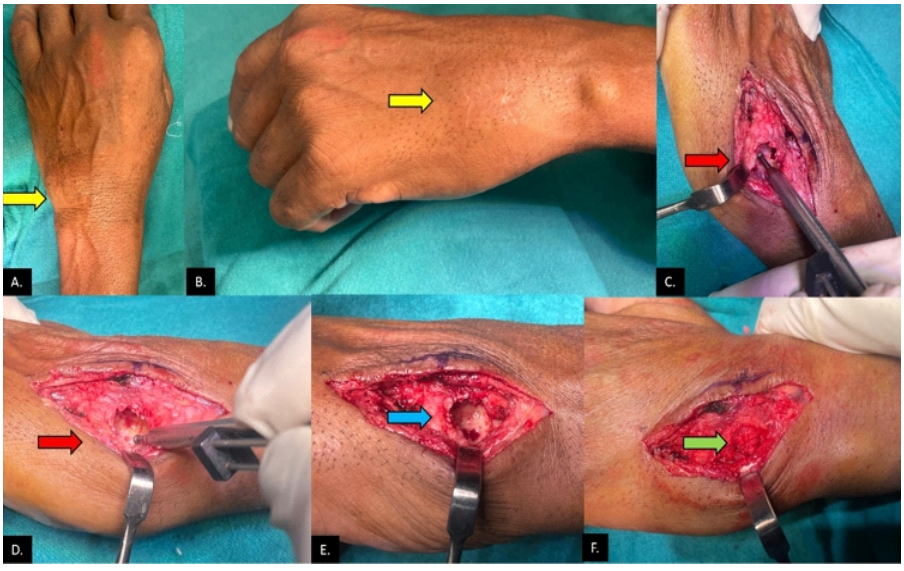

Figure 3: Clinical images show (a and b) swelling in the wrist (black arrows). (c and d) Intraoperative pictures show extended curettage with high-speed burr, (e) shows a post-curettage void, and (f) shows a compactly filled void with autologous cancellous graft.

Discussion

Osteoblastoma constitutes only 1% of all bone tumors and predominantly affects the spine, pelvis, and long bones. Carpal bone involvement is exceedingly rare. A review of the literature identified only nine reported cases of osteoblastoma involving the hamate (Table 1). Osteoblastoma typically arises in individuals aged 10–25 years, with a notable male predominance (2:1) [6]. Occurrence of this neoplasm in the 5th decade of life is extremely rare.

Unlike osteoid osteoma, it is not associated with nocturnal pain relieved by salicylates, a finding consistent with our case. The exact mechanism of osteoblastoma-associated pain remains unclear but is thought to be linked to the tumor's rich vascularity and local inflammatory response.

Histopathologically, osteoblastoma is a locally aggressive benign neoplasm. It can be challenging to distinguish from osteosarcoma, particularly in its very aggressive variants. Osteoblastoma carries a recurrence rate of 10–19%. In rare cases, malignant transformation has been

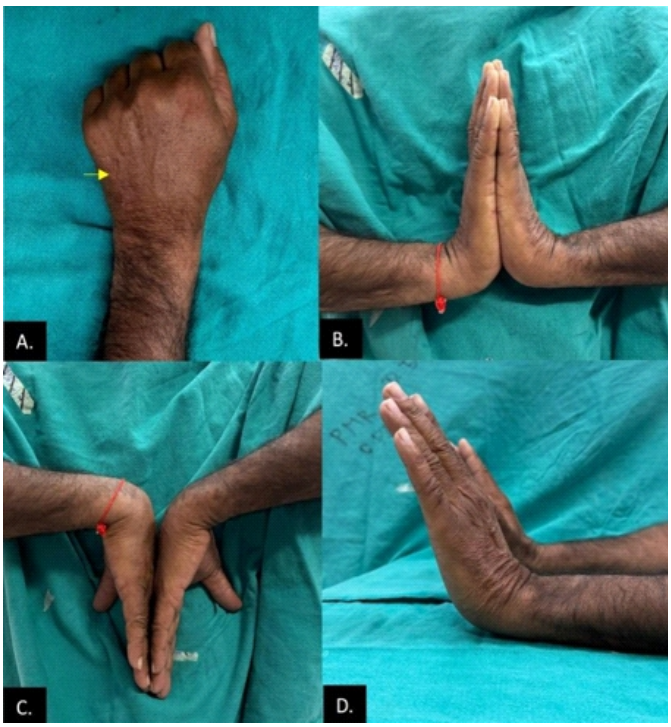

Figure 4: Shows (a) clenched fist showing healed dorsal incision scar (yellow arrow), (b and d) equal full wrist extension on both sides, and (c) comparable wrist flexion on both sides.

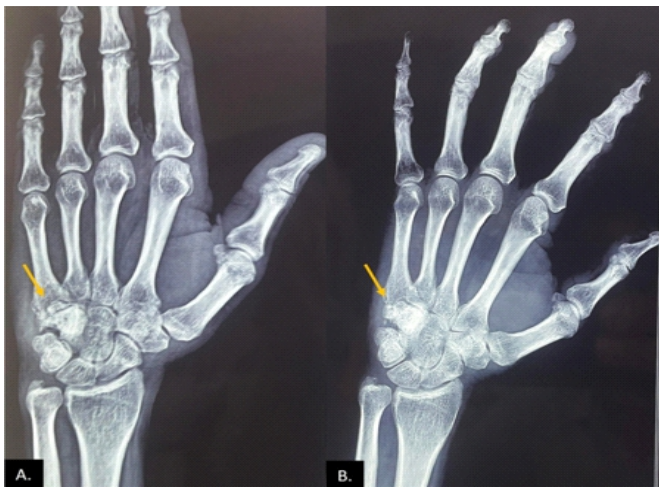

Figure 5: Post-operative radiograph shows dense hamate with bone graft within.

reported [8].

In our case, the patient presented with chronic wrist pain and swelling, initially misattributed to trauma. Delayed diagnosis is common, as early radiographic findings can be subtle. Radiographs revealed a well-defined lytic lesion with a sclerotic rim within the hamate, while MRI demonstrated a T1-hypointense, T2-hyperintense lesion with a blood-fluid level—features consistent with osteoblastoma.

Treatment strategies vary based on tumor aggressiveness and recurrence risk, ranging from curettage with bone grafting to en bloc resection [6,7,9]. While curettage remains the preferred approach for most cases, radical excision is advocated for aggressive or recurrent lesions [7, 10].

The long-term functional outcome following carpal osteoblastoma resection depends on the extent of bone loss and the reconstruction approach. Some authors recommend en bloc resection with proximal row carpectomy or four-corner fusion for scaphoid involvement [6,7,9]; however, these procedures can significantly impair wrist mobility. In our patient, meticulous curettage combined with bone grafting led to rapid symptom resolution, restoration of grip strength, and a favorable functional outcome, with no signs of recurrence at follow-up. This method not only provided symptomatic relief but also ensured structural stability.

Conclusion

Despite its rarity, osteoblastoma should be considered in the differential diagnosis of persistent, non-traumatic wrist pain, particularly in young adults. Early recognition and appropriate surgical management can provide excellent long-term outcomes, preserving wrist function while minimizing recurrence risk. Future studies and case reports will help refine treatment strategies and expand our understanding of this uncommon tumor.

Clinical Message

Although exceedingly rare in carpal bones and older adults, osteoblastoma must be considered in the differential diagnosis of chronic, non-traumatic wrist pain. Early recognition and meticulous extended curettage with autologous bone grafting can provide excellent long-term pain relief and structural stability while avoiding the risk of radical resections that compromise wrist mobility.

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

References

1. Dahlin DC, Johnson EW. Giant osteoid osteoma. J Bone Joint Surg Am 1954;36:559-72.

2. Lichtenstein L. Benign osteoblastoma. A category of osteoid and bone-forming tumors other than classical osteoid osteoma, which may be mistaken for giant cell tumor or osteogenic sarcoma. Cancer 1956;9:1044-50.

3. Jaffe HL. Benign osteoblastoma. Bull Hosp Joint Dis 1956;17:141-51.

4. Healey HJ, Ghelman B. Osteoid osteoma and osteoblastoma. Clin Orthop 1986;204:76-85.

5. Manguini U. Tumors of the skeleton of the hand. Bull Hosp Joint Dis 1967;28:61-103.

6. Gdoura F, Trigui M, Ellouze Z, Hamed YB, Ayadi K, Keskes H. Hamatum osteoblastoma. Orthop Traumatol Surg Res 2010;96:712-6.

7. Zyluk A, Puchalski P, Szlosser Z. Osteoblastoma of the hamate bone: A case report. J Hand Surg Am 2017;49:350-1.

8. Van Dijk M, Winters HA, Wuisman PI. Recurrent osteoblastoma of the hamate bone. A two-stage reconstruction with a free vascularized iliac crest flap. J Hand Surg Br 1999;24:501-5.

9. Chughtai M, Orriols AM, Saengchote SA, Kim J, Wright TW, Dell PC, et al. Distribution and characteristics of carpal bone tumors: A systematic review. J Wrist Surg 2023;13:534-49.

10. Ayan I, Serinsöz E. Osteoblastoma in the os hamatum: A rare case report. Eklem Hastalik Cerrahisi 2014;25:56-9.

11. Menon J, Rankin D, Jacobson C. Recurrent osteoblastoma of the carpal hamate. Orthopedics 1988;11:609-11.

12. Apergis E, Tsamouri M, Theodoratos G, Maris I, Antoniou N. Osteoblastoma of the hamate bone: A case report. J Hand Surg Am 1993;18:137-40.

13. Maréchal E. Recurrent osteoblastoma of the hamate bone. J Hand Surg Br 1999;24:757-8.

14. Dunda SE, Kauczok J, Demir E, Braunschweig T, Pallua N. A rare case of massive carpal osteoblastoma requiring complex reconstructive surgery. J Plast Reconstr Aesthet Surg 2013;66:e193-6.

15. Repáraz Padrós FJ, Eraso Lara I, Garbayo Marturet AJ, Tejero Ibáñez A, Castaño Serrano A, Panizo Santos A. Osteoblastoma del hueso ganchoso [Hamatum osteoblastom]. An Sist Sanit Navar 2016;39:433-7.

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