

Original article

Simple and Safe Excisional Technique of Osteoid Osteoma of the Proximal Femur and Distal Tibia Using Hollow Reamer: A Case Report

Mahmoud Ali*^{ID}, Fathi Al Arabi^{ID}, Khawlah Alghzawi^{ID}, Esra Elkhoja^{ID}, Sara Morgham^{ID}, Ritaj Agha^{ID}, Sondis Hassan^{ID}, Mofida Fathi^{ID}

Trauma and Orthopaedic Department, Tripoli Central Hospital. Tripoli, Libya.

Email: mahmoud.maarfi@gmail.com

Abstract

Osteoid osteoma is a small benign bone tumour, most frequently seen in young patients, usually solitary, and common in male patients (about 80% < age of 30 years). We present two cases of osteoid osteoma. 1st case of a 14-year-old male patient with osteoid osteoma distal 2/3rd of the left femur. 2nd case of 75 years old male patient with osteoid osteoma distal 1/3rd right tibia. In both cases, radiography and computed tomography revealed osteoid osteoma that was successfully treated with simple and safe percutaneous computed tomography and radiography-guided excision using a hollow reamer technique.

Keywords. Computed Tomography, Image Intensifier, Osteoid Osteoma, Femur, Tibia, Hollow Reamer.

Received: 18/11/25

Accepted: 20/01/26

Published: 28/01/26

Copyright © Khalij-Libya Journal (KJDMR) 2026.

Open Access. Some rights reserved. This work is available under the CC BY-NC-SA 3.0 IGO license.

Introduction

Osteoid osteoma is a small benign bone tumour, most frequently seen in young patients, usually solitary, and common in male patients (about 80% < age of 30 years) [1,2]. The pathogenesis of osteoid osteoma is unknown; it seems that a high level of prostaglandins is produced in the nidus center, resulting in arteriolar vasodilation and edema, which stimulates the nerve terminals, causing pain [3]. A radiolucent nidus in the center of intensely reactive thick bone is usually the radiographic appearance of osteoid osteoma (oval, radiolucent central focus smaller than 2 cm with surrounding reactive sclerosis) [4]. MRI is helpful in the differential diagnosis of smaller lesions not detected by standard X-ray [7].

Case presentation

First case. A 14-year-old male presented with long-standing left thigh pain radiating to the left knee with limping. The pain worsens at night. X-ray revealed a large area of cortical thickening (sclerosis) in the distal 2/3rd of the left femur, and CT scan revealed a 1cm radiolucent nidus (Fig. 1).

Second case. A 75-year-old male patient presented with long-standing right ankle pain, worsened at night, and responded to NSAIDs. X-ray revealed a small necrotic area in the lower end of the right tibia, and a CT scan revealed a radiolucent nidus of osteoid osteoma. (Fig. 2A, B, C). This lesion was successfully and completely excised under CT guidance in the first case and under X-ray guidance in the second case using hollow reamer techniques.



Figure 1. Plain radiographic image from the first case (AP view). **Figure 2.** Plain radiographic and CT scan images from the second case. (A) AP view, (B) Sagittal view, (C) Axial view

Discussion

Regression is a natural history of osteoid osteoma that occurs spontaneously with conservative treatment [8]. The prognosis is good with no potential risk of malignant changes. The treatment of osteoid osteoma is a non-surgical treatment, including aspirin, NSAIDs, and CT-guided radio-frequency ablation, and/or surgical [1,3]. 50% of patients treated with aspirin and NSAIDs will have their lesion burn out with no further medical or surgical treatment [9]. CT-guided radio-frequency ablation has become the dominant method of

treatment. Under CT guidance, a radiofrequency probe is placed into the lesion, and the nidus is heated to 80°C, about 90% of selected patients can be successfully treated with one or two ablations. Surgical treatment is indicated when there is no improvement with conservative treatment. The success of surgical treatment is achieved with nidus resection or destruction [5]. In our study, we used a simple and safe technique using a hollow reamer for the complete removal of the lesion, a day case surgery. Our technique: A day case admission, General Anesthesia (GA), Full aseptic techniques, X-ray and/ or CT guidance for guide pin and nidus localisation, excision of the lesion using hollow reamer. [Figure 3,4,5], filling the gap with bone graft and/or bone substitute, Radiological confirmation of complete nidus excision, and wound closure. Excised lesion sent for histopathology (both cases reported benign osteoid osteoma). Patients were discharged on the same day.

Follow up: 4/52, 3/12, 6/12, and after one year. There was no pain or other risks and complications recorded.

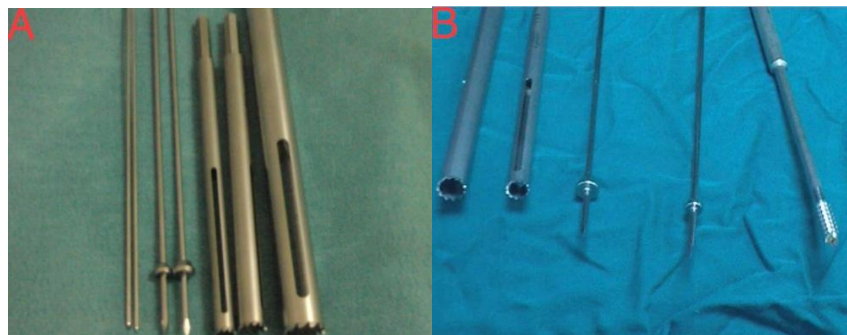


Figure 3. Hollow reamers and guide pins

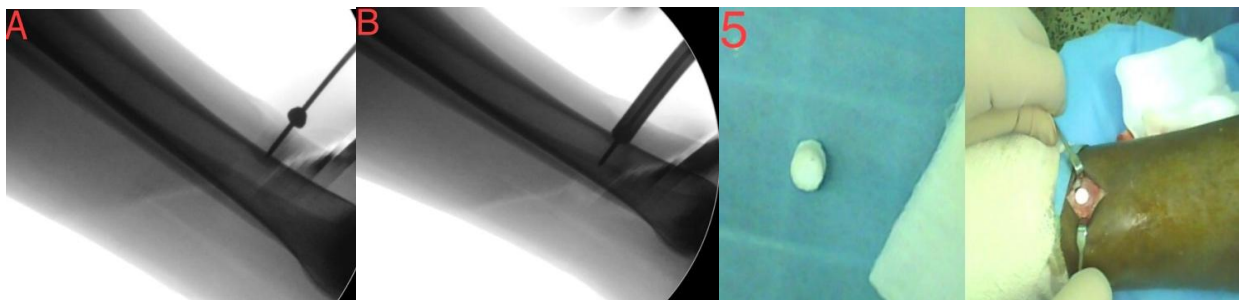


Figure 4. (A) X-Ray image guidance for guide pin, (B) X-Ray image shows hollow reamer, Figure 5. Image of filling the gap with a bone graft

Conclusion

Osteoid osteoma is a small bone tumour of benign nature and spontaneous resolution character with conservative treatment (self-limiting condition). Presenting with bone pain. Surgery is indicated for big lesions and for failure of conservative management. In our study we recommend the safe and simple surgical techniques for excising symptomatic osteoid osteoma using hollow reamer to achieve complete (en block) removal of osteoid osteoma, with the advantages of small wound, short time of surgery, short hospital stay, low hospital cost effective, and aiming for a very low incidence rate of recurrence, infection and risk of fracture post operatively (fig 6).

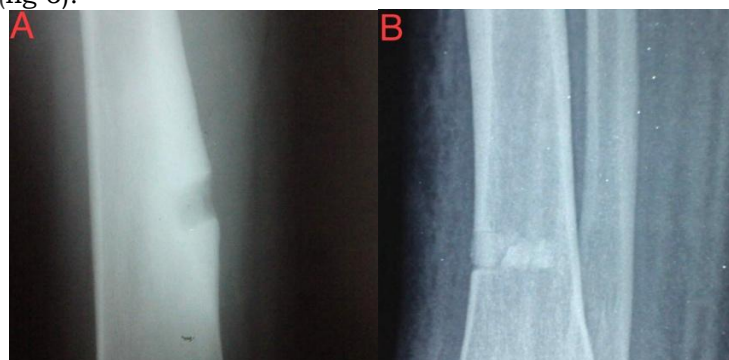


Figure 6. (A) X-Ray lateral view of left femur (Intra-OP post excision). (B) AP view distal tibia showed satisfactory graft in situ

References

1. Light J, Retrouvey M, Conran RM. Educational case: osteoid osteoma. Acad Pathol. 2021;8. doi: 10.1177/23742895211006879.
2. Ciftidemir M, Tuncel S, Usta U. Atypical osteoid osteomas. Eur J Orthop Surg Traumatol. 2015;25(1):17-27. doi: 10.1007/s00590-014-1441-0.
3. Jaffe HL. "Osteoid-osteoma": a benign osteoblastic tumor composed of osteoid and atypical bone. Arch Surg. 1935;31(5):709-28.
4. Sreenivas T, Menon J, Nataraj AR. Synchronous symmetrical atypical osteoid osteoma of tibia: a case report. Eur J Orthop Surg Traumatol. 2012;22(Suppl 2):251-4. doi: 10.1007/s00590-011-0844-4.
5. Arslan A, Sarlak AY, Tosun B. Synchronous multicentric osteoid osteoma with associated fibrous cortical defect. Orthopedics. 2008;31(1):95. doi: 10.3928/01477447-20080101-23.
6. Aynaci O, Turgutoglu O, Kerimoglu S, Aydin H, Cobanoglu U. Osteoid osteoma with a multicentric nidus: a case report and review of the literature. Arch Orthop Trauma Surg. 2007;127(10):863-6. doi: 10.1007/s00402-007-0365-0.
7. Gangi A, Alizadeh H, Wong L, Buy X, Dietemann JL, Roy C. Osteoid osteoma: percutaneous laser ablation and follow-up in 114 patients. Radiology. 2007;242(1):293-301. doi: 10.1148/radiol.2421041404.
8. Glanzmann MC, Imhoff AB, Schwyzer HK. Osteoid osteoma of the shoulder and elbow: from diagnosis to minimally invasive removal. Int Orthop. 2013;37(12):2403-8. doi: 10.1007/s00264-013-2053-8.
9. Pratali R, Zuiani G, Inada M, Hanasilo C, Reganin L, et al. Open resection of osteoid osteoma guided by a gamma-probe. Int Orthop. 2009;33(1):219-23. doi: 10.1007/s00264-008-0536-9.