

Osteoid osteoma of calcar of femur in child: prophylactic fixation using PHILOS and excision

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DESCRIPTION

Osteoid osteoma (OO) affects proximal femur in 20%–25% of cases.^{1,2} When they are intra-articular, they can mimic inflammatory synovitis and be difficult to diagnose.^{3,4} CT scan is the imaging modality of choice.⁵ Various treatment modalities have been described in literature but surgical excision remains gold standard.^{6,7} Here, we present two cases of OO of proximal femur-treated en bloc resection after prophylactic fixation with proximal humerus internal locking system (PHILOS) plate in child and adolescence. This type of fixation provides complete removal and the plate is found to be countered to the bone as illustrated.

Case 1

An 11-year-old girl weighing 20 kg was diagnosed as OO of calcar region after clinical and radiological examination. Plain X-ray and CT scan showed sclerosis in anteromedial aspect of inferior right femoral neck with nidus (figure 1A–C). In supine position, a prophylactic fixation was done using a PHILOS plate through a lateral incision and the lesion was exposed using a Smith-Peterson approach. After marking under C-arm, first some holes were drilled and then a block was excised using an oscillating saw (figure 1D,E). Postoperatively, the child got relieved of her pain and the wounds healed uneventfully. The patient was stated to mobilise full weight bearing after 6 weeks. Follow-up radiographs at 6

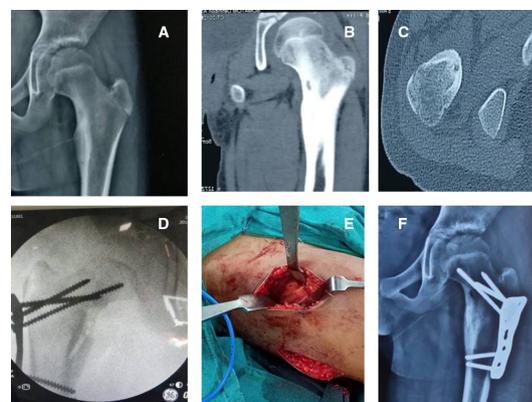


Figure 1 Radiograph of the right hip showing sclerosis anteromedial aspect of femoral neck with nidus surrounded by radiolucent rim in (A); CT scan images demonstrating eccentric lytic lesion with reactive bone sclerosis (B, C); intraoperative and intensifier images showing the PHILOS plate and excised calcar (D); surgical image showing double incision (E) and follow-up radiograph showing bone healing and implant in-situ in (F). PHILOS, proximal humerus internal locking system.

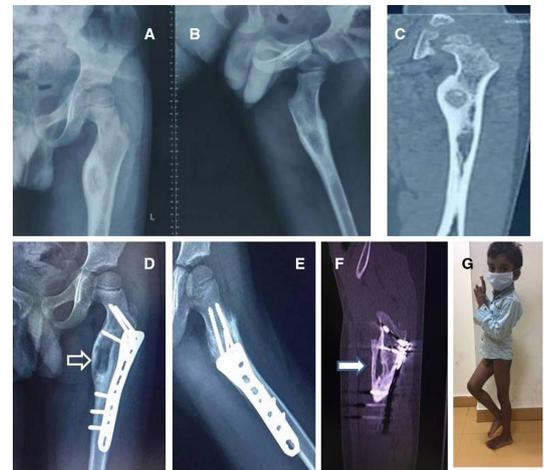


Figure 2 Antero-posterior and lateral radiographs of the left hip child showing sclerosis in the anteromedial aspect of the left lesser trochanter, nidus surrounded by the reactive bone of sclerosis (A, B); CT scan images showing eccentric lytic lesion with reactive bone sclerosis extending below lesser trochanter (C); follow-up radiograph showing bone healing (hollow arrow) in anteroposterior and frog lateral views with the proximal humerus internal locking system plate in-situ (D, E); reduction of cavity in coronal CT cuts (F-solid arrow); and clinical picture showing single leg stance (G).

months showed a healing bone and no recurrence or implant-related complications (figure 1F).

Case 2

A similar case in a 5-year-old boy child who had been operated before elsewhere for OO presented with recurrence (figure 2A–C). There was a medial scar on his left thigh suggestive of a medial approach and no other records available. This time using a Watson-Jones approach the PHILOS plate was slid and fixed. The limb was then external rotated and the periosteum was incised longitudinally. Two Hohman's retractor was placed superior and inferior to lesser trochanter and psoas tendon was displaced away from the working field. A cortical window was created and the lesion was curetted. The biopsy confirmed OO. The patient was kept non-weight bearing for a month after which he started to mobilise. At his last follow-up at 8 months, he could stand painless on operated limb, radiographs show bridging callous (hollow arrow) and CT scans show reduction in cavity's size (solid arrow) were satisfactory (figure 2D–G).

OO are common in lower extremities but can be intra-articular in 0%–16%. These can behave



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atypically like no night-pains or responsive to non-steroidal anti-inflammatory drugs (NSAIDs) and even the nidus and cortical sclerosis could be absent.⁸ Hence, the diagnosis becomes challenging and often delayed.^{9 10} CT scan is usually confirmatory but MRI can show 'half moon sign' and the bone scintigraphy can display 'double density sign'.^{11 12}

The aim of the treatment is to complete removal of the lesion. Latest technical modalities thermo/radiofrequency ablation are available in sophisticated centres and unaffordable to majority of poor patients in developing countries like ours.^{6 7} Recently, percutaneous drilling of the nidus either image intensifier-guided/CT-guided has been described to safe, minimally invasive and cost-effective method though technically demanding.^{13 14} An en bloc surgical excision is gold standard technique but chances of iatrogenic fracture and use fixation devices particularly in the children remain a concern.¹⁵ The PHILOS plate used for proximal humerus fixation in adults had been demonstrated to fit well with multiple screw options saving the epiphysis and allowing for surgical manoeuvre medially. This can be done with a single or two incisions as demonstrated in our cases. We have not done bone grafting in any of the cases.

Learning points

- ▶ Osteoid osteoma of calcar is rare and difficult to diagnose.
- ▶ Surgical excision can be associated with iatrogenic fracture requiring prophylactic fixation.
- ▶ Proximal humerus internal locking system plate best suits the contour with multiple screw options.

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