CASE REPORT

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Long-term follow-up of a hip joint osteoblastoma after intralesional curettage and cement packing: a case report

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This article reports a case of intraarticularly expanding benign osteoblastoma of the acetabulum caused femoral head destruction by impingement in a 17-year-old male that was diagnosed for two years from the onset of symptoms. As a treatment, by surgical dislocation of the hip joint, polymethylmethacrylate was packed inside the gap of the acetabular site after intralesional wide curettage. Femoral head remodeling was observed without recurrence after ten years follow-up.

Key words: Acetabular osteoblastoma; femoral head remodeling, intralesional curettage.

Osteoblastoma is a solitary benign bone-forming tumor. It occurs without any regard to age, being more common in young adults. The peak age is approximately twenty, though the tumor may present as early as age ten to as late as age sixty.[1] The tumor is located a wide variety of bones including the spine, femur, skull, bones of hands and feet, humerus, tibia and fibula.[2] Pelvic bones are rare location site of the tumor.[3,4] Osteoblastoma localized at the joint surface of the acetabulum has been reviewed only in fourteen cases.[5] These cases were usually characterized by signs of synovitis.

Here we report the case of a 17-year-old male with intraarticular acetabular osteoblastoma of the hip that resulted in impingement and severe destruction at the femoral head. This patient is the first case presented in English literature in terms of not only clinical and radiological findings but also the ten-year period of follow-up without recurrence, and the remodeling of the femoral head as well.

Case report

A 17-year-old male patient presented with history of moderate pain at the left hip ongoing for two years. The pain was dramatically worsened six months before admission and aggravated by weight bearing but also was presented at night and responded well to analgesic drugs. He had a moderate limp, global limitation of motion and internal rotation of the joint.

On pelvic x-rays a huge well-circumscribed, round sclerotic lesion was observed located in the left iliopubic region with soft tissue expansion (Figs. 1a and b). Also femoral head irregularity and acetabular expansile lesion was observed on computed tomography (Fig. 1c). T2 weighted magnetic resonance imaging (MRI) showed a hyperintense lesion bulging out from the anterior column of the acetabulum. Fat suppression MRI showed edema at the lesion site. Other MRI findings were destruction of the femoral head and joint effusion (Fig.

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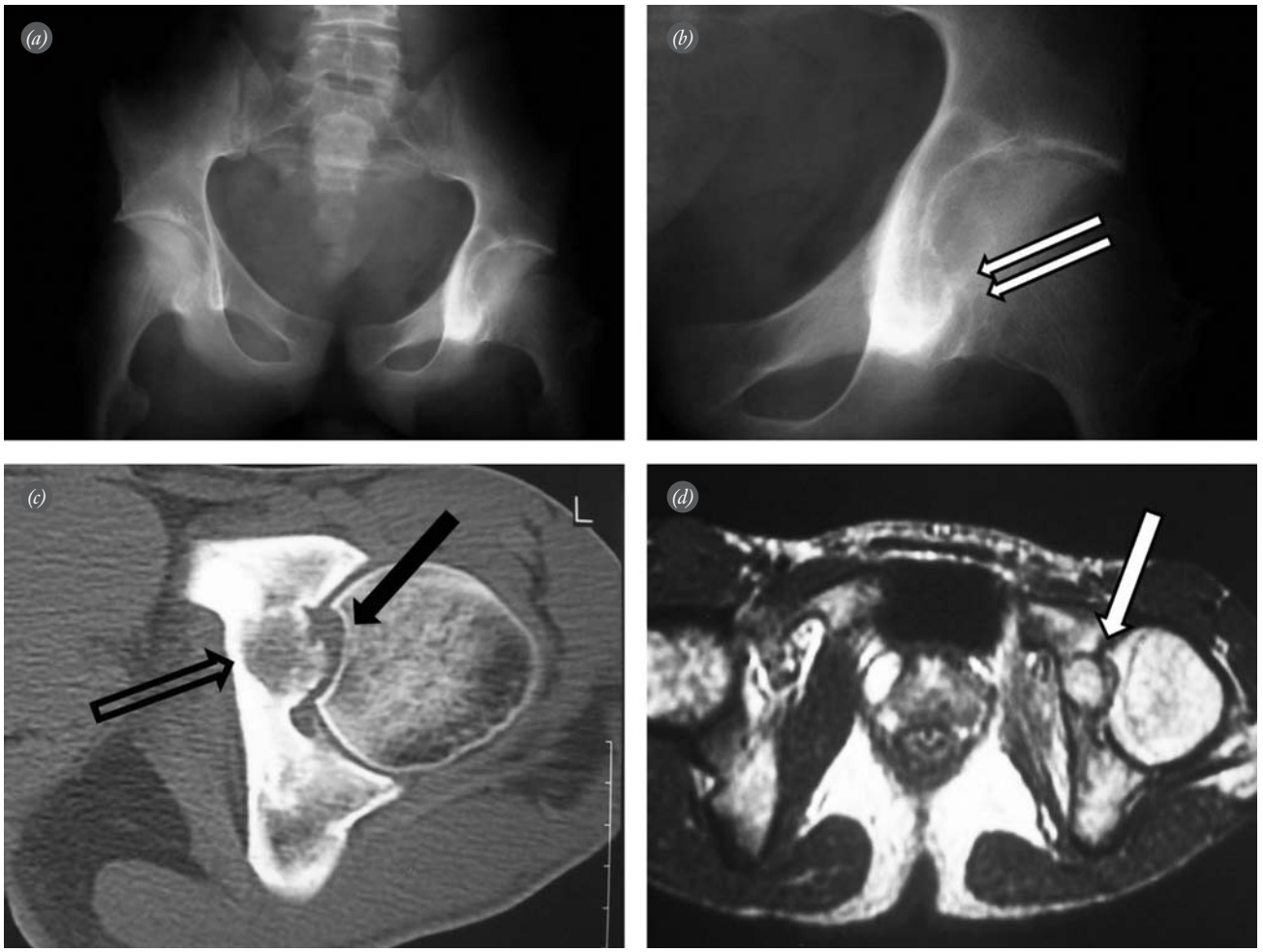

Fig. 1. **(a)** Anteroposterior pelvic X-ray represents the sclerotic lesion on left acetabular site. **(b)** White arrows show the gap due to impingement of lesion on femoral head. Axial CT image **(c)** demonstrates intraarticular expansile lesion (outlined arrow) and femoral head destruction (solid black arrow). **(d)** Magnetic resonance imaging of the lesion also shows the soft tissue edema.

1d). Bone scan with technetium^{99} phosphonate showed an increased uptake in the left pelvic ring.

Hip arthrotomy was performed and femoral head dislocated to have a direct visualization of both sides of lesion by direct lateral approach of Hardinge. All periarticular soft tissues were protected and spared as much as possible. The lesion was protruded to intraarticular space with a reddish, friable mass and bleeding easily. The cartilage of acetabular site was destroyed by the tumor. A destructed and irregular crateric shaped gap was observed in the femoral head. The depth of the hole was 1.5 cm and localized at the anteroinferior part of the femoral head (Fig. 2a). Extensive curettage was done by preserving to the weight bearing dome and part of the posterior wall of the acetabulum. The lesion was measured approximately 4x3x2.5 cm (Fig. 2b). Two packages of polymethylmethacrylate (40 ml) packed inside the gap of the acetabular site (Fig. 2c). The irregular region at the femoral head was smoothened and microfractures were made. Femoral head was relocated carefully without giving any damage to peripheral soft tissue of the hip joint.

The specimen was characterized by osteoid tissue with proliferation of osteoblasts and osteoclasts without mitotic or atypic figures on histopathologic examination. The histological diagnosis was reported as benign osteoblastoma (Fig. 2d).

Skin traction was applied to left lower limb for two weeks and afterwards non-weight bearing for an additional four weeks on crutches was recommended. Preoperative pain dramatically disappeared soon after surgery.

Adjuvant radiotherapy was not recommended. On physical evaluation six months after surgery, the patient walked freely with a minimal limp and slight

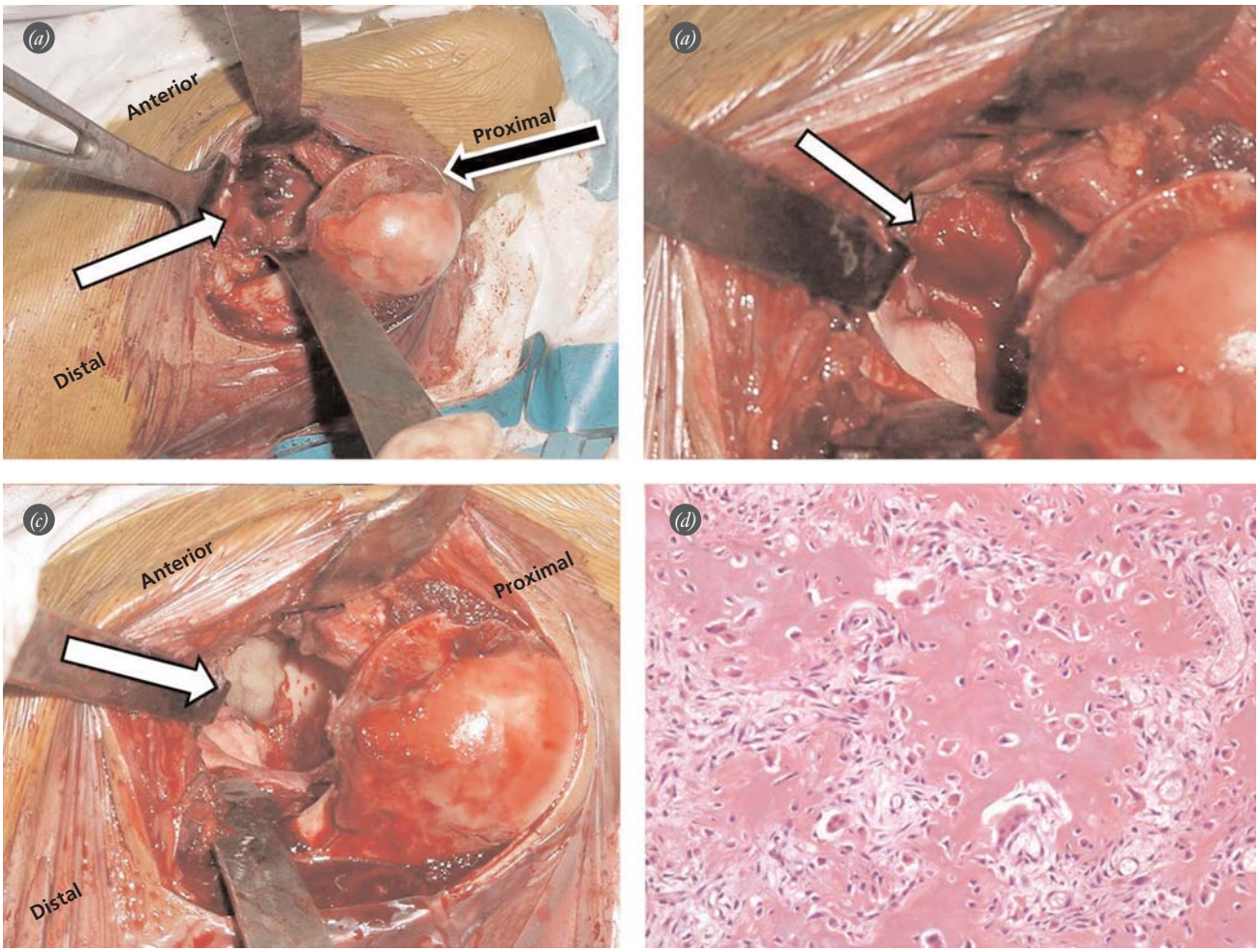

Fig. 2. **(a)** Intraoperative illustration demonstrates expansile tumoral mass on acetabular site (white arrow) and destruction on the femoral head site (black arrow). **(b)** Appearance of the lesion after curettage. **(c)** Clinical image of the curetted lesion after cement packing. **(d)** Typical histological features of osteablastoma showing anastomosing trabeculae of woven bone separated by a fibrovascular stroma (H&E x400). [Color figure can be viewed in the online issue, which is available at www.aott.org.tr]

difficulties on climbing stairs. The range of hip motion was normal and painless. Three years after surgery the patient remained free of symptoms and walked unrestricted. At the end of ten years follow-up physical examination was unremarkable, X-rays and CT scans showed not only without recurrence of the disease but also significant remodeling of the femoral head (Figs. 3a-d).

Discussion

Osteoblastoma is a rare primary neoplasm of bone categorized as a benign tumor that is closely related to osteoid osteoma. It differs from osteoid osteoma in its ability to grow larger than 2 cm in diameter.[6,7] It may be found within the cortex, medullary canal or periosteal tissues. According to the Musculoskeletal Society Tumor Staging (MSTS) system of benign bone tumors, most osteoblastomas are Stage 2 lesions.[8] Stage 2 lesions are characterized by benign cytologic characteristics, remain intracapsular and do not metastasize. On the other hand, Stage 3 osteoblastomas destroy bone much more aggressively and extend extracapsularly, and their histological architecture and cell structure may contain many polymorphic osteoblast with pathological mitoses.

Tumors involving the central neuraxis are associated with greater morbidity and mortality. Aggressive behavior is within the biologic spectrum of osteoblastomas and histopathology alone does not appear to be a reliable predictor of aggressiveness.[9] In our case, although histological pattern was in benign form, a clinically and radiologically aggressive local lesion was observed. After ten years, still no recurrence of the tumor supports that the lesion is benign.

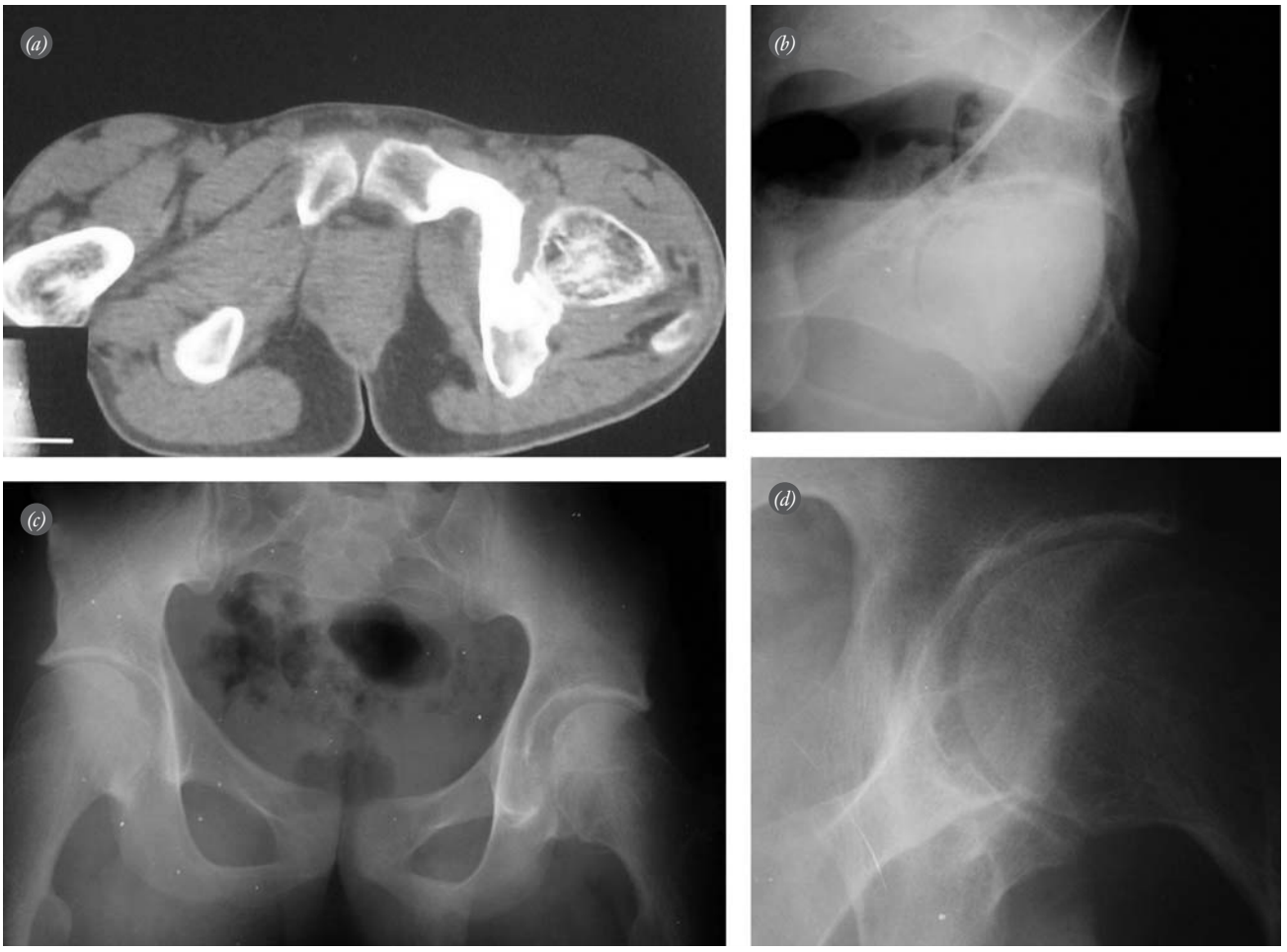

Fig. 3. **(a)** Axial CT image demonstrates excellent femoral head remodeling without any evidence of recurrence of the tumor after ten years. **(b-d)** Last pelvic X-rays of the case demonstrate femoral head remodeling and a normal hip joint space.

The intraarticular part of the acetabulum is a relatively common site for osteoid osteoma when compare with osteoblastoma.[10,11] Several cases of intraarticular lesions are difficult to identify. A focal lesion may not be detected even after the onset of symptoms and radiological identification of the tumor. Bone scintigraphy and computed tomography are essential for an accurate and early diagnosis. These imaging techniques reveal abnormalities in bone and cartilage growth, new bone formation and sclerosis distant from the tumor on other site of joint and disruption of the articular surfaces.

Radionuclide bone scintigraphy demonstrates an intense focal increase of activity and can be of great assistance in localizing the tumor especially in the pelvis. This technique is sensitive but not specific. It reveals intense focal activity of the radionuclide at the tumor site but study alone is not diagnostic. Many bone tumors show a similar type of focal activity.[12]

The appropriate surgical treatment goal for osteoblastoma is complete excision of the lesion. For Stages 1 and 2 lesions, the recommended treatment is extensive intralesional curettage. For Stage 3 lesions wide resection is defined as the excision of the tumor with circumferential cuff of normal bone and soft tissue around the entity. Such excisions are usually curative for osteoblastoma.[13] In a study of 99 cases of osteoblastoma with 30 years of follow-up (1974-2006), local recurrence rate was approximately 24% following intralesional curettage and packing. The authors concluded that in selected cases recurrence can be minimized by wide resection surgery.[14] The primary function of the anterior pelvis is protection. It is known that the posterior column has a weight bearing function. So in our case, the expected and actual gait disturbance was minimal. Therefore, we chose the simplest treatment modality for our patient instead of massive pelvic resection. Encouraging results were reported by somewhat similar but more extensive type of surgery with inclusion of the weight bearing area of the acetabular dome called internal hemipelvectomy.[15,16]

We hypothesized that this joint preserving method would also provide an economic alternative to prosthetic joint replacement without compromising good functional outcomes.

Intraarticular surface osteoblastoma can cause joint osteoarthritis and should be included in the differential diagnosis of apparent idiopathic arthritis. It must be also taken into consideration during the follow-up.

In this case, our long-term follow-up results make us optimistic that our method may be an alternative to immediate megaprosthetic reconstruction. Furthermore, this may provide a useful intermediate step in the treatment of aggressive benign intraarticular bone tumors with some degree of associated joint deformation without significantly compromising later prosthetic reconstruction.

Conflicts of Interest: No conflicts declared.

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