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CASE STUDY

ANTERIOR APPROACH TO EN-BLOCK RESECTION OF THE OSTEOID-OSTEOMA TO POSTERIOR SIDE OF PROXIMAL TIBIA. CASE REPORT

DOSTĘP PRZEDNI DO RESEKCJI KOSTNIAKA KOSTNAWEGO ZLOKALIZOWANEGO W TYLNEJ CZĘŚCI KOŚCI PISZCZELOWEJ. OPIS PRZYPADKU

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ABSTRACT

Introduction

One of the relatively common bone tumors of the tibia is osteoid osteoma. Surgical en-block resection of pathological focus is the method of choice for treatment of this tumor type.

Aim

Description of the original approach to the resection of osteoid osteoma located in the posterior side of the proximal tibial bone.

Material and methods

A 18-year old women presented with the history of pain in the right leg during last three months. Considering the data of the clinical examination, we assumed diagnosis of a typical osteoid osteoma to posterior side of proximal tibia. Transosseous retrograde approach towards pathological focus was used for surgical removing of tumor bone site.

Results

No complications were observed in postoperative period. Two years follow up, the patient noted the absence of pain and normal function of the operated leg.

Conclusions

The idea of transosseous retrograde approach towards pathological focus may be useful in the treatment of bone tumors of other atypical anatomical localizations.

Keywords: benign bone tumors, osteoid osteoma, osteogenic tumors, en-block resection

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STRESZCZENIE

Wstęp

Jednym ze stosunkowo powszechnych nowotworów kości piszczelowej jest kostniak kostnawy (osteoid osteoma). Chirurgiczna resekcja w całości ogniska patologicznego jest metodą z wyboru w leczeniu tego typu nowotworu.

Cel

Opis oryginalnego dostępu do resekcji guza zlokalizowanego w tylnej części bliższej kości piszczelowej.

Materiał i metody

18-letnia pacjentka zgłaszała ból prawej kończyny dolnej w ciągu ostatnich trzech miesięcy. Biorąc pod uwagę dane z badania klinicznego oraz badania obrazowe, postawiliśmy rozpoznanie typowego guza o charakterze kostniaka kostnawego w tylnej części bliższego końca kości piszczelowej. Zastosowaliśmy nietypowo dostęp przedni do resekcji tego guza.

Wyniki

Nie zaobserwowano powikłań w okresie pooperacyjnym. Po dwóch latach pacjentka nie zgłasza bólu i podaje pełną funkcjonalność operowanej kończyny.

Wnioski

Idea przezkostnego przedniego pośredniego (retrograde) dostępu do ogniska patologicznego może być przydatna w leczeniu guzów kości o innych atypowych lokalizacjach anatomicznych.

Słowa kluczowe: łagodne nowotwory kości, kostniak, guzy osteogenne, resekcja blokowa

Introduction

Osteoid osteoma is a third most common benign bone tumor of the long bones, such as the femur or tibia. It was first described by Jaffe in 1935. Most often pathology is found in female children and young adults (*Kaiser et al., 2014*). The most common complaints of patients with this type of tumor is pain which usually responded to non-steroidal anti-inflammatory drugs (NSAIDs) and is generally more severe at night. Typically, osteoid osteoma presented at X-ray examination as a lucent nidus that is sometimes calcified, associated with surrounding sclerosis and located at the bone cortex (usually 1–2 cm in diameter) (*Levine et al., 2003*). Computerized tomography helps to make clearly diagnosis and detailed tumor localization (*Steinberg et al., 1990*). The basic way for treating these benign bone tumors is surgical.

Aim

Description of the original approach to the resection of osteoid osteoma located in the posterior side of the proximal tibial bone.

Material and methods

Case report

A 18-year old adolescent women presented with the history of pain in the right leg during last three months. There no was history of trauma. The pain was permanent throughout the day and localized in right knee. The patient noted a pain increase at night hours. The use of NSAIDs only reduced pain, but did not eliminate it completely. The parents of the patient noted that during these three months of debilitating pain the patient lost 5 kilograms in weight. They attributed this to nervous overload due to sleep disturbance. In course of clinical examination no swelling

was noted and there was tenderness over posterior aspect of proximal right leg. Laboratory tests such as complete blood count and biochemical blood tests were normal. Antero-posterior and lateral X-ray imaging of right knee was performed. The radiographs visualized pathological focus of bone sclerosis with lucent within; it localized in the posterior surface of the proximal part of tibia (Figure 1).

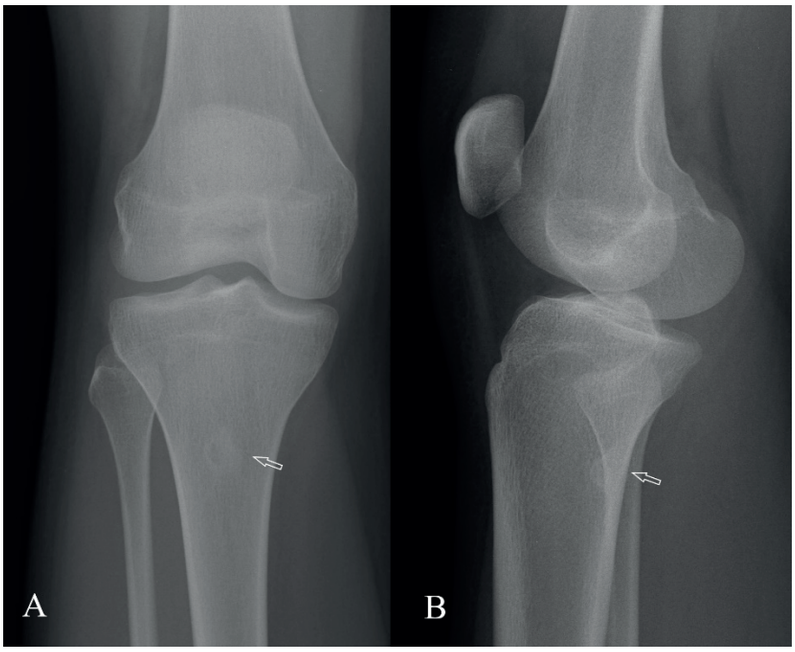

Figure 1. Primary radiographs: at A (antero-posterior view) – the pathological focus of bone sclerosis with lucent within visualized; at B (lateral view) – a local sclerosis in the hind part of tibial bone seen.

Computed tomography confirmed the presence of a scleroid focus of the cortical layer of the posterior surface of the tibia with dimensions of 0.7 × 1.2 cm, as well as the presence of a cavity inside (Figure 2). Considering the data of the clinical examination, we assumed diagnosis of a typical osteoid osteoma.

Surgical approach

Surgery was performed under regional anesthesia of the sciatic and femoral nerves of lower extremity. Through a curved access in the area of the proximal part of the right leg, a section of the periosteum measuring 3 × 1.2 cm was cut as an incomplete rectangle at the medial site of tibia. Then we performed fenestrated osteotomy of the bone cortex along the medial surface of tibia. During its execution, an osteotomy was made with an oscillating saw along the periosteum incision and holes were formed in the base area of the planned "window" using a drill with a Kirschner wire 0.8 mm in diameter. This was done to ensure that after the breakup of the cortex along the formed holes, the "cortical window" retains its connection with the periosteum. Through a formed window hole in the medial surface of the tibia, a pathological osteoid osteoma center located in the posterior side of tibial bone was clearly visualized. An en-block resection of osteoid osteoma was performed through the bone hole using an oscillating saw. Macroscopically, the pathological focus resembled a nut with a soft cherry-colored core inside. Then the "cortical window" of medial surface of tibia was returned in its original place and was fixed by absorbable 5–0 sutures by periosteum (Fig. 3).

Suture of the postoperative wound was performed. Patient was immobilized for 5 weeks with posterior splint to minimize the risk of pathologic fracture.

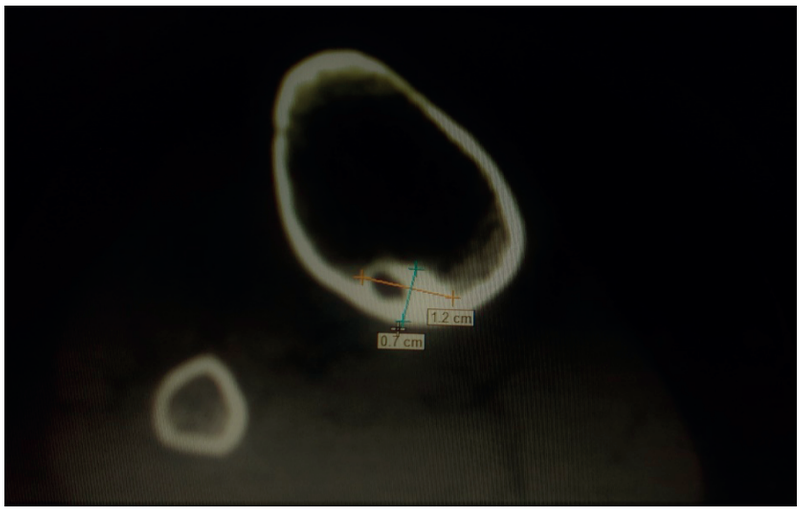

Figure 2. CT scan at bone tumor site.

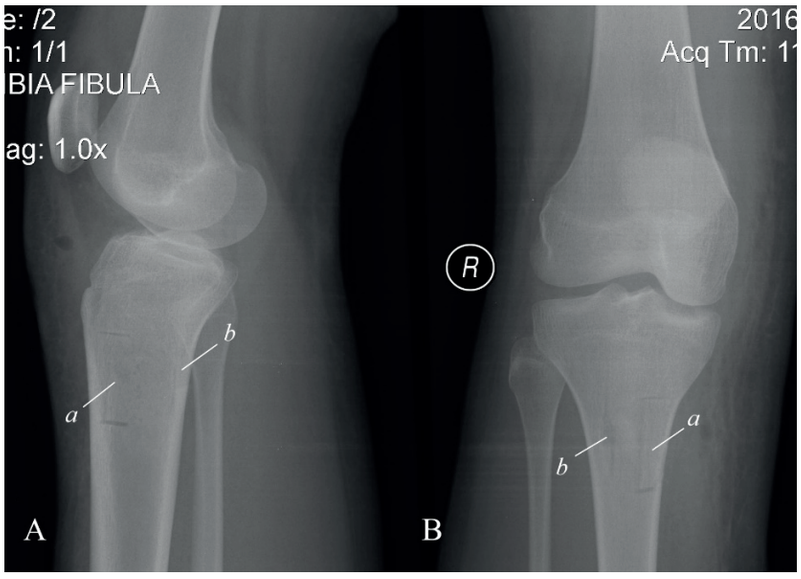

Figure 3. Postoperative X-ray examination: A – lateral view; B – antero-posterior view (a – "cortical window" at medial site of proximal tibia; b – cortical bone defect in the region of en-block resection of osteoid osteoma).

Histopathological diagnosis confirmed osteoid osteoma.

Results

Immediately after the surgery, the patient noted that debilitating pain has disappeared. No complications were observed in postoperative period. After removing the splint, the patient returned to normal life, without pain. Body weight returned to normal. Two years follow up, the patient noted the absence of pain and normal function of the operated leg (Figure 4).

Discussion

As known, surgical resection (with or without bone grafting) is a gold standard to treat osteoid osteoma. Recently increased frequency of percutaneous radiofrequency ablation (RFA) of pathological nidus has been reported (*Paladini et al., 2018*). Cryoablation is another ablation method in treatment of osteoid osteoma. Complication of cryoablation are not well known such as RFA because the complication rates of cryoablation are low and it is used less (*Oc et al., 2019*).

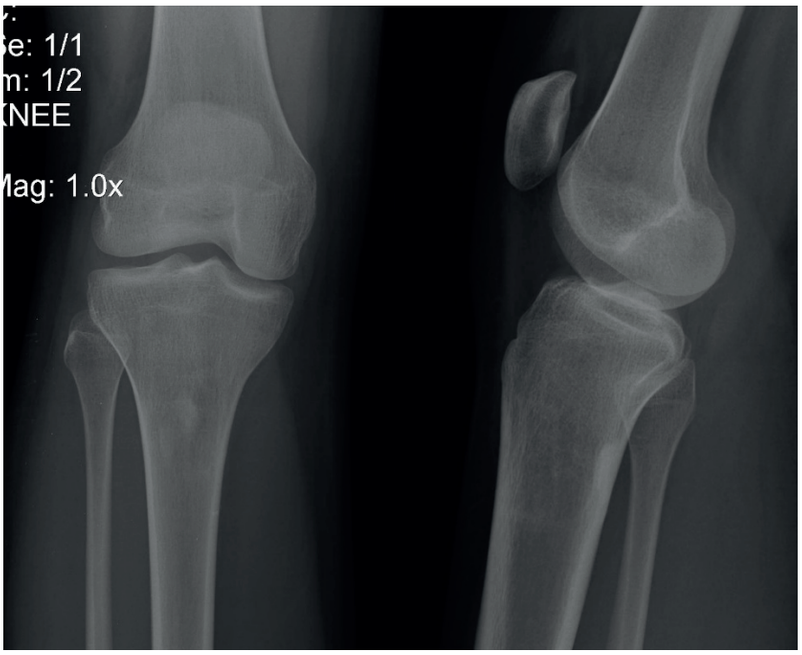

Figure 4. Two plane X-ray examination after two years after surgery. Good healing of the bone defect is detected in the resected region of tibia.

Osteoid osteomas are small painful benign bone tumors that can be effectively treated by RFA in most situations. Safe access to the lesion is often the most difficult part of the procedure. Because the minimum ablation zone is 1 cm in diameter, osteoid osteomas < 1 cm away from important anatomical structures are not believed to be good candidates for RFA (*Huang, 2016*).

Recently, there are reports of the possibility of treating osteoid osteomas with the use of high-intensity focused ultrasound, as a totally noninvasive procedure. But this method is still poorly understood and also has its drawbacks and contraindications (*Scipione et al., 2018*).

Posterior side of proximal tibia is localized unfavorably in terms of the surgical approach due to the presence of numerous neurovascular structures in this anatomical area, thus we present anterior approach to the tumor. The approach described in this article towards resection of osteoid osteoma, located in a bone site complicated regarding anatomy and downright surgical approach is effective and easy to use.

Conclusions

The idea of transosseous retrograde approach towards pathological focus may be useful in the treatment of bone tumors of other atypical anatomical localizations.

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