

CASE REPORT

Application of Cervicocapital Endoprosthesis in Treatment of Pathological Fracture of the Humerus

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Summary

Osteosarcoma is one of the most common malignant tumours of osseous tissue, where localisation of the tumour in the proximal third part of the humerus is the third most frequent (6). Prosthesis of the teenager's right humerus after pathological fracture was done with cervicocapital or Moore endoprosthesis. This endoprosthesis developed for the treatment of femoral neck fracture and using for hip hemiarthroplasty. After 10 years the patient has suffered fracture of periprostheses, osteosynthesis has been performed. Within 2 months after osteosynthesis the patient has regained the previous functional level without complications.

Key words: osteosarcoma; pathological fracture; cervicocapital or Moore endoprosthesis.

AIM OF THE DEMONSTRATION

Application of cervicocapital endoprosthesis in an atypical site, longterm results and their analysis.

CASE REPORT

A male, 25, was admitted to of the Traumatology and Orthopedics Hospital on 15.12.2012 with low energy trauma of the right upper arm after falling. On examination fracture of the distal third of periprostheses of the upper arm with fragment displacement was detected.

The patient has had osteosarcoma since 2002. Biopsy was done in the Children Clinical University Hospital, the patient received the chemotherapy course. In 2003 the patient suffered from pathological fracture of the proximal third of the right upper arm. On 07.05.2003 resection of osteosarcoma of the upper arm bone was performed, and due to lack of the corresponding implant, endoprosthesis with cervicocapital endoprosthesis was performed (Fig.1). Histologic finding on 13.05.2003: highly differentiated osteosarcoma of the upper arm bone.

After trauma on 15.12.2012 corresponding osteosynthesis construction was ordered. On 02.01.2013 after receiving of the construction, osteosynthesis was performed. Osteosynthesis with 2 interlocked plates (DHP 2.7/3.5, right dorsolateral 14 holes and LCP Metaplys PL 3.5 f/dist.med.humer 13 holes) medially and laterally, Tomofix 3.5 screws and clamp loops. The patient withstood the operation adequately to its severeness and the type of anaesthesia. Physiotherapy was started (Fig.2). Sensation and movements of the fingers were not disturbed. Examination of the patient 2 months after osteosynthesis reveals the patient's condition corresponds to the operation performed. The patient is able to perform the previous activities and feels well, neurologic disturbances in the right arm have not been detected. Abduction 5 degrees, adduction 0 degrees, flexion 5 degrees, extension 5 degrees, external rotation 25 degrees and internal rotation 15 degrees.

DISCUSSION

Osteosarcoma is an extremely aggressive and malignant tumour of osseous tissues with bad prognosis. For its treatment mainly chemotherapy and surgery are used (3). Surgical treatment includes several variations. Surgical treatment is more complicated if the tumour is localised in the area of joints, since in this case not only arm salvage is important, but also maintenance of its functions (6).

Reconstruction with endoprosthesis Modular Replacement System (MRS), which was stabilised with Dacron tapes at the clavicle and shoulder blade and muscular transposition. Using this method in 23 patients after 10 years 15 patients had remission, the prosthesis still functions in 15 survivors. Elbow and forearm functions maintained, in 8 patients transitory neurapraxy has been observed (5). Performing sparing proximal humerus resection and endoprosthesis, for example, with MRS or another device, they can be supplemented by Tikhoff – Limberg procedure or its modification (6). If resection involves all humerus, it is possible to use total humerus endoprosthesis together with both articulations (shoulder and elbow) (4). Autotransplantation is possible as well, using avascular autofibula, if can saving humerus head. Excellent results have been acquired after 10 years, patient's range motion was minimally disturbed (2). A similar method of treatment was chosen for 8 patients having humerus tumours, who also were treated by avascular fibula transplantation. After 70 months 7 patients are still alive, 5 of them having satisfactory functions of the shoulder joint (7). Studies of 53 cases within 50 years revealed that chemotherapy in isolation did not significantly affect survival. Limb salvage surgery did not have an adverse effect on survival rates (3).

If limb salvage surgery with MRS or other method is not possible, it may be replaced by cervicocapital endoprosthesis. Cervicocapital endoprosthesis has good long-term outcomes in treatment of osteosarcoma of proximal humerus.

Conflict of interest: None

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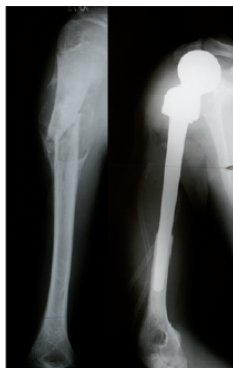


Fig. 1. Right humerus
 Left side – right humerus pathological fracture
 Right side – replacement with cervicocapital endoprosthesis

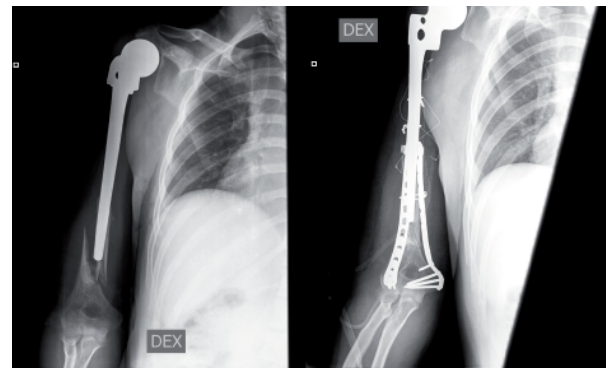


Fig. 2. Right humerus
 Left side – periprosthetic fracture
 Right side – right humerus after osteosintesis