

TWO CASES OF ENORMOUS TUMORS IN THE PROXIMAL HUMERAL REGION

Petko Ganev

Medical University, Plovdiv, Bulgaria, petko_ganev@abv.bg

Vladimir Stavrev

Medical University, Plovdiv, Bulgaria, vstavrev@yahoo.com

Luben Stokov

UMHAT “Sv. Ana”, Sofia, Bulgaria

Abstract: With this report we aim to present two cases of patients with malignant neoplasms in the region of the proximal humerus. The patients were both operated with their limbs spared.

The two patients described in this report are very recent cases. The first one, a 60 y.o. man was admitted to the hospital in May 2021. He had a large tumor in the proximal humerus that developed very fast (in a matter of 3 months), getting huge in size. The Shoulder joint became less and less mobile and eventually almost no motion was possible. He was operated with his proximal humerus replaced with a reverse tumor prosthesis “Arrow”.

The second patient, a 78 y.o. female was admitted to the hospital in September 2021. She developed a large formation seemingly in the midshaft area of the humerus. The process took less than a year. The initial X-ray images and clinics were strongly suggesting osteosarcoma, however the MRI made us perform extirpation of the formation. The tumor was removed entirely and what seemed like a osteosarcoma came out to be a degenerated Exostosis cartilaginea.

Although the first patient had almost his entire Deltoid muscle consumed by the formation he is slowly regaining range of motions. He is undergoing physiotherapy and his treatment is still being planned because the tumor came out to be a metastatic one. The female patient had no injury of the main anatomical elements (particularly n. Radialis due to the close proximity of the formation) and is even now regaining full range of motions. She is being planned for radiotherapy and is still recovering in the hospital.

Although the cases of enormous tumors are relatively rare their treatment stand a great challenge for the surgeon. With the treatment we chose and more specifically the limb salvage operations we believe that the patient will still have a good life expectancy but the high level of quality of life compared with amputees for example is a huge advantage.

Keywords: Tumor, Humerus, Enormous

1. PURPOSE

In the recent years with the development of the diagnostics, the early detection of the neoplasms becomes quicker (1,2) especially with the tumors of the musculo- skeletal system (3,4). However the cases we came across were of enormous tumors in the region of the humeral bone. Either because of an inadequate behaviour or fast tumor growth, the formations had grown in sizes that posed serious challenge for their treatment. In this report we wish introduce you with the treatment these patients underwent in our clinic.

2. MATERIALS AND METHODS

The two cases included in this report are very recent ones. The first is a 60 y.o. male. He was admitted to the hospital in May 2021. 3 months earlier he experienced mild discomfort in the right shoulder joint. Gradually the range of motions became more and more limited. He was examined by a physician. The radiographs were unclear. No significant changes in the paraclinics were present. The tumor continued growing fast and eventually the shoulder joint became completely immobilized. A histological sample was taken in the beginning of the third month which showed a non differentiated Blastoma originating from endocrine tissue. Indeed a PET scan later on showed a neoplasm in the right suprarenal gland (most probably the primary location). When the patient was admitted to our hospital the initial X- ray showed the size of the tumor with just a little left from the proximal humerus (Pic.1)

*Pic.1 X-ray of the right shoulder joint
(and the tumor)*



*Pic.2 Angyography (A. Brachialis medially from the
formation)*

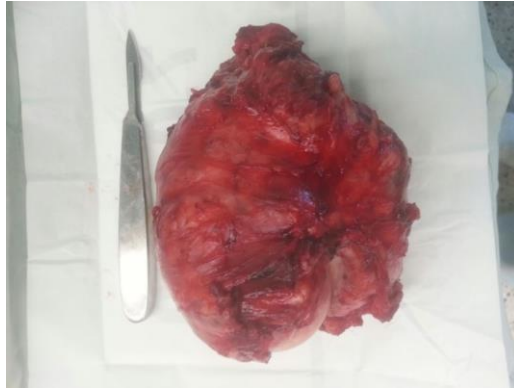


Preoperatively we decided to measure the risk for the important anatomical structures such as a. Brachialis. The images showed that the artery was indeed pushed away so this wouldn't pose a serious problem (Pic.2). In order to extract the tumor we used Deltoido- pectoral approach, extended distally. We cut the Humeral bone 4 cm. below the formation. On Pic.3,4 and 5 the formation is shown.

Pic.3 The extracted tumor, cut



Pic.4 The extracted tumor



Pic.5 The extracted tumor



Unfortunately the patient couldn't afford tumor prosthesis so we had to think of another plan. This is how we decided to use reverse humeral endoprosthesis "Arrow" with long stem. (Pic.6) We created a collar of bone cement over the part of the prosthetic stem that was outside the bone, so that it wouldn't penetrate the humeral bone distally.

Pic.6 The implanted prosthesis



Pic.7 The patient's arm preoperatively



The second case is of a 78 y.o. female who had a rapidly developed formation in her right humeral region. She reported that in less than a year the mass in her right arm became unbearably big (Pic.7). Being more thoroughly questioned, she admitted that more than 10 years ago she was accidentally X-rayed and a cyst in the region was found. No further examination or treatment was performed. About a year ago she hit her arm in this region and not long after that felt a formation.

She had no limitations in her range of motions or any neurological symptoms. On the X-rays, she came with, we saw an image that together with the history very strongly made us suggest that this was osteosarcoma. (Pic.8)

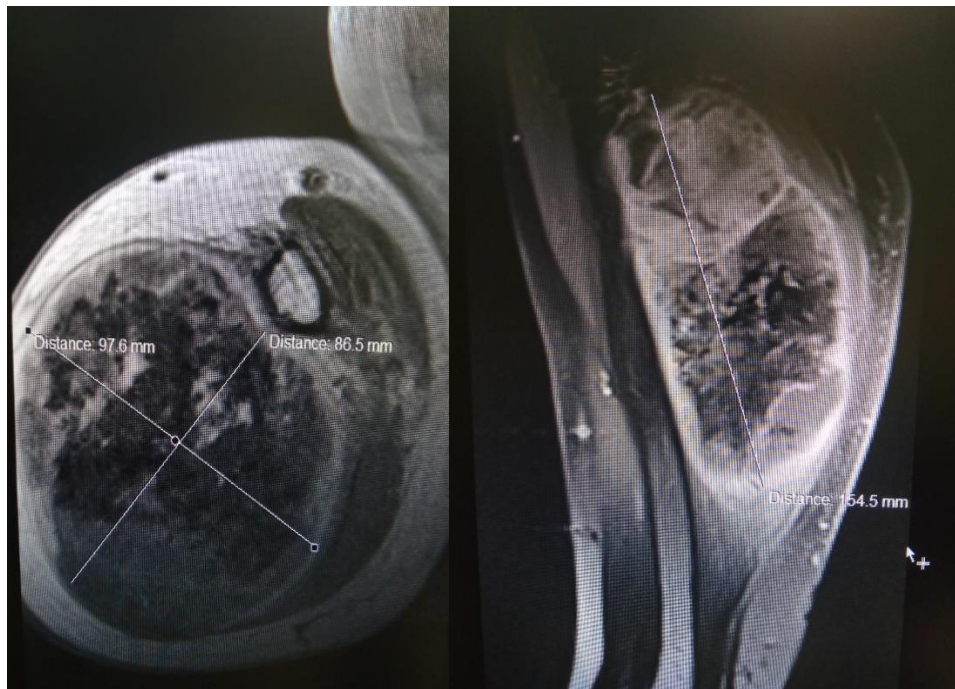
Pic.8 X-ray of the formation



This was the reason that in many other clinics she had been she was offered either amputation or no surgical treatment at all. However we decided to perform a MRI for the region. The images really showed the vast size of the formation but also let us see that the formation had strict margins and therefore might be a different kind of neoplasm.

Pic.9 MRI of the formation

Pic.10 MRI of the formation

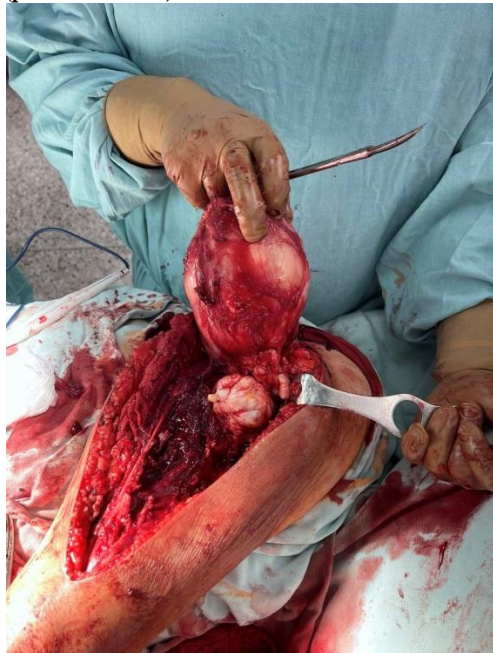


For the operation we used posterior approach to the humerus. We easily reached the formation and started searching distally, close to the elbow for the Radial nerve. Our goal was to find it and then keep it while we work over the tumor. However we couldn't find it probably because it was also pushed away from its anatomical position. The tumor in most of its mass was separated from the bone, only at the proximal humerus was attached to the metaphysis of the bone similarly to an Osteochondroma (5,6) Pic.11, Pic.12

Pic.11 The tumor



Pic.12 Close to the retractor is the part of the tumor, attached to the humeral bone (pale in colour)



Pic.13 The tumor, cut



Inside the tumor showed large areas of ossification. (Pic. 13)

Pic.14 Postoperative result (drainage is visible)



3. RESULTS AND DISCUSSION

In such cases nowadays we plan to perform limb salvage operations because we also believe that the amputation lost the role it had in the past (7) The male patient is undergoing a chemotherapy. However he is also a patient of a team of endocrinologists of the fact that primary malformation is located in the suprarenal gland and the hormone balance should be observed (8). Other authors report of the use of long stem humeral prostheses in the cases bone loss, failed primary arthroplasties etc. They acknowledge the risk of distal penetration of the humeral bone by the stem (9) however even if the surgery was performed in less than a year, no complication is observed so far. The first patient is happily slowly regaining range of motions. He has active motions: flexion- extension: 110°-0°-10°; adduction-abduction: 5°-0-100°; int. - ext. rotation:15°-0°-10°. The female patient had been discharged recently but even so she is satisfied with the result: full flexion and extension of the elbow joint and no lack of motion in the hand. Lack of muscle strength is present and expected after such an operation (10) The female patient is scheduled for radiotherapy due to higher effectiveness of the method with these neoplasms (11,12) The patients are monitored for the future.

4. CONCLUSION

Although the cases of enormous tumores are relatively rare their treatment stand a great challenge for the surgeon. With the treatment we chose and more specifically the limb salvage operations we believe that the patient will still have a good life expectancy but the high level of quality of life compared with amputees for example is a huge advantage.

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