Reconstruction of distal radius giant cell tumor with non-vascularized fibular graft: A case report

Introduction: Giant cell tumor (GCT) is locally aggressive tumor of bone and it commonly localizes at the long bone ends. It is often seen between 20-40 years of age. The most common location for this tumor is the long bone metaepiphysis of the distal femur, proximal tibia, distal radius, and the proximal humerus respectively. Its treatment at distal radius is difficult because of wrist's complex anatomy and it has more recurrence rate at this localization. We aimed to present a case with GCT that located at distal radius, and treated with wide resection and reconstruction with non-vascularized fibular graft.

Materials and Methods: 21-year-old male referred to our clinic with the complaint of swelling and pain at his right wrist for 2 months. He had limitation at wrist flexion after 10 degrees; and wrist extension was limited at neutral position. On the X-ray there was lytic lesion with bone destruction at distal radial metaepiphyseal region. CT and MRI images of the lesion were also evaluated. He had no metastasis in his lung according thorax CT. The initial diagnosis was GCT of bone. After Tru-cut biopsy, histopathlogic results revealed GCT. We resected 5,5 cm proximally from the distal radius articular surface and reconstructed with non-vascularized fibular graft. Lateral collateral ligament was used for knee stabilization and fixed to proximal tibia with a 3,5 mm anchor. Fibula was stabilized with plate and screws. Extensor carpi radialis longus tendon was used for dorsal stabilization and fixed with two 3,5 mm anchor. Flexor carpi radialis tendon was used for volar stabilization and fixed with two 3,5 mm anchor. Extensor carpi ulnaris tendon was used for distal radioulnar joint stabilization and fixed with a 3,5 mm anchor from radial side of ulna to dorsal side of fibula. A K-wire was used for radiocarpal stabilization from fibula to carpals and two K-wires were used for radioulnar stabilization from fibula to ulna. Long arm cast was applied for 3 weeks of immobilization. After 3 weeks radiocarpal K-wire was removed and wrist splint used. 20 degrees passive flexion and extension motion was allowed. In the end of the first month all K-wires were removed. After 6 weeks of surgery, splint usage stopped and besides 20 degrees active flexion extension movements, pronation-supination were allowed.

Results: After 2 months of surgery, there were no complaint of pain. The wrist of motions was 20 degrees of flexion and 30 degrees of extension after 3 months of surgery. There was any complication at postoperative 6 months.

Conclusion: Giant cell tumor is one of the aggressive tumors of bone and it was commonly treated with chemical cauterization, aggressive curettage and cementation. Similar to our case, some functional limitations may occur with reconstruction of GCT. It is very important to plan surgical technique of distal radius GCT to avoid unnecessary and aggressive attempts. It is essential to keep in mind that insufficient surgery at the risk of protecting functions may cause repetitive operations and lung metastasis.

Keywords: Giant cell tumor, Distal radius, Non-vascularized fibular graft, Reconstruction, Wrist stabilization.

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