

Clinical Case Presentation: Limb Salvage Procedure Using an Osteoarticular Allograft for a Low Grade Parosteal Osteosarcoma in the Proximal Humerus

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Background: The proximal humerus is the third most common site for osteosarcomas. Prior to the 1970's, malignant bone tumors in the humerus were devastating. These tumors were typically treated with an amputation of the upper extremity. With advances in medicine, these patients now have options. However, there is no consensus regarding the best reconstructive technique once the proximal humerus is resected. Limb salvage procedures today include, but are not limited to, osteoarticular allografts, allograft-prostheses composites and arthroplasty prostheses. All of these surgical options allow for a mobile glenohumeral joint after surgery. These surgeries save the affected limb, however, they lead to challenges clinically. Resections of the tumors generally lead to deficits in the deltoid, joint capsule, rotator cuff and the scapula. Physical therapy outcomes depend largely on which muscles were affected by not only the tumor, but also the surgical intervention. In addition, we need to look at implant survival rates and potential complications following surgery.

Purpose: To share the surgical procedure, treatment choices and outcomes of a patient diagnosed with an osteosarcoma of her proximal humerus.

Case Description: This case describes a 26 yo female who was diagnosed with a low grade parosteal osteosarcoma. She underwent a radical resection of her proximal humerus, which included her humeral head, humeral neck and proximal diaphysis. She then was treated using an osteoarticular allograft. She had a global rotator cuff repair and tendon reattachments of her latissimus dorsi, pectoralis major and teres major. The surgery, therapy and outcomes will be discussed in detail.

Outcomes: The outcomes of pain and function will be discussed in this presentation. With limb salvage procedures, the functional outcomes depend largely on the structures that were affected during the surgery. Therefore, evidence based rehabilitation needs to be used in order to progress the patient through the stages of physical therapy while protecting the structures that were affected. There needs to be a strong emphasis on setting expectations for the patient, both from the surgeon and the physical therapist.

Discussion: This case will demonstrate how far medicine has come. The primary goal of these surgeries is to save the limb while safely resecting the tumor. There are many structures that are affected during these procedures, so outcomes vary between patients. The outcomes of this case will be presented and we will discuss any current complications.