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Use of total scapular arthroplasty for treatment of a recurrent alveolar soft tissue periescapular sarcoma

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Introduction: High-grade sarcomas arising from the scapula or periscapular soft tissues traditionallyhave been treated with either a total or partial scapulectomy (Tikhoff-Linberg resection). The major challenge is to restore shoulder girdle stability while preserving a functional hand and elbow. The development of a constrained scapular prosthesis could improve glenohumeral stability by passively restoring rotator cuff and glenohumeral capsular function. We present a patient with recurrent alveolar soft tissue sarcoma treated by total scapular prosthesis.

Patient and Methods: 31 year old male, smoker, diagnosed with alveolar soft tissue sarcoma periscapular with pulmonary metastases in December 2011. Marginal resection including lower margin of the scapula was performed in February 2012. The patient presented as sequela a postganglionic brachial plexus injury for full axonotmesis of the middle and lower trunk, so surgery of nerve transfer (motor and sensitive) was performed in another hospital with good results.Adjuvant chemotherapy (cediranib) treatment was started 8 weeks after surgery.

In subsequent follow-up tests (October 2013), the patient presented a local recurrence with scapular bone invasion. Then we performed surgery with tumour resection, and reconstruction with a "constrained" (rotator cuff substituting) scapular prosthesis (Stanmore Implants®). There were no intra-operative complications. The patient's shoulder was placed in a sling for 4 weeks and then gentle physical therapy was started.

Results: No deep wound infections or prosthetic failures in one year of follow up. The patient's shoulder is painless and stable with 75° active abduction and flexion, internal rotation to T6, and external rotation to 30°. Passive shoulder motion is complete. The patient can actively protract, retract, elevate, and depress his scapula. His periscapular muscles actively contract to stabilize his scapula and upper extremity. The patient is free of local recurrence and presents no progression of lung metastasis. At latest follow-up, the Musculoskeletal Tumor Society functional score was 26.

Conclusion: Total scapula prosthetic reconstruction appears to be safe and reliable for anatomically reconstructing the shoulder girdle following total scapulectomy. It permits reconstruction of the glenohumeral and scapulothoracic mechanisms, both functionally important and constrained components ease reconstruction.Even so, further follow-up is necessary.