

En Bloc Resection of Spinal Tumors: Short Term Follow-up

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Introduction

As opposed to piecemeal resection, en bloc resection refers to removal of the tumor in one whole piece with tumor-free margins. The spinal cord and the vital vascular anatomy around the spine increase the challenge of applying this oncologic principle on the spine. We report our experience of margin-free spondylectomy and the outcome of 14 cases and to discuss the advantages and limitations of the procedure.

Methods

Retrospective reviews of 14 patients with mean age of 57 years who underwent en bloc resection of cervical (1), thoracic (10) and lumbar (3) spinal tumors between 2005 and 2012 at Notre Dame Hospital. Tumors were pulmonary adenocarcinoma (4), chordoma (3), anevrysmal cyst (1), malignant schwannoma (1), prostatic adenocarcinoma (1), liposarcoma (1), malignant mesothelioma (1), giant cell tumor (1) and vascular malformation (1).

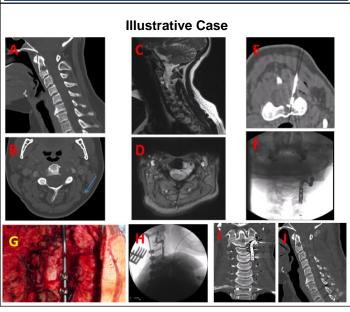
Results

Resection was en bloc hemicorpectomy in 8 cases, spondylectomy in 5 and pediculolaminectomy in 1 case. Surgery was done with thoracic surgery team in 6 cases and ENT team in 1 case. The average duration of surgery and blood loss was 8.3 h (2.4-33.3) and 2550 mL (300-7500) respectively. Peroperative incidental dural tear occured in one case and was closed without postoperative complication. The average length of hospitalization was 22 (6-66) days. Margins were tumor free except in one case. One patient died due to postoperative ischemic colitis. Six patients were reoperated for infection (3), kyphosis (1) and CSF leak (2). At mean follow up of 17 months there were no local tumor recurrence.

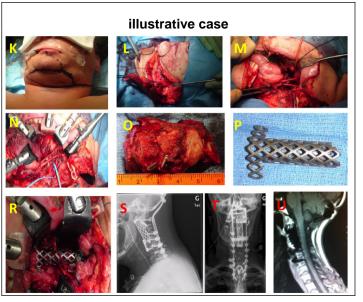
Illustrative case

A 64-year-old woman presented with a 6-month history of progressively worsening neck pain and stiffness. Cervical CT scan (A, B) and MRI (C, D) showed a large osteolytic mass of C-2 and C-3. She underwent a posterior CT-guided core needle biopsy (E) that demonstrated a chordoma. On angiogram the two VA were patent and passed trial occlusion tests so left VA was occluded (F). Through posterior approach: laminectomy of C2 and C3, osteotomy from C1 to C4, occipito-thoracic instrumentation with screws on lateral mass of right C3 to C6, and bilateral from T1 to T3 (G, H).

Postoperative mortality and morbidity Complications Peri-hospitalization Complications: * Post-hospitalization Complications ✓ Pleuro-dural fistula:1 ✓ Paravertebral abcess:1 ✓ Tracheotomy: 1 ✓ Epidural abcess: 1 ✓ Ischemic colitis*: 1 ✓ Cervical kyphosis: 1 ✓ Material infection: 1 √Chronic pain: 2 ✓ Dysphagia: 1 ✓ Paresthesia: 1 * Reintervention: 4 Major morbidity: 4 (48%) **❖ Morbidity**: 10 (83 %) * Death: 1 (8%)



Postop CT scan (I, J). Anterior approach was done with ENT team. Through hemimandibulectomy (M) after preparing flap (K, L), en bloc resection of C2 and C3 (N, O), replace by cage that was split on the upper part (P) to be fix on C1, the lower part was fixed on C5 (R, S, T). It was covered by sub mandibular flap. Pathological examination revealed wide margins. She was reoperated at 1 month for kyphosis. At 20 months, the patient remains disease free with no CT/MR imaging (U) evidence of pseudarthrosis or residual tumor.



Discussion and Conclusion

En bloc resection of spinal tumor has led to longer survival rates especially with chordoma. It is a technically challenging procedure and Its complexity is also dependent on the level of the vertebrae involved. It allows complete tumor resection and good local control but along with high morbidity. Appropriate preoperative evaluation, staging, and planning should be performed to achieve oncologic resection and preserve optimal functional capacity. Multidisciplinary appraoch is require most of the time.

Learning Objectives

Outline the result of en bloc resection of spinal tumour regarding tumour-free margin and complications.

References

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- 2- Wang Y, Xiao J, Wu Z, Huang Q, Huang W, Zhu Q, Lin Z, Wang L. Primary chordomas of the cervical spine: a consecutive series of 14 surgically managed cases. J Neurosurg Spine. 2012 Oct;17(4):292-9.