

Cervicotomy and Sternotomy for Resection of Cervicothoracic Neuroblastoma in Children

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Abstract

Keywords

- Children
- Neuroblastoma
- Cervicothoracic tumor
- Cormier Dartevelle-Grünenwald incision

Introduction: We report the case of a 4 years old girl who present a cervico-thoracic ganglioneuroblastome with none response to chemotherapy and radiotherapy

Case presentation: The girl was operated using the Cormier Dartevelle-Grünenwald incision which helped to remove the tumor completely with optimal control of noble elements. The follow up was uneventful.

Conclusion: The Cormier Dartevelle-Grünenwald incision can be a good option in case of big cervico-thoracic malignant tumors.

Introduction

Less than 5% of tumors of the Cervicothoracic region in children are neuroblastomas and prognosis mainly depends on the possibility of complete excision. If complete resection is carried out, the prognosis will be between 74% and 100%.¹ The standard approach is based on thoracotomy or dual cervicotomy/thoracotomy but these approaches do not provide optimal control of the subclavian vessels. We report the case of a 4 years old girl who presented with a cervicothoracic ganglioneuroblastoma. A cervicotomy and sternotomy approach was done in order to treat this child.

Case presentation

A 4.5 years old girl had been hospitalized for laryngeal dyspnea along with symptoms of superior vena cava syndrome. Chest radiography showed a left apical homogeneous and well-demarcated opacity. The rate of VMA was increased. A thoraco-abdominal-pelvic scan showed a mediastinal mass with low cervical extension compressing the mediastinal vessels **Figure 1**. Biopsy confirmed the diagnosis of ganglioneuroblastoma. Chemotherapy and preoperative radiotherapy were performed yet the mass increased in size with worsening of the clinical symptoms. The first surgery was done through a sternotomy and cervicotomy using the Cormier Darteville-Grünenwald incision **Figure 2**. The latter was done in italic s along the sternocleidomastoid muscle, manubrium, by passing lower edge of the sternoclavicular joint and following the lower edge of the clavicle which helped to remove the tumor completely with optimal control of noble elements. The evolution was good after two years of follow-up.

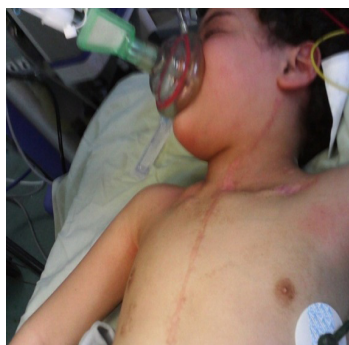


Figure 1: The Cormier Darteville-grünenwald incision

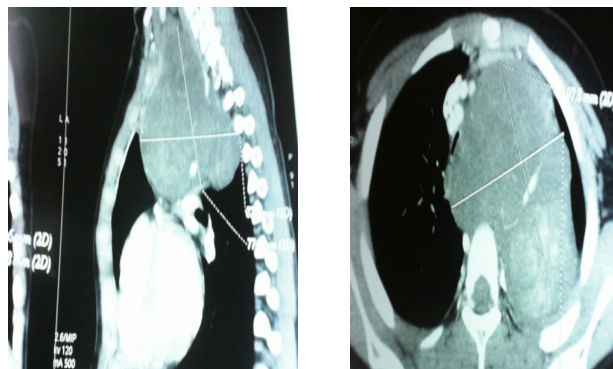


Figure 2: Chest CT image of the lower cervical region showing the presence of a mediastinal mass with low cervical extension

Discussion

Despite the fact that incidence of neuroblastoma is 1 per 100000 it is the most common solid tumor in children under 5.² One fourth of neuroblastomas are found in the thoraco-cervical region and have exceptional prognosis following total resection, with recent studies showing an 88% actuarial survival rate.

Surgical excision of tumors located in the cervicothoracic region is technically challenging due to proximity of major nerves and vessels. In the past operation of these tumors was done by using a cervical incision and or a thoracotomy, even using both incisions, dissection of the tumor and vascular structures is difficult.¹

Cormier first introduced an anterior transcervical approach in 1970 which Dartevell then modified it in 1993; in this approach the medial half of the clavicle was resected which resulted in instability of the shoulder and deformity of the neck and caused a considerable delay in postoperative recovery.^(2,3)

Later Grenewald and Spagiari modified the technique using a transmanubrial approach leaving the clavicle intact but splitting the first rib⁴ and Laddas further modified it by extending the anterior cervical incision to the inferior and divided the sternum.⁴ Though these approaches provide the best exposure of the thoracic field they are considered generally too invasive for a localized mass at this region, but they can be very useful in the case of a big cervico-thoracic malignant tumor like our case.

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