

Surgical treatment with Ligasure® Precise of schwannoma of brachial plexus: case report

P. SPERLONGANO, D. PARMEGGIANI, D. PISANIELLO, I. SORDELLI, P. BIONDI¹, A. APICELLA², N. AVENIA, A. PIATTO, M. DI MARZO, M. DE FALCO, G. COLELLA¹, U. PARMEGGIANI

SUMMARY: Surgical treatment with Ligasure® Precise of schwannoma of brachial plexus: case report.

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We present a case of bulky schwannoma arising from the brachial plexus treated by a new surgical device. A 38-year-old man presented with a slow-growing left-sided supraclavicular mass and complained paresthesia of the third and fourth fingers of the hand and forearm weakness. Physical examination revealed Tinel's sign. A CT-scan revealed a solid mass situated in the left profound supraclavicular fossa.

The tumour was resected with the utilization of bipolar vessel sealing system (Ligasure® Precise). This device is very useful in suturless removal of masses localized in deep supraclavicular fossa. During the operation, care was taken to preserve the nerve function.

RIASSUNTO: Trattamento chirurgico con Ligasure® Precise di uno schwannoma del plesso brachiale: case report.

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Viene presentato un caso di schwannoma localizzato in fossa sovraclaveare e trattato con un nuovo device. Un uomo di 38 anni si presentava alla nostra osservazione con una tumefazione localizzata in regione sovraclaveare sinistra: il paziente riferiva parestesie all'arto superiore, mentre all'esame fisico era presente il segno di Tinel. La TC evidenziava una massa solida situata profondamente nella fossa sovraclaveare.

La tumefazione veniva resecata utilizzando come strumento di emostasi il Ligasure® Precise. Questo device è risultato essere utilissimo nella resezione "suturaless" della massa. Durante la resezione è stato possibile preservare da lesioni i rami del plesso brachiale strettamente contigui alla massa.

KEY WORDS: Schwannoma - Brachial plexus - Bipolar vessel sealing system.
Schwannoma - Plesso brachiale - Bipolar vessel sealing system.

Introduction

Schwannomas or neurilemmomas are uncommon benign, encapsulated tumors. They may arise in every part of the body, but 25 to 45 percent occur in the head and neck (1). Their precursor is the Schwann cell, which surrounds peripheral nerve tissue and is believed to take its origin from the neural crest (2). The schwannomas have low incidence, most often occur in the III and IV decades of life and women are affected more often than men, with reported ratios between 2:1 and 3:2 (3).

The origin of cervical schwannoma are from cranial nerves IX-XII, cervical plexus, sympathetic chain and brachial plexus (4). Brachial plexus schwannomas are rare. Schwannomas are slow-growing and only when they become bulky (2-3 cm) can give compression symptoms like pain and paresthesia. They usually present as solitary encapsulated neck masses, slightly movable except along the long axis of the nerve.

The treatment of choice is surgical excision in order to avoid neurological damages. MRI and CT may help to differentiate these diseases before surgery (5). The confirmation may be obtained by histopathology. Malignancy in these lesions is very rare.

Case report

A 38-year-old man was referred to our observation because of a mass in the left supraclavicular fossa and paresthesia of the third

Second University of Naples
Department of Anaesthesiological, Surgical
and Emergency Sciences
Fifth Department of Surgery

¹ Department of Head and Neck Surgery

² Department of Histopathology

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and forth fingers of the hand and forearm weakness lasting for two months. The patient reported shooting pain on palpation of the mass along the ulnar innervation district and inability to flex the forearm (Tinel's sign).

Physical examination revealed slightly tumour in the deep left supraclavicular fossa; it was elastic, non-tender, poorly mobile and had a smooth surface. Ultrasonography of the left supraclavicular district showed a solid, well-encapsulated, hypoechoic, 5,5x4,5 cm mass. Computed tomography (CT) confirmed an ovoid, low-density mass in the left supraclavicular fossa (Fig. 1).

At surgery, an oval, well-encapsulated tumour was found deeply in the supraclavicular fossa. This mass was poorly mobile and difficult to remove. We performed its excision using the Ligasure® bipolar vessel sealing system, an electrosurgical radiofrequency device allowing a perfect haemostasis with minimal thermal spread (Figs. 2, 3, 4 and 5).

Histologically the lesion was constituted by spindle cells with elongated nuclei and alternating areas of organized, compact cells (Antoni A configuration) and relatively few cellular regions in myxoid interstitial tissue (Antoni B configuration). Immunohistochemistry allowed the correct diagnosis. The schwannoma showed intense immunological staining for S-100 protein (Figs. 6, 7, 8 and 9). This protein is a neural-crest marker antigen present in the supporting cells of the nervous system (6). Finally the diagnosis of benign schwannoma was made.

In the post-operative period there was no pain, but complete recovery with no impairment in function. No neurological deficit was noted until ten days after the operation. A six-months control CT-scan showed a complete anatomical integrity without recurrence.

Discussion and conclusions

The main advantages of Ligasure® Precise are mostly related to high current, but low voltage output with subsequent less thermal spread (1 mm) (7, 8). The instrument delivers the appropriate amount of energy needed: the "generator" measures the variation of impedance (by a feed-back system) in the tissues caused by radiofrequency and automatically stops its production. In this way: 1) there is no need for foreign stuff (clips, sutures), thus reducing the infectious risk and the fibrosis due to the use of synthetic material (9); 2) allows the safe haemostasis of vessels up to 7 mm of diameter (8), withstanding three times systolic blood pressure.

As in our case, the deep localization of the tumour makes difficult its excision, thus with the risk of an impairment of the brachial plexus. The use of the Ligasure® allowed a safe haemostasis of small vessels surrounding the mass, originating from the subclavian vessels and their progressive surfacing, with an also quite safe haemostasis of the mass close to the brachial plexus. The minimal thermal spread of the device, in fact, minimizes the risk of neural damages.

In our experience, the utilization of bipolar vessel sealing system (Ligasure® Precise) is useful in suturless removal of the tumour located in deep supraclavicular fossa.



Fig. 1. CT-scan showing a mass (5 x 4,5 cm) in the left supraclavicular fossa.



Fig. 2. Supraclavicular mass: intraoperative findings.



Fig. 3. Supraclavicular mass: intraoperative findings.

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Fig. 4. Operative specimen.

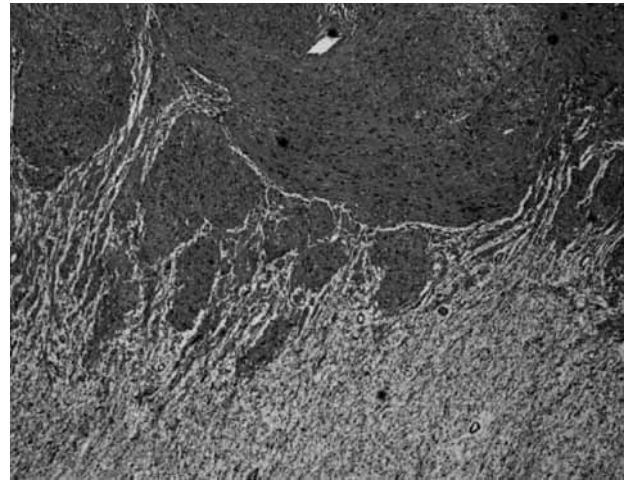


Fig. 7. Distinct aspects of the tumour: cellular Antoni A type and mixoid Antoni B type (E.E., 25x).



Fig. 5. Operative specimen.

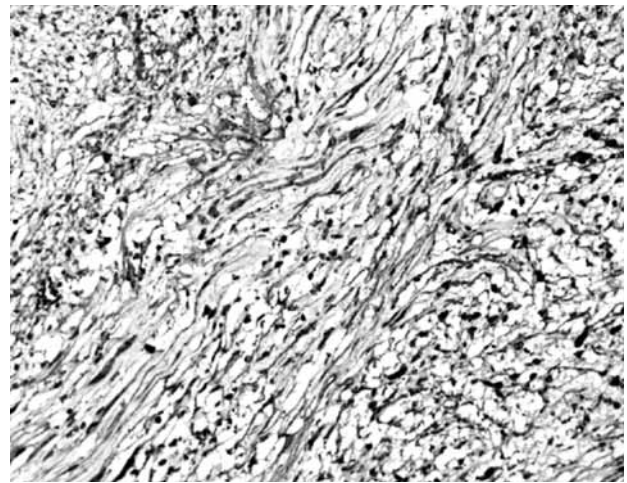


Fig. 8. Tumour cells positive for vimentin.

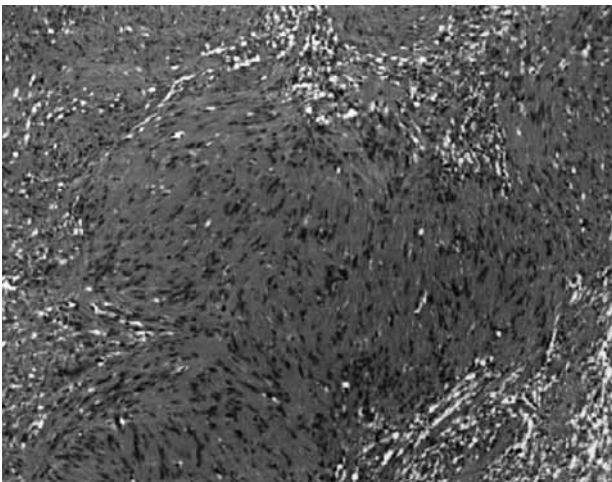


Fig. 6. Particular from Antoni A area associated cells, also called Verocay's bodies (E.E., 400x).

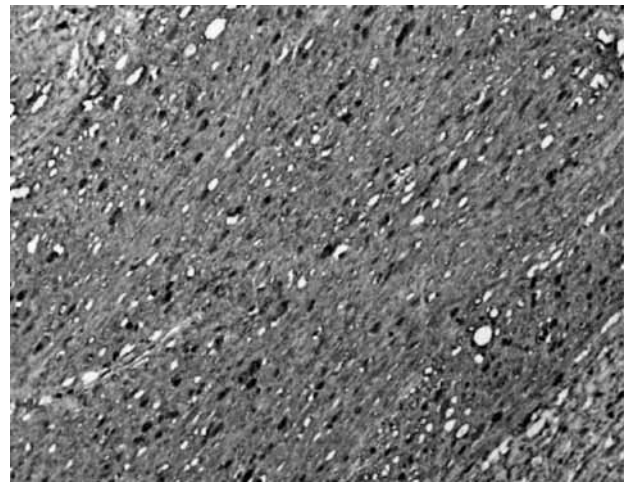


Fig. 9. Tumour cells positive for S-100 protein.

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