JACOBS PUBLISHERS

OPEN ACCESS

Jacobs Journal of Clinical Case Reports

Case Report

# Excision of an Extrathoracic Chest Wall Benign Schwannoma Associated with an Insulin Injection

George Paul Liao*[1] MD, Adel D. Irani[1] MD

[1]*University of Texas Health Science Center at Houston, USA*

**Corresponding author:* *Dr. George Paul Liao, MD, Department of Cardiothoracic and Vascular Surgery University of Texas Health Science Center at Houston, 6400 Fannin Street Suite 2850 Houston, Texas 77030, USA, Tel: 215-668-1867; Email: George.P.Liao@uth.tmc.edu*

*Received:* 03-31-2015

*Accepted:* 04-23-2015

*Published:* 04-30-2015



## Abstract

Thoracic schwannomas are uncommon benign or malignant tumors arising from the mediastinum. Thoracic shwannomas arising from intercostal nerves are even rarer. While the intrinsic etiology of these tumors is unknown, the extrinsic causes of schwannomas have been associated with repetitive trauma or foreign bodies. We describe a 53 year old diabetic male who presented with a large chest wall mass which had grown in size over a five year period. The mass was found on surgical excision and pathological analysis to be a benign schwannoma arising from an intercostal nerve due to a previous insulin needle injury.

**Keywords:** Schwannoma; Chest Wall

## Introduction

A 53 year old male with no significant past medical history other than insulin dependent diabetes and hypertension, presented to our clinic on referral from general surgery for a lateral chest wall/flank mass that had been present for the past 5 years, but had recently begun to increase more rapidly in size. The patient reported having a traumatic subcutaneous diabetic needle injection in the same location shortly before his lesion developed. He denied any discomfort with the lesion other than that relating to cosmesis.

A previous a needle core biopsy of the mass favored peripheral nerve sheath schwannoma with Antoni B histologic findings and immunohistochemistry demonstrated strong S100 staining, less than 1% KI-67 signal and negative for p53 and epithelial membrane antigen. Computed tomography imaging suggested that this lesion originated from the chest wall musculature and did not invade into the thoracic cavity (Figure 1). However, the fat planes separating the mass from the chest wall musculature were obliterated.

The operative approach began with double lumen endotracheal intubation, an unremarkable bronchscopy, followed by right lateral decubitus positioning with the patient's left side in slight extension (Figure 2). An elliptical incision was made along the long axis of the mass and extended through the subcutaneous tissue and fascia using electrocautery with attention made towards maintaining a margin to the rubbery, completely encapsulated mobile mass of dimensions of 12x7x7 cm. A single nerve pedicle was encountered in the course of dissection at the level of what appeared to be the fascia of the external oblique or serratus anterior muscle (Figure 3). This nerve was ligated and divided proximally so that the distal seg-

ment could be sent to pathology. Given its location, this nerve was likely the lateral cutaneous branch of an intercostal nerve. The deep aspect of the mass was adherent to the underlying muscle without an obvious plane, thus, a 0.5cm muscle margin was used to remove the deep aspect of the mass.

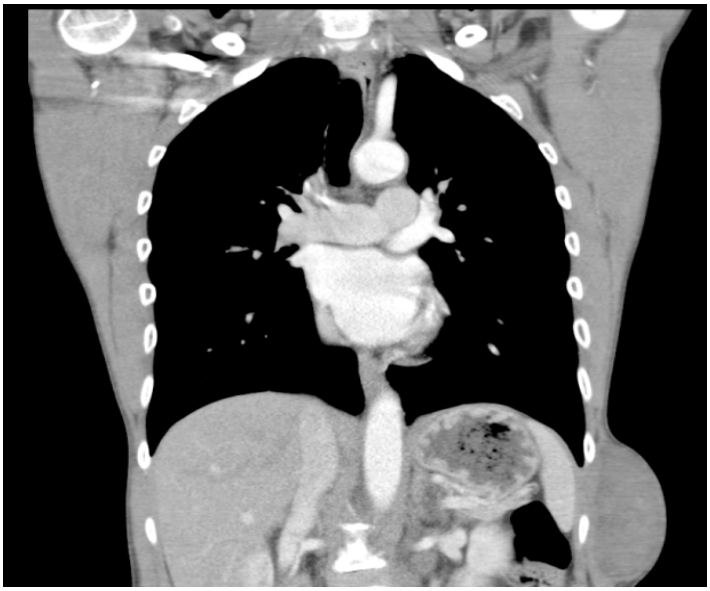

**Figure 1.** Computed tomographic scan demonstrating the lesion arising from the left lateral aspect of the inferior chest wall.

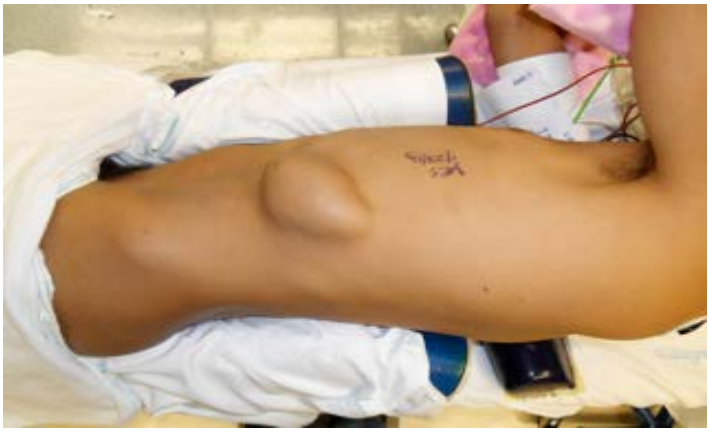

**Figure 2.** Intraoperative positioning of the patient.

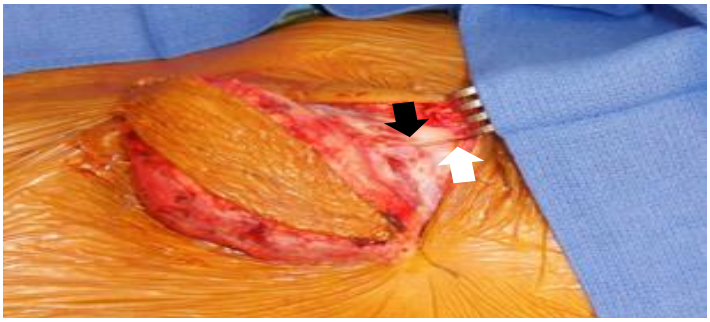

**Figure 3.** Partially excised lesion with silk suture (white arrow) retracting on nerve pedicle (black arrow).

No other neurovascular attachment was identified. The mass was delivered intact and sent to pathology as a fresh specimen and was found to be entirely encapsulated, with the underlying mass freely separable from its capsule without invasion (Figure 4). The patient tolerated the procedure well without need for entry into the thoracic cavity and was discharged home from the perioperative recovery room.

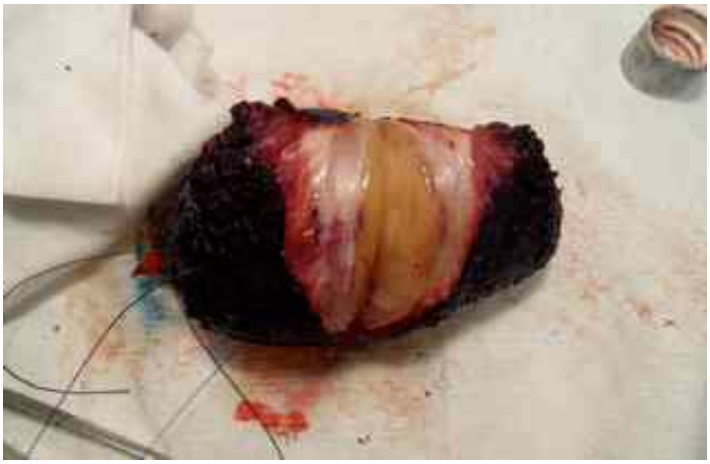

**Figure 4.** Bivalved lesion revealing well encapsulated tumor.

## Discussion

Benign schwannomas are uncommon nerve sheath tumors often seen in populations such as pediatrics in association with neurofibromatosis [1]. Anatomically, they have been reported in all areas of the body and are often seen at the level of the skin and soft tissues. In a case series of 303 benign solitary schwannomas, 45% were found in the head and neck, 19% in the upper extremity, 14% in the lower extremity and 9% in the trunk [2]. In another case series of 232 malignant solitary schwannomas, the upper and lower extremities comprised 68%, while the head and neck only accounted for 8% of the anatomic distribution [2]. Autopsy reports suggest a frequency of sporadic central schwannomas of 4.5% in the elderly, with greater than 85% being vestibular and 15% spinal [3]. However, population studies of vestibular schwannoma suggest a lower incidence of 0.01-0.1% [4]. Histologically, these tumors are characterized by well incapsulated growths that do not invade adjacent organs, having dual histological findings of hypercellular spindle cells with nuclear palisading (Antoni A) as well as hypocellular cells with cystic degeneration, focal calcification and hemangeomatous vascular changes (Antoni B) [2]. Although the intrinsic etiology for the development of these tumors has not been defined, extrinsic etiologies for the development of these tumors have been suggested, and include mechanisms such as repetitive trauma [5] or introduction of foreign bodies [6].

## Conclusion

Thoracic schwannomas are uncommon, and those arising from intercostal nerves have been estimated to be at 10% with the majority of thoracic neural tumors arising from the mediastinum [7]. These lesions can be benign or malignant, painful or asymptomatic. Benign schwannomas that are resected entirely do not tend to recur. Depending on location, chest wall resection may be required along with radiotherapy. Our case is that of an extrathoracic benign Schwannoma rising from a lateral branch of an intercostal nerve, likely arising as result of a penetrating traumatic injury.

## References

1. Hobbs DJ. Schwanoma of the diaphragm – a pediatric case report. J Pediatr Surg. 2012 , 47(4):e5-e7.

2. Das Gupta TK, Brasfield RD. Tumors of peripheral nerve origin: benign and malignant solitary schwannomas. CA Cancer J Clin. 1970, 20(4):228-233.

3. Schneider J, Warzok R, Schreiber D, Guthert H. [Tumors of the central nervous system in biopsy and autopsy material. 7th communication: neurinomas and neurofibromatosis with CNS involvement]. Zentralbl Allg Pathol. 1983,127(5-6):305-314.

4. Evans DG, Moran A, King A, Saeed S, Gurusinghe N et al. Incidence o fvestibular schwannoma and neurofibromatosis 2 in the North West of England over a 10-year period: higher incidence than previously thought. Otol Neurotol. 2005, 26(1):93-97.

5. Kneitz H, Weyandt G, Meissner C, Gebhart E, Bröcker EB. Dermal schwannoma (neurilemmoma): a peculiar foreign body reaction? Am J Dermatopathol. 2010, 32(4):367-369.

6. Lim A, Richards SW. Benign palmar schwannoma – a rare case in a handball player. BMJ Case Rep. 2012 Jun 14.

7. McClenathan JH, Bloom RJ. Peripheral Tumors of the Intercostal Nerves. An Thorac Surg. 2004, 78(2):713-714.