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# FATHOMING THE COMPLEXITY OF CAROTID BODY TUMOURS: A CASE REPORT.

Otorhinolaryngology

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## ABSTRACT

**Aim:** Carotid body tumours (CBT) are neoplasms arising from paraganglionic tissue at the bifurcation of the common carotid artery. Our objective was to review our experience in the management of carotid body tumour. **Methodology:** This case report was done to discern the presentation, management and outcome of carotid body tumour. We evaluated a 52 years old female who presented with left sided neck swelling. She was diagnosed with left carotid body tumour and advised excision. **Results:** Carotid body tumours are usually benign. It may occur at any age but are typically diagnosed between the third and sixth decades of life. Angiography is conventionally considered to be the gold standard diagnostic tool. Surgery remains the treatment option of choice, as it is the only available curative therapy. The aim of the surgical management is the complete removal of carotid body tumour at an early stage to prevent further growth with the risk of local involvement of adjacent neurovascular structures as was done in our patient. **Conclusion:** Our report details the approach to carotid body tumour. A number of diagnostic and therapeutic approaches have been suggested for the management of carotid body tumours, but they continue to pose diagnostic, investigative and therapeutic challenges.

## KEYWORDS

Carotid body tumour; Carotid body paraganglioma; Extra-adrenal paraganglioma.

## INTRODUCTION:

Carotid body tumours (CBT) are neoplasms arising from paraganglionic tissue at the bifurcation of the common carotid artery.[1] They are usually benign.[2] They are very rare neoplasms constituting less than 0.5% of all body tumors.[2] It can occur at any age but are typically diagnosed between the third and sixth decades of life.[3] Angiography is conventionally considered to be the gold standard.[2] Fine needle aspiration or an incisional biopsy is of little value for paragangliomas.[4] The aim of the surgical management is the complete removal of CBT at an early stage to prevent further growth with the risk of local involvement of adjacent neurovascular structures.[1] The basic objective of our report was to review the presentation, management and outcome of carotid body tumour.

### Case Report:

A 52 years old female presented with a painless swelling in the left anterior triangle of the neck to the Department of Head and Neck Oncology. The swelling had been increasing in size gradually for 2 months. There were no other complaints associated with it. On examination a 2 *3 cm ovoid, non-tender, pulsatile swelling of firm consistency was present in the left anterior triangle of the neck. Fontaine sign[4] was positive. She was a known case of hypertension, on treatment for 3 years.

Routine haematological and biochemical parameters were normal including 24hours urine vanillyl mandelic acid (8.50mg/24 hours). Magnetic resonance imaging (MRI) neck findings were likely of carotid body paraganglioma. Imaging study showed a well-defined intensely enhancing lesion measuring 2.9*2.8*2.2 cm (CC*TR*AP) in the left side of neck near left common carotid artery bifurcation with intense postcontrast enhancement, predominantly involving the carotid triangle; the lesion was displacing left external carotid artery(ECA) and internal carotid artery(ICA); and compressing the internal jugular vein; the lesion was causing splaying of the external carotid artery and internal carotid artery and extended up to carotid bifurcation; the lesion showed hyperintense signal on T2 weighted images with few flow voids; arterial supply of the lesion was from branches of external carotid artery. The right side was normal. USG abdomen and pelvis was done to rule out pheochromocytoma.

The patient underwent tumour excision under general anaesthesia. A cervical incision was made along the anterior border of sternocleidomastoid muscle.

After incision of the platysma and the carotid sheath, the tumour was found to be at the bifurcation of the carotid (Shamblin[4] type II). It was supplied by feeder vessel from the external carotid artery. Feeder vessel was ligated and the tumour was completely removed with the use of bipolar coagulation (Fig 1).

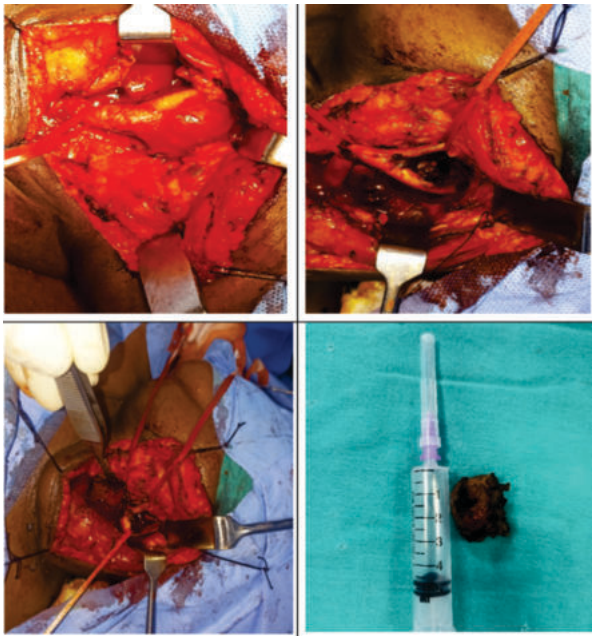

**Figure 1: Intraoperative findings.** Tumour noted at the left common carotid artery bifurcation, removed with careful dissection using bipolar coagulation.

## DISCUSSION:

CBT are rare neoplasms originating from neural crest cells, referred to as paragangliomas (extra-adrenal).[4] Histologically, tumours are highly vascular and between the many capillaries are clusters of cells called Zellballen or cell balls.[5]

CBT may be sporadic or familial.[5] Most CBTs are parasympathetic and non-functional.[4] Only 5% of CBT are endocrinologically active and hence in the absence of hypertension or other symptoms of the pressor amine syndrome, screening for catecholamine metabolites in patients with cervical chemodectomas is unwarranted.[5] Because of its close

proximity to the carotid vessels and cranial nerves (X-XII), enlargement of the tumour may cause progressive neurologic symptoms such as odynophagia, dysphagia or hoarseness of voice.[4]

Both computerized tomography angiography (CTA) and MRA appearances are diagnostic.[4] Biopsy is contraindicated in cases of paraganglioma.[3] The role of preoperative embolization of highly vascular tumours is controversial.[5] Preoperative embolization has been reported to be useful in decreasing vascularity but it carries the hazard of ICA thrombosis and cerebral embolization.[5]

Surgical excision has been the standard approach for removal of CBTs with standard principles of excision being wide surgical exposure, proximal and distal vascular control, identification and preservation of the neurovascular structures, careful tumour dissection from the external and internal carotid arteries, ligation of the external carotid arteries when necessary, and vascular shunting and grafting wherever necessary.[4] Tumour removal requires periadventitial dissection.[3] Radiotherapy for CBT has been largely unsatisfactory, except for control of residual or recurrent disease.[5] Chemotherapy has no role.[5]

## CONCLUSION:

Through the current case report, we have briefly outlined the diagnostic work-up and the operative planning needed for managing carotid body tumours.

## Declarations:

**Acknowledgements-**none.

Ethical standard was in accordance with Ethical Review Committee of SNMC-Institutional ethics committee on human subjects research recognized by Medical council of India and affiliated to RGUHS, Banglore.

**Conflicts of interest-**none.

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