CASE REPORT

Preoperative Devascularization of a Glomus Tumor with a Covered Stent in the External Carotid Artery

SERGIO A. GARRIDO, MARTÍN F. PARODI, RONALDO L. MACKENZIE, HERNÁN BERTONI

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Address for reprints:
Dr. Sergio A. Garrido
Rodríguez Peña 1653 1° "A"
Ciudad Autónoma de
Buenos Aires
CP: C1021ABI
e-mail: garridosa@fibertel.com.ar

SUMMARY

Glomus tumors are hypervascularized neoplasms which may require preoperative percutaneous embolization. This technique reduces the incidence of bleeding, the tumor size, the risk of resection-related complications, and morbidity and mortality. The interruption of the tumor blood supply placing a covered stent in the external carotid artery, the main tumor-supplying vessel, is an alternative option. This technique is especially useful in large tumors and prevents the risk of intracranial embolism when coils are used during embolization. We describe the case of a 31 year-old female patient who underwent stent placement 48 hours before tumor resection.

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Key words > Carotid Glomus - Tumor - Stent

BACKGROUND

Glomus (also known as carotid body) tumors are infrequent; surgery is indicated when symptoms occur due to tumor growth or in order to rule out malignancy (which is in fact uncommon). (1)

Resection-related complications of these hypervascularized tumors are extensive bleeding and possible damage to cranial nerves. Embolization reduces the incidence of bleeding and the tumor size; yet, this technique is tedious and has the risk of embolization into the internal carotid artery.

In 2003, a new approach was described to preoperative vascular exclusion for carotid body tumor; this method has lower risk of embolization. (2)

CASE REPORT

A 31 year-old female patient without history of relevant diseases consulted due to a self-detected, slow-growing lateral neck mass. Physical examination revealed a firm, elastic and easily mobile mass 3-4 cm in diameter at the level of the right carotid artery bifurcation.

A computed tomography angiography showed the typical image of a carotid bifurcation mass (a pathognomonic image of a carotid body tumor) (Figure 1).

The hypervascularized tumor was fed by the branches of the external carotid artery (superior thyroid artery, ascending pharyngeal artery, occipital artery and lingual artery) (Figure 2).

The patient underwent a digital angiography in the roadmapping mode and selective catheterization of the right external carotid artery. A 0.035-inch roadrunner guidewire was exchanged and a 6 Fr introducer sheath was advanced. A 0.014-inch guidewire was then advanced and a new mapping was performed to confirm the position of the stent. Two stents (Jostent Graftmaster measuring 3.5 × 26 mm and4 mm × 26 mm) were placed 5 cm proximally in the external carotid artery, covering the branches that fed the tumor (Figure 2).

A new angiography showed a significant reduction in tumor vascularization (Figure 2).

During the immediate postoperative period, the patient noted an evident reduction in the tumor size.

She underwent surgery 24 hours later; the tumor was resected with insignificant bleeding and the hypoglossal, pneumogastric, superior laryngeal and glossopharyngeal nerves were easily identified with absence of damage. The tumor was large and intimately adherent to the external carotid artery (Shamblin type III); for this reason, tumor resection included the stent previously implanted (Figure 3).

The histopathological examination revealed a benign paraganglioma of the carotid artery body.

DISCUSSION

Resection of glomus tumors frequently produces bleeding, damage to the cranial nerves and stroke. Embolization has reduced the incidence of these complications; (1) yet, brain embolism has been reported.

Vascular exclusion of the external carotid artery with stent placement, a method described in 2003, (2) has several advantages over embolization: absence of embolism; exclusion of all branches feeding the tumor,

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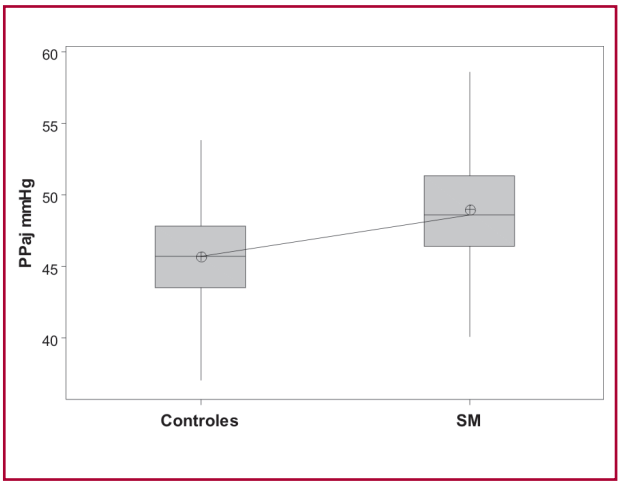


Fig. 1. G: Glomus tumor. **G:** Glomus tumor. **CC**A: Common carotid artery. **ICA:** Internal carotid artery. **ECA:** External carotid artery.

even the smaller ones that are not visualized in the angiography; finally, stent implant is more easy and the procedure has less duration. This technique avoids the intracranial embolic risk of coils used for this purpose. The risk of stroke is difficult to estimate due to the fact that only case reports have been published; however, the role of this technique in large or invasive tumors seems to be beneficial.

The outcomes of preoperative stent placement in the external carotid artery followed by surgical resection after 24-48 hours has been recently described in a series of three cases with no neurological complications or significant intraoperative bleeding. In these cases, tumor blood supply depended on the external carotid artery and its branches, which were excluded by the covered stent. (3)

The present case was treated in a similar fashion, with successful devascularization of the tumor and subsequent tumor resection without complications.

Fig. 2. A. Angiography beforestent implantPre-stenting angiography. **B.** Angiography afterpoststentinPost-stenting angiographyg.

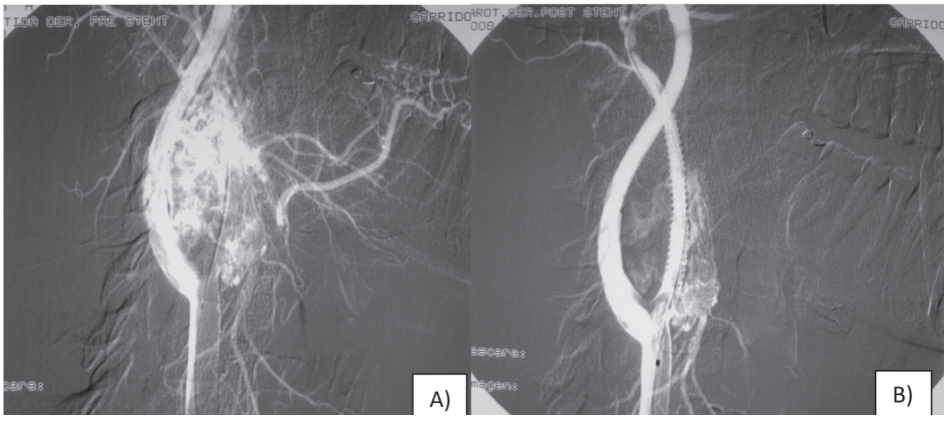
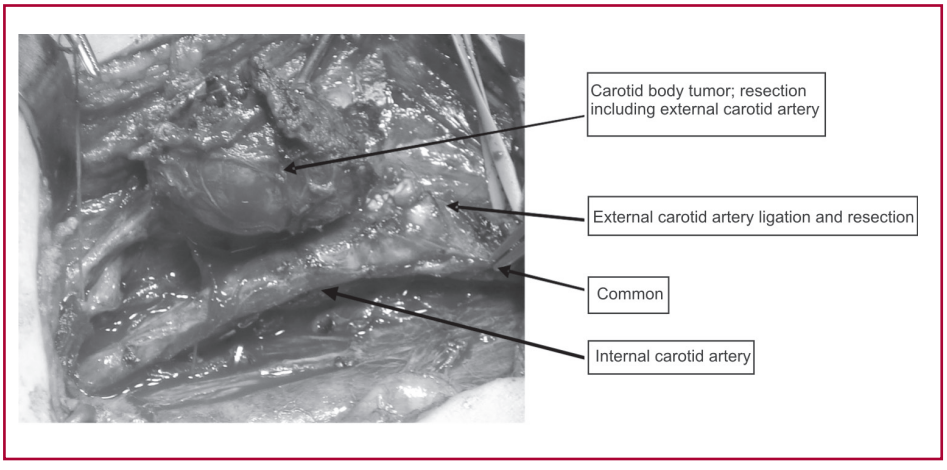


Fig. 3. Intraoperative findings.



RESUMEN

Desvascularización preoperatoria de tumor del glomus mediante colocación de *stent* cubierto en la carótida externa

Los tumores del glomus carotídeo se caracterizan por su vascularización importante y su
manejo preoperatorio puede incluir la embolización percutánea previa a la resección quirúrgica. Esta técnica disminuye la hemorragia y el tamaño del tumor y hace menos riesgosa la disección, con reducción de la morbimortalidad. Una técnica alternativa es la interrupción de la irrigación del tumor mediante la colocación de un *stent* cubierto en la carótida externa, que es la vía principal de irrigación. Esta técnica es útil en especial en tumores grandes y evita el riesgo de embolia intracraneal cuando se emplean *coils* para realizar la embolización. En esta presentación se describe el caso de una paciente de 31 años tratada de esta manera; se le colocó el *stent* y 24 horas después se realizó la resección del tumor.

Palabras clave > Glomus carotídeo - Tumor - *Stent*

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