

# An enormous organizing hematoma of the carotid triangle: A case report and review of the literature

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## Abstract

Expanded or small organizing hematoma is found everywhere in the body and frequently simulates a neoplasm. It has a central mass of blood, a wall of granulation tissue, and a dense, fibrous tissue at the periphery. We report a case of an enormous organizing hematoma of the left carotid neck triangle, in a patient without a history of trauma in the neck or blood disorders and also review the literature.

## Introduction

Most hematomas resolve without causing notable clinical problems, but some may persist and appear as slowly expanding lesions that simulate neoplasms. The last lesions occurring have been described as chronic expanding organizing hematoma. The term “organizing” explains the histologic findings such as fibrous tissue, neovascularization and extravasated red blood cells. The formation of a fibrous capsule around the hematoma prevents its absorption and allows for recurrent intracapsular bleeding and progressive expansion [1]. The organizing hematoma was first described by Tadokoro in 1917 [2]. Sporadic cases have been reported in the head and neck.

The carotid triangle is the most important anatomic space of the neck, comprising carotid artery, jugular vein and vagus nerve. Most tumors of this region are benign and are mainly from the carotid body. Other lesions of this region include carotid artery aneurysm, branchial cleft cyst, thyroid tumor, enlarged lymph nodes and parotid gland tumor [3].

In this paper, we report the first case of an enormous organizing hematoma appearing as a carotid triangle tumor that displaced the trachea in the precisely opposite side of the neck and also review the literature.

## Case report

A man aged 60 years was admitted to the outpatient department of Maxillofacial Surgery Clinic complaining of discomfort in breathing because of a mass in the neck, without any history of blunt trauma or operation. The mass appeared on the neck 25 years ago, gradually increased in the first ten years and remained stable in size. Physical examination showed an enormous sub-hard mass in the left carotid triangle area (Figure 1A). Computed tomography (CT), CT angiography and 3D CT showed a well-defined mass lesion, about 8 × 8 × 7 cm in size, manifesting calcification and heterogeneous enhancement involving the left carotid triangle with extension to the larynx, trachea and left clavicle region, displacing the trachea to opposite right neck carotid triangle (Figure 2). The relationship between the mass and the thyroid gland was unclear, but the SPECT

showed that the left thyroid lobe was atrophic. Laboratory data for thyroid gland function were within normal limits. At laryngoscopy the

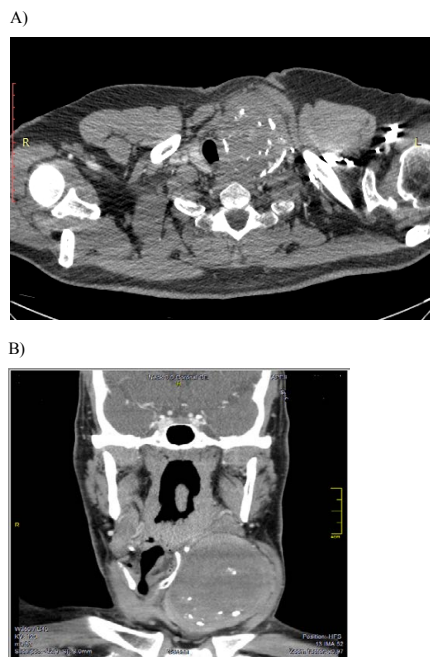


**Figure 1.** Clinical view of the patient. A) Preoperatively. B) Postoperatively.

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**Figure 2.** Preoperative CT. A) Axial view. B) Coronal view.



**Figure 3.** The specimen macroscopically.

movement of the vocal cords was normal, and showed no lesions. The coagulation tests showed normal platelet number, prothrombin time (PT) and activated partial thromboplastin time (aPTT). Open biopsy was performed and the histology showed necrosis. The patient was advised to have undergone a total excision of the mass. The anesthesia process was difficult because of the trachea displacement, so a fiber optic endoscope and a video camera were used for safe intubation of the patient. The whole neck tumor was excised smoothly with intact capsule *via* a broad submandibular approach with a T-shaped extension to the supraclavicular fossa. For the safeguarding of the pressed by the tumor recurrent laryngeal nerve a NIM (neurostimulator) was used. Macroscopically, the specimen was a circumscribed mass measuring 9X6.5X6.5 cm with relatively smooth surface and fascia attachment (Figure 3). Sectioning revealed a cavity with hemorrhagic content, surrounded by a thick fibrous capsule with partly chalky texture. After extensive sampling, histology failed to show epithelial, endothelial or mesothelial lining. Immunohistochemistry against CK8/18, CD31 and D2-40 antibodies was negative, confirming the H&E light

microscopic appearance. Cavity content was made of fibrin and clot. Fibrous capsule showed hemosiderin laden macrophages, mast cells, cholesterol crystals and calcifications. These features are compatible with an organized hematoma (Figure 4).

The post-operative course was uneventful (Figure 1B), except a bit of hoarseness that disappeared without treatment two months postoperatively. The cranial nerves function was normal, and there was no sign of recurrence at the one year follow-up.

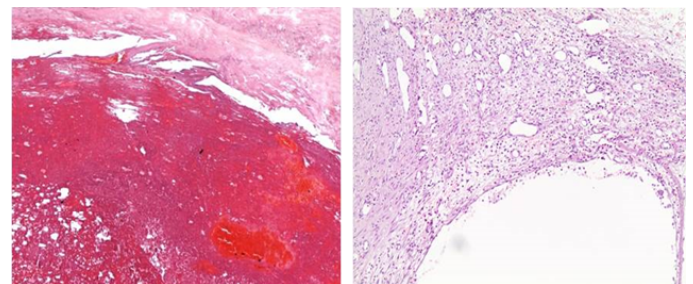
## Discussion

A hematoma characterized as organized when surrounded by a fibrous capsule. The first stage of organized hematoma formation is the extravasation of red blood cells between vascular endothelial cells, followed by necrosis, hyalinization, neovascularization and fibrosis. Because of the slow blood flow, the newly formed vessels are dilated and rebleeded. On the other hand, the fibrous capsule around the hematoma prevents the absorption and facilitates its progressive expansion. Various causes can lead to the initial blood collection, such as bleeding diathesis, postoperative complication, radiation therapy and trauma [1,4,5]. Our patient, despite our persistent question, did not report us a neck injury, while the hematological tests were normal

Many authors have reported several cases of organized hematoma in the head and the neck (Table 1). It is appeared in all age groups (2-85 years) with a slight predominance in males (57%). The vast majority is located in the paranasal sinuses, especially the maxillary sinus (90%), while other locations include the nasal cavity, the lower eyelid and the parapharyngeal space. In 1975 Helidonis and Myers [26] first reported an organized hematoma of the neck, in a man 55 years old, simulating carotid body tumor and displacing the internal and external carotid arteries. To our knowledge, we refer to the second case of organized hematoma in the carotid triangle as Helidonis and Myers have reported, but the first with such a large size that caused significant displacement of adjacent anatomical structures to the opposite side, especially the trachea.

The most tumors of the carotid triangle usually present as a palpable mass, painless and slow growing, whereas if the mass grown patient enough may complain of shortness of breath and dysphagia, as our patient who complained of discomfort in breathing [3]. Our findings on CT are consistent with those of other authors, such as heterogeneous or homogeneous lowly attenuated lesions with or without calcification. Here we would like to emphasize that the angiography is an additional examination choice when suspected vascular lesion, to define its blood supply and the site of origin [19,27].

The treatment of choice is surgical removal of the lesion. The surgical planning depends on its size and location as well as by its



**Figure 4.** H&E shows a cavity with hemorrhagic content, surrounded by a thick fibrous capsule H&E and immunohistochemistry was negative for any lining.

**Table 1.** Summary of literature review.

AUTHOR(year)	PATIENTS No	GENDER	AGE	LOCATION
Kim et al. 2016 [6]	23	M 15F 8	18-75y	Antrum 15 p, Septum 4 p, Inferior turbinate 2 p, Ethmoid sinus 2 p
Pang et al. 2016 [7]	84	M 39F 45	9-81 y	Antrum 82 p, nasal cavity 2 p
Lin et al. 2016 [8]	1	F 1	81y	Sphenoid sinus 1 p
Oubahmane et al. 2016 [9]	1	F 1	28y	Lower eyelid 1 p
Park and Kim 2015A [10]	1	M 1	40 y	Inferior turbinate 1 p
Park and Kim 2015B [11]	1	M1	55Y	Antrum a1 p
Imayoshi et al. 2015 [12]	3	M 3	16-40y	Antrum 3 p
Choi et al. 2015 [13]	7	M 10F 7	17-74y	Antrum 15 p, frontal sinus 1 p, sphenoid sinus 1 p
Cho et al. 2015 [14]	1	M 1	2y	Antrum 1 p
Yokoi et al. 2014 [15]	5	M 3F 2	19-68y	Antrum 5 p
Almasoud et al. 2014 [16]	1	M1	26y	Antrum 1 p
Ohta et al. 2013 [17]	5	M 3F 2	14-56y	Antrum 5 p
Omura et al. 2010 [3]	6	M 5 F 1	26-56y	Antrum 5 p, nasal cavity 1 p
Nakagawa et al. 2010 [18]	1	F 1	85y	Sphenoid sinus 1 p
Hsu et al. 2009 [19]	1	M 1	72y	Parapharyngeal space 1p
Suzuki et al. 2008 [20]	3	M 2F 1	50-62y	Antrum 3 p
Kim et al. 2008 [2]	12	M 9 F 3	12-76y	Antrum 12 p
Song et al. 2007 [1]	20	M14 F6	16-67	Antrum 20 p
Nishiguchi et al. 2007[21]	2	M 2	22-76y	Antrum 2 p
Yoon et al 2006 [22]	3	M 1 F 2	51-70y	Antrum 3 p
Lee et al. 2003 [23]	8	M 5 F 3	18-67y	Antrum 8 p
Tabaee and Kacker 2002 [24]	1	M 1	18y	Antrum 1 p
Unlu et al. 2001 [25]	2	M 1 F 1	42-78y	Antrum 2 p
Helidonis and Myers 1975 [26]	1	M1	55y	Carotid triangle 1 p

M: Males, F: Females, y: years, p: patients

relation to the great vessels. If a small lesion is located in the maxillary sinus, usually the endoscopic sinus surgery is the treatment of choice. In other lesions, such as in our case, wide excision is used with open approach [19,16].

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### Declaration of conflicting interests

All authors declare they have no any conflict of interests.

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