

## Case Report

## Post-Traumatic Pseudoaneurysm of a Branch of the Left External Carotid Artery

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**Abstract:** We report the case of a 27-year-old man, taken to emergencies for a deep left lateral facial wound by stabbing at the neck. After initial suturing of the wound by the attending general practitioner he was back at the hospital three days later with a pulsatile neck swelling at the left parotid region. Doppler ultrasound of the carotid arteries was done, followed by CT angiography. A pseudoaneurysm of an occipital branch of the left external carotid artery was depicted and surgical repair was performed by a vascular surgeon.

**Key words:** Pseudoaneurysms, trauma, Doppler ultrasound, CT angiography.

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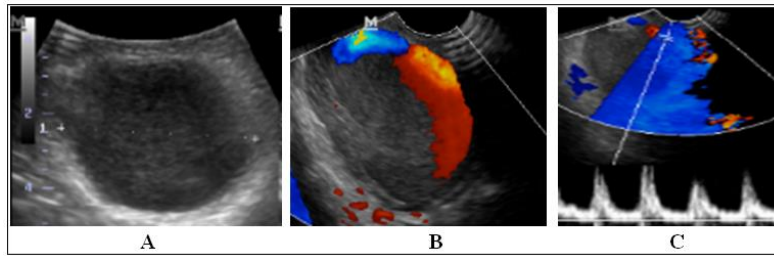
## INTRODUCTION

Swelling of the parotid region in adults is due to various etiologies, the vast majority of which are benign intraparotid nodules, such as pleomorphic adenoma, in 74% of cases [1], and rarely related to post-traumatic causes, such as pseudoaneurysms [2]. Pseudoaneurysm or also called false aneurysm is generally defined as a pocket of blood communicating with an artery, secondary to the rupture of the vascular wall, following a penetrating or non-penetrating injury of the latter. We report a case of pseudoaneurysm of a branch of the external carotid artery in a 27-year-old man, who came back to the clinic with a swelling of the left parotid region, developed a few days after the suture of a deep left lateral facial wound.

## CASE REPORT

The case is about a young man of 27 years old, taken to the emergency service for a deep left lateral facial wound, by knife, following a physical aggression. He had previously undergone a suture by a general

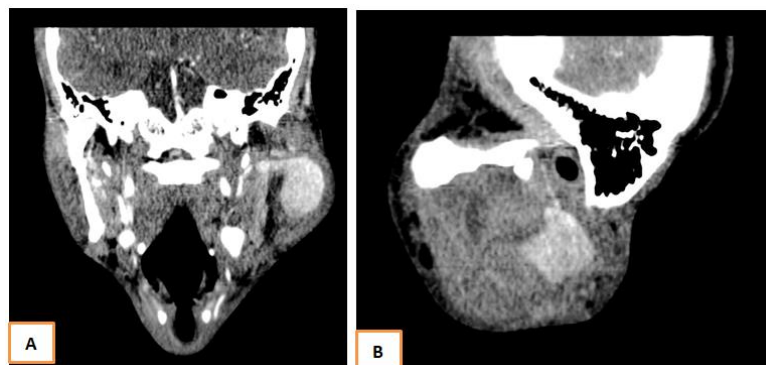
practitioner, under local anesthesia, and returned to an otorhinolaryngology consultation, 3 days later, for a painful mass opposite the sutured area. On clinical examination, a pulsatile and sensitive swelling of the left parotid lodge was found, in a febrile context. A Doppler ultrasound was performed by an experienced radiologist, using a MINDRAY DC-6T, with low and high frequency linear and convex probes, respectively. It revealed a hypo echoic oval mass, with a "Yin and Yang" appearance, and an arterialized flow on Doppler (Figure 1). This examination was completed by an angioscan of the supra-aortic trunks, performed on a HITACHI Supria 16 multi-bar scanner without and after injection of contrast medium, which revealed an oval formation of the left parotid lodge (54 x 48 mm axially x 56 mm in height), spontaneously not very dense, taking contrast, in a heterogeneous manner, in contact with the occipital branch of the external carotid artery. There is associated infiltration of the adjacent soft tissues, which are suppressed (Figure 2). The pseudoaneurysm was surgically flattened and the postoperative course was simple.



**Figure 1: Ultrasound image, B mode (A), color Doppler mode (B), and pulsed Doppler mode (C): Oval, thin-walled formation with particulate hypo echoic content, showing the "yin-yang" sign on color Doppler and arterial flow on pulsed Doppler**



**Figure 2: Cervical CT, without and with contrast medium, axial sections: Oval formation of the left parotid lodge, spontaneously sparse (A), and heterogeneously taking the contrast (B)**



**Figure 3: Cervical CT with contrast medium, coronal (A) and sagittal (B) reconstructions: Enhanced oval formation, in contact with the occipital branch of the left external carotid artery**

## DISCUSSION

Pseudoaneurysm refers to a break in the continuity of the arterial wall creating a circulating pocket, contained by the adjacent tissues. The term "false" refers to the absence of a clean wall [3]. Their location on the external carotid artery is rare, usually of post-traumatic origin [2], or even following iatrogenic complications, with an incidence of 0.07%, and a mortality of around 30% [4].

Clinically, several signs can be noted, including pain, auscultatory murmur or thrill, and the presence of a pulsatile mass [5].

Medical imaging is of great help, thanks to the echodoppler, which is performed in case of suspicion, with a high sensitivity and specificity [6], and remains useful for the post-surgical follow-up of patients [7].

The ultrasound mode shows a hypo echoic mass, presenting in color Doppler mode, the pathognomonic sign of "Ying-Yang" [8], related to the turbulence of the flow within the lesion. The pulsed Doppler mode shows a systolo-diastolic flow, "back and forth" between the false aneurysm and the artery concerned [9].

Nowadays, angiography with multiplanar reconstructions is more important in the diagnosis of pseudoaneurysms, while eliminating the disadvantages and risks of conventional angiography [10]. It highlights a heterogeneous mass with hyper density (sentinel hematoma), with variable enhancement depending on the size of the intralesional thrombus, and provides information on the condition of the adjacent structures [11]. It can also be used to differentiate a pseudoaneurysm from an active bleed, particularly in peripheral lesions, such as femoral lesions [6], and to

study adjacent structures related to other associated pathologies [8].

More recently, the growing role of magnetic resonance imaging (MRI), and especially magnetic resonance angiography (MRA), in cases where the use of iodinated contrast medium is contraindicated [12], has been noted, although it remains less accessible than CT for vascular exploration.

However, despite these recent imaging methods, conventional angiography, although rare in our context, remains the reference technique for the diagnosis of pseudoaneurysms [13], and also to eliminate venous involvement, in favor of an arteriovenous fistula [11].

As far as management is concerned, surgical treatment still has some definite indications today [14], although it is gradually giving way, depending on the context, to other less invasive therapies such as simple compression, ultrasound-guided compression and percutaneous injection of thrombin or coils [15].

## CONCLUSION

Medical imaging, particularly CT scanning, plays an important role in the diagnosis of post-traumatic vascular lesions of the cervical region, particularly before and after any therapeutic procedure.

**Conflicts of Interest:** The authors declare no conflicts of interest.

## REFERENCES

1. Comoglu, S., Ozturk, E., Celik, M., Avci, H., Sonmez, S., Basaran, B., & Kiyak, E. (2018). Comprehensive analysis of parotid mass: A retrospective study of 369 cases. *Auris Nasus Larynx*, 45(2), 320-327.
2. Fernandez, J., Dassonville, O., Culié, D., & Bozec, A. (2015). Pseudo-anévrisme spontané intra-parotidien de l'artère carotide externe. *Annales françaises d'Oto-rhino-laryngologie et de Pathologie Cervico-faciale*, 132(6), 340-342.
3. Böge, G., Laroche, J. P., & Alric, P. (2017). Le traitement des faux anévrismes postcathétérisme par injection échoguidée de thrombine: expérience monocentrique et guide pratique. *JMV-Journal de Médecine Vasculaire*, 42(4), 198-203.
4. Carotid artery pseudoaneurysm, Radiology Reference Article, Radiopaedia.org. <https://radiopaedia.org/articles/carotid-artery-pseudoaneurysm>.
5. Maurizi, M., Almadori, G., Paludetti, G., Ottaviani, F., & Loschi, A. (1985). Pseudo aneurysm of the

- external carotid artery: report of a case. *International journal of pediatric otorhinolaryngology*, 8(3), 263-269.
6. Ousmane, T. R. A. O. R. E., Ouncoumba, D. I. A. R. R. A., Souleymane, S. A. N. O. G. O., Alassane, K. O. U. M. A., & Diama, K. A. (2020). Pseudo-anévrisme artériel post traumatique: à propos de deux cas. *Journal Africain d'Imagerie Médicale: Journal en ligne et en version papier-Printed and online open journal*, 12(3).
7. Coughlin, B. F., & Paushter, D. M. (1988). Peripheral pseudoaneurysms: evaluation with duplex US. *Radiology*, 168(2), 339-342.
8. Saad, N. E., Saad, W. E., Davies, M. G., Waldman, D. L., Fultz, P. J., & Rubens, D. J. (2005). Pseudoaneurysms and the role of minimally invasive techniques in their management. *Radiographics*, 25(suppl\_1), S173-S189.
9. Abu-Yousef, M. M., Wiese, J. A., & Shamma, A. R. (1988). The "to-and-fro" sign: duplex Doppler evidence of femoral artery pseudoaneurysm. *American Journal of Roentgenology*, 150(3), 632-634.
10. Walker, M. T., Liu, B. P., Salehi, S. A., Badve, S., & Batjer, H. H. (2003). Superficial temporal artery pseudoaneurysm: diagnosis and preoperative planning with CT angiography. *American journal of neuroradiology*, 24(1), 147-150.
11. Jean Roger, M. T., Marcus, F., Emmanuel, F., Boniface, M., & Alain Georges, J. (2015). Pseudoaneurysm of the common carotid artery in an infant due to swallowed fish bone. *Case reports in radiology*, 2015, e903150.
12. Iziki, O., Rouadi, S., Abada, R. L., Roubal, M., & Mahtar, M. (2019). Spontaneous intra-parotid pseudoaneurysm of the external carotid artery: A rare case report due to an unfrequent disease. *Annals of Medicine and Surgery*, 43, 72-74.
13. Múnera, F., Soto, J. A., Palacio, D., Velez, S. M., & Medina, E. (2000). Diagnosis of arterial injuries caused by penetrating trauma to the neck: comparison of helical CT angiography and conventional angiography. *Radiology*, 216(2), 356-362.
14. Tisi, P. V., & Callam, M. J. (2013). Treatment for femoral pseudoaneurysms. *Cochrane Database of Systematic Reviews*, (11).
15. Mohammad, F., Kabbani, L., Lin, J., Karamanos, E., Esmael, F., & Shepard, A. (2017). Post-procedural pseudoaneurysms: Single-center experience. *Vascular*, 25(2), 178-183. <https://journals.sagepub.com/doi/abs/10.1177/1708538116654837>.

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