

# External Jugular Venous Aneurysm: A Case Report

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**Summary:** Venous aneurysms of the external jugular vein (EJV) are exceedingly rare. During the 21-year period from 2000 to 2020, only 30 cases were reported. There have been no reports of serious complications associated with EJV aneurysms. Treatment is mainly for cosmetic reasons, but sometimes for pain or other symptoms. Currently, surgical excision is the most commonly applied therapeutic strategy. In this report, we present the case of a 40-year-old previously healthy woman who presented with a painful mass in her left supraclavicular area after a mild left neck contusion injury one month earlier. A venous aneurysm of the left EJV was diagnosed on the basis of vascular ultrasound and computed tomography angiography and venography findings. The patient underwent surgical removal of the EJV aneurysm for the symptom of pain. The EJV was repaired and preserved based on the intraoperative findings. The treatment resulted in cosmetic improvement and pain relief, with no signs of recurrence. (*Plast Reconstr Surg Glob Open* 2022;10:e4617; doi: [10.1097/GOX.0000000000004617](https://doi.org/10.1097/GOX.0000000000004617); Published online 24 October 2022.)

Venous aneurysms of the external jugular vein (EJV) are rare.<sup>1</sup> During the 21-year period from 2000 to 2020, only 30 cases have been reported.<sup>2</sup> EJV aneurysms are considered innocent lesions that require treatment mainly for aesthetic reasons, and an open surgical approach is the more commonly applied therapeutic strategy.<sup>2</sup> A thrombus within the lumen rarely results in a pulmonary embolism, but surgery is performed to alleviate pain or improve cosmetic appearance. In most cases, the EJV aneurysms are treated by otolaryngologists or vascular surgeons. Plastic surgeons proficient in manipulating the EJV in head and neck reconstructive surgery are also suitable for this surgery. In this report, we describe a case of a venous aneurysm of the left EJV in an adult.

## CASE REPORT

A 40-year-old Japanese woman with no specific medical history developed a painful mass in her left supraclavicular area after a mild left neck contusion injury one month earlier. The mass increased in size and was painful when she

exerted pressure on her abdomen or bent forward. The patient was referred to our hospital by a local clinic for further examination. There was a mass in the left supraclavicular fossa that increased in size with breath-holding during the initial examination (Fig. 1). No pulsation or thrills were palpable.

Vascular ultrasonography revealed blood flow from the EJV into the mass. A cyst with traffic from the EJV was observed and intermittent flow was noted. Computed tomography angiography and venography (CTA/CTV) demonstrated a well-defined mass above the left clavicle. The mass was incrementally contrasted and had traffic with the upper and lower veins, suggesting low-flow type vascular malformation or venous aneurysm (Fig. 2). An EJV aneurysm was diagnosed on the basis of these imaging findings.

Surgery was performed under general anesthesia. The mass was located beneath the platysma muscle and measured 3 cm in size. The anterior branch of the EJV flowed into the mass from the anterior superior region, and the left supraclavicular nerve was in contact with the mass. The left supraclavicular nerve was detached from the mass and preserved. The anterior vein, which flowed directly into the mass, was ligated and dissected (Fig. 3). As the mass communicated with the EJV, the EJV was partially clipped, and the mass and part of the vessel wall of the EJV were resected. EJV repair with 9-0 nylon was performed after microscopic examination revealed no thrombi or

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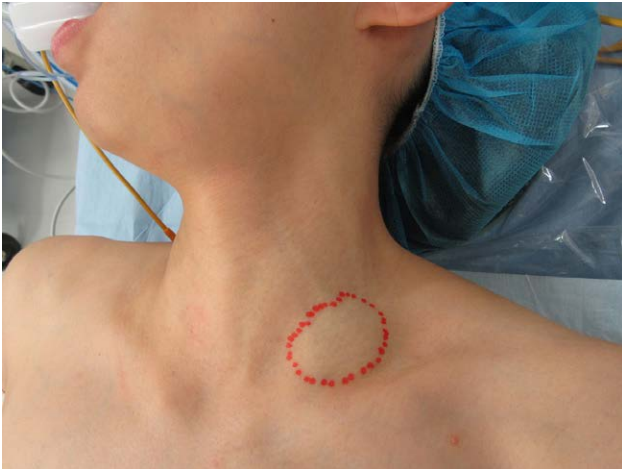
Received for publication August 2, 2022; accepted August 31, 2022.

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DOI: [10.1097/GOX.0000000000004617](https://doi.org/10.1097/GOX.0000000000004617)

**Disclosure:** The authors have no financial interest to declare in relation to the content of this article.

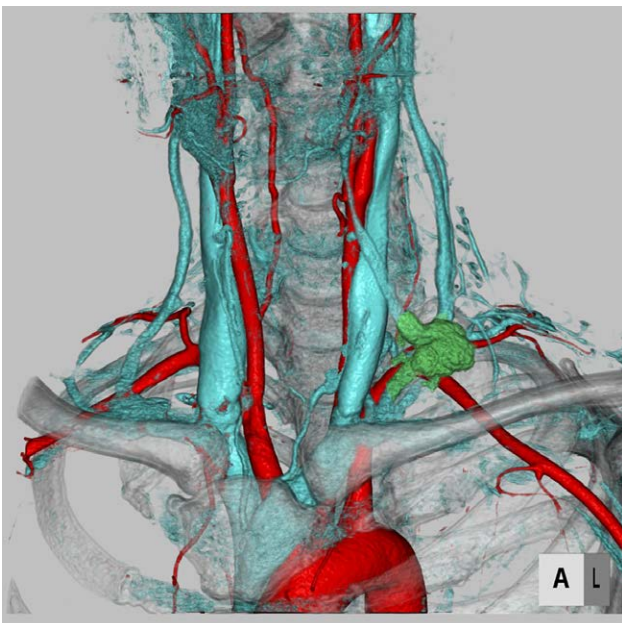
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**Fig. 1.** Preoperative image, showing a mass in the left supraclavicular fossa that increased in size with the Valsalva maneuver.



**Fig. 3.** Intraoperative image of the EJV aneurysm (blue vessel loop: anterior communicating vein, yellow vessel loop: supraclavicular nerve).



**Fig. 2.** Preoperative CTA/CTV showing a well-defined contrasted mass connected to EJV and anterior communicating vein.

abnormal findings in its lumen (Fig. 4). The pathological findings included cystic lesions lined with endothelial cells and an internal organizing thrombus. CTA/CTV examination 1 year after surgery showed no recurrence, and the morphology of the EJV was normal. (See figure, Supplemental Digital Content 1, which displays CTA/CTV examination 1 year after surgery showed no recurrence, and the morphology of the EJV was normal. <http://links.lww.com/PRSGO/C208>.)

### DISCUSSION

Venous aneurysms in the neck are rarely encountered in clinical practice due to the low blood pressure in the superior vena cava.<sup>1-3</sup> Internal jugular veins are most commonly affected, followed by EJV and anterior jugular veins.<sup>4</sup> There are two types of venous aneurysms:



**Fig. 4.** Intraoperative image of the EJV repaired with 9-0 nylon and the laterally detached supraclavicular nerve.

primary and acquired. Primary venous aneurysms are true venous aneurysms, with an intact venous wall and a fusiform shape. Acquired venous aneurysms are typically saccular and develop as a result of changes in blood flow and pressure.<sup>5</sup> The cause of acquired venous aneurysms can include tumors, inflammation, or trauma, or they may occur spontaneously without an identifiable etiology.<sup>6</sup> In some cases, they can be caused by iatrogenic procedures, such as venous catheterizations.<sup>7</sup> In

our case, it was triggered by a minor blunt trauma to the neck a month earlier.

Clinically, EJV aneurysms are generally round masses, asymptomatic, unilateral, soft, nonpulsatile, and without vascular murmur. Characteristic symptoms include an increase in the mass when straining, crying, sneezing, or performing the Valsalva maneuver. In the clinical setting, jugular venous aneurysms can be confused with branchial cysts, laryngoceles, hemangiomas, lymphangiomas, and other cystic lesions, such as carcinoma arising in primary lateral neck cyst or metastatic squamous cell carcinoma.<sup>6</sup>

Doppler ultrasonography of the neck veins is useful as the first imaging modality and confirm the diagnosis.<sup>8</sup> Further, CTA/CTV and magnetic resonance venography can be used to assess aneurysm extent, feeder vessels, and intraluminal thrombus, in addition to aiding in preoperative planning.<sup>9</sup> In our case, vascular ultrasonography and CTA/CTV were performed preoperatively. Doppler ultrasonography confirmed the diagnosis of a venous aneurysm protruding saccular from the external jugular vein, and CTA/CTV confirmed its extent and continuity with the anterior communicating vein as well as EJV (Fig. 2).

There have been no reports of serious complications associated with venous aneurysms in the head and neck region, including the internal jugular vein.<sup>2</sup> Surgical resections of EJV aneurysms (whether primary or acquired) are the treatment of choice even though life-threatening complications are not reported.<sup>2</sup> A few reports have described embolization treatment for EJV aneurysms, however.<sup>10</sup> Indications for treatment are primarily cosmetic and may be due to pain or other symptoms. The EJV can be repaired and preserved in cases with minimal defects after resection of aneurysms. In our case, the patient underwent surgical removal of the EJV aneurysm due to pain. The EJV was repaired and preserved based on the intraoperative findings. The treatment resulted in pain relief and cosmetic improvement, with no signs of recurrence. (See **figure, Supplemental Digital Content 2**, which displays an image 1 year after surgery. The treatment resulted in pain relief and cosmetic improvement, with no signs of recurrence. <http://links.lww.com/PRSGO/C209>.)

## CONCLUSIONS

EJV aneurysms are exceedingly rare. Treatment is given mainly for cosmetic reasons, but sometimes for pain or other symptoms. Currently, surgical excision is the more commonly applied therapeutic strategy. In some cases, the EJV can be repaired and preserved.

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## PATIENT CONSENT

*The patient provided written consent for the use of her image.*

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