

LETTER TO THE EDITOR

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The nasal emissary vein and its importance

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To the Editor,

Precise knowledge of anatomical structures and their variations equips the surgeon with the confidence to anticipate what to expect, enabling easier recognition of the most probable complications. Rhinoplasty is one of the most common esthetic procedures and the nose has a very rich vascular plexus. While the facial arterial vasculature is generally outlined in detail in surgical textbooks, the venous drainage system is not addressed as elaborately. Surgical complications such as congestion while designing skin flaps, bleeding, edema, ecchymosis, and other potential complications in facial esthetic [1].

The main facial venous drainage pathway is through the hemiloop-like venous system which is supplied by supraorbital, angular, and facial veins. These veins are connected to the zygomaticotemporal vein in the upper lateral region of the orbit. They drain to the superior ophthalmic vein in the medial canthal area, the facial vein in the nasolabial area, and internal or external jugular veins in the lower lateral area (Fig. 1).

The angular vein is comprised of conjoined supratrochlear and supraorbital veins. It passes along the medial margin of the medial canthal tendon and turns into the facial vein at its junction with the superior labial vein. The nasal root vein arising from the angular vein and anastomoses with its equivalent on the other side forms a large plexus under the nasal root skin. Several accessory branches form the external nose connected to the nasal

root. The significance of this venous pathway is due to its connection with the cavernous sinus [2].

Emissary veins are valveless structures that connect the intracranial sinuses to extracranial vessels. The presence and distribution of the emissary veins vary from person to person, and during childhood, these venous structures are found more frequently and with larger foramina. The valveless nature of these vessels facilitates bidirectional blood flow, which allows for the equalization of intracranial pressures and selective cooling of the brain [3].

During the rhinoplasty operation, we have noticed emissary veins located unilaterally or bilaterally, penetrating the nasal bone on each lateral wall and possibly connected to the angular vein. A comprehensive search of rhinoplasty references and anatomical textbooks did not yield a clear explanation of this structure. So we studied 100 consecutive rhinoplasty patients to determine the characteristics of these veins. Ten male and 90 female rhinoplasty patients were examined from December 2021 to March 2022. Thirty-seven patients had this emissary vein, and in 8 cases (21.6%), these veins were positioned bilaterally. In 13 cases (35.1%), the diameter of the vein hole in the bone was larger than 1 mm, and almost all of them occurred on the left side (Fig. 2).

As we use wide skin flap elevation in rhinoplasty (instead of making narrow dorsal tunnels preferred by many surgeons), these structures are encountered more frequently in our practice.

The dark color of deoxygenated bleeding of these vessels during surgery may seem alarming for novice surgeons. As such, familiarity with their nature as connecting vessels to intracranial sinuses could be reassuring [3] (Video S1).

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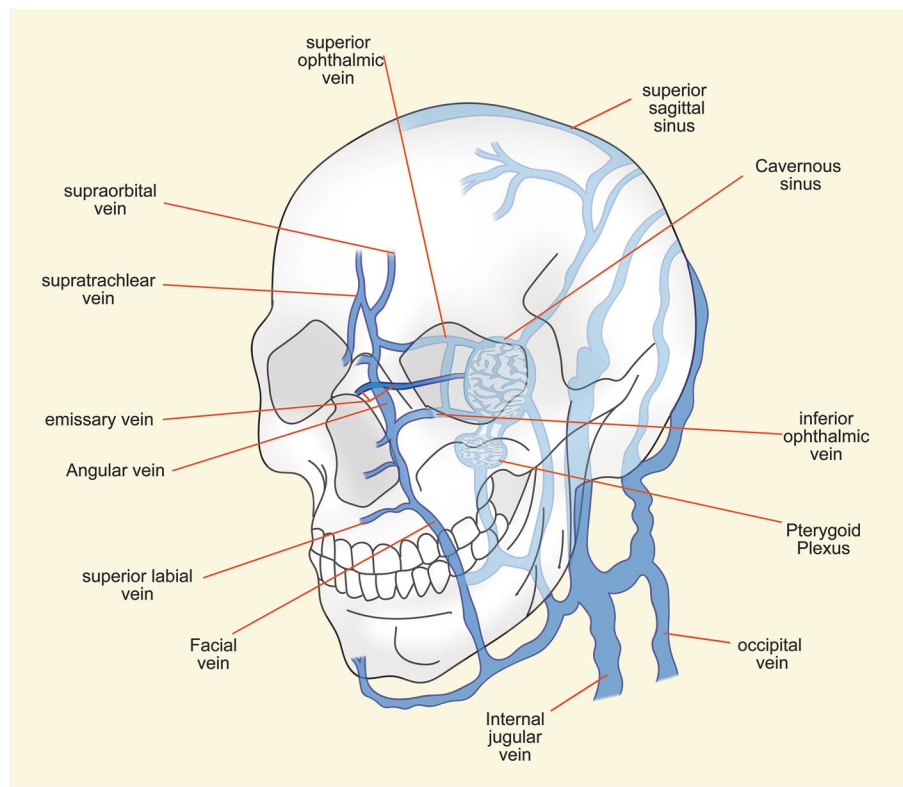


Fig. 1 Schematic drawings of emissary vein and its internal connections

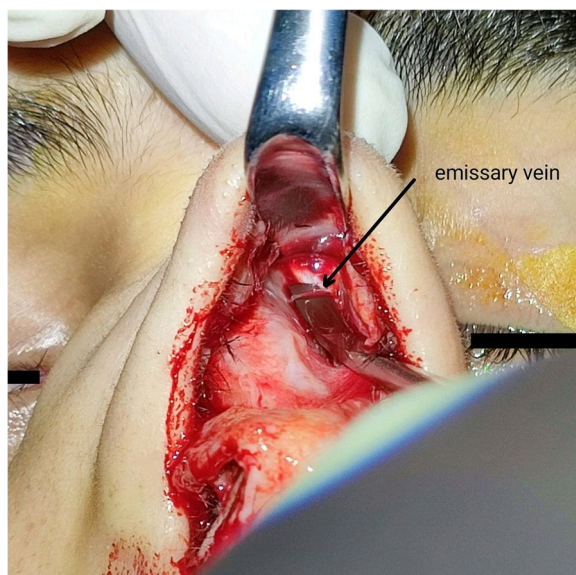


Fig. 2 A 27-year-old female patient presented for a primary rhinoplasty. Unilateral emissary vein penetrating the nasal bone on the left lateral wall.

However, emissary veins may serve as essential sources of perioperative bleeding and thrombosis, as well as have the potential to provide a dangerous pathway

for infection to reach deep intracranial structures [3]. Another potential danger is the retrograde movement of injectable material, such as fillers, through these vessels to intracranial sinuses and the subsequent complications due to their valveless nature [4].

It is clear that anatomical awareness of these emissary veins in the nasal area during esthetic facial surgeries can prevent complications.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s43163-023-00531-y>.

Additional file 1: Video S1. A 27-year-old female patient presented for a primary rhinoplasty. Unilateral emissary vein penetrating the nasal bone on.

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Declarations**Ethics approval and consent to participate**

This study protocol was conducted with the approval of the institutional review and ethical board of the Iran University of Medical Sciences, Tehran.

Consent for publication

This study states that all patients give full permission for the publication, reproduction, broadcast, and other use of photographs, recordings, and other audio-visual material of themselves (including of the face) and textual material (case histories) in all editions of the above-named product and in any other publication (including books, journals, CD-ROMs, online and internet), as well as in any advertising or promotional material for such product or publications. This consent form is ready if the journal asks for it.

Competing interests

All the authors have no competing interests. The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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