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Rare Variation of Submental Artery Extending Into Inferior Labial Artery

*Albert Gradev, Lina Malinova, Lazar Jelev**

Department of Anatomy, Histology and Embryology, Medical University of Sofia, Bulgaria

* Corresponding author e-mail: ljelev@abv.bg

During routine anatomical dissection of a 68-year-old Caucasian male cadaver we found a large sized left submental artery which after supplying the structures in submandibular triangle crossed the mandibular body and further extended into the inferior labial artery. After reviewing the literature, we discuss the variations in the inferior lip blood supply and their possible clinical significance.

Key words: submental artery; inferior labial artery; arterial variations; clinical significance; human

Introduction

The submental artery is the largest branch of the facial artery in the neck, which can be identified within the submandibular triangle, parallel to the body of the mandible. At this location, it supplies the overlying skin and adjacent muscles and also the chin and contributes to inferior lip blood supply by anastomosing with the inferior labial and mental arteries [7, 8]. These anastomoses are named vertical labiomental arteries [2, 11]. Sometimes such arterial anastomose may enlarge and become the major blood supply to the lower lip together with the inferior labial artery [5].

Case report

We discovered a rare variation of the lower lip blood supply during a routine anatomical dissection of a 68-year-old Caucasian male cadaver from the authopsy material of the Department of Anatomy, Histology and Embryology at the Medical University of Sofia. By a layered neck dissection, the skin was removed, followed by platysma layer and the investing layer of the cervical fascia. While dissecting the content of the left submandibular triangle, we found an unusually large left submental artery (external diameter 2.8 mm). This vessel started from a large sized facial artery (external diameter 3.6 mm) within the submandibular triangle and followed a direction parallel to the body of the mandible just underneath the investing layer of the cervical fascia. In this

location, the variant submental artery had nearly the same size as the ascending in the face part of the facial artery. At a point nearly 2 cm aside from the anterior midline, the submental artery curved superiorly over the mandibular body, giving a small but discernible bony indentation, and ascended to the mental region (**Fig. 1a, b**). Further dissection revealed that the variant submental artery continued to supply the lower lip. After precise dissection in the buccal region we established that instead of usual inferior labial artery, the facial artery was only providing a small anastomosing branch (external diameter of less than 1 mm) to the lower lip. In the reported case obviously the submental artery was extending into the left inferior labial artery. On the right side, no variations in the origin and distribution of the submental, inferior and superior labial arteries were observed.

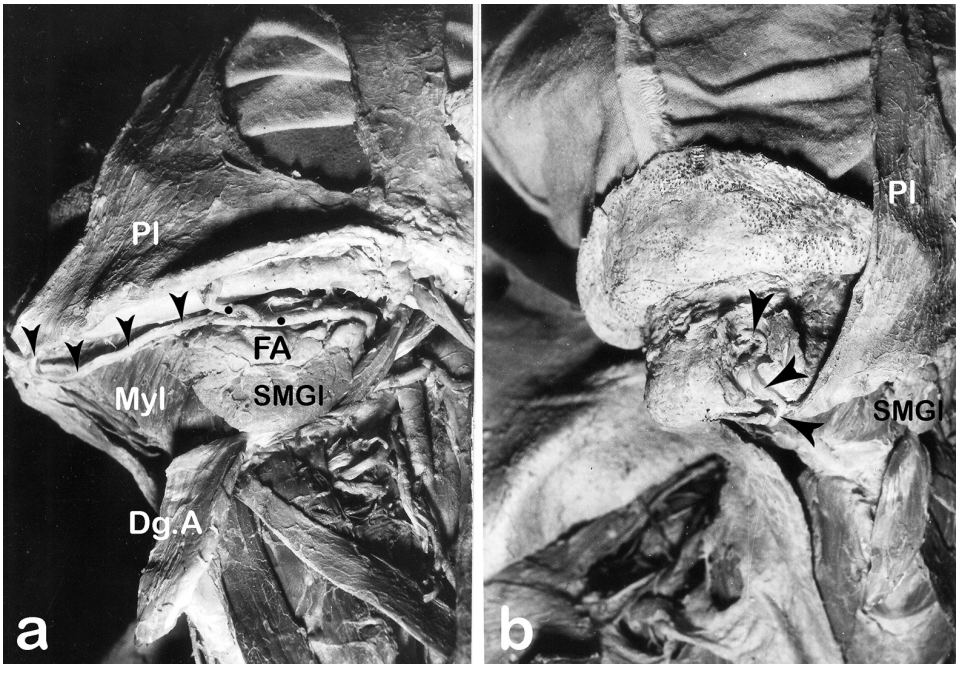

Fig. 1. Photographs of the neck dissection demonstrating the large sized submental artery (black arrowheads) arising from the facial artery (a) and extending into the inferior labial artery (b). Muscles: **Pl** – platysma; **Dg.A** – digastric anterior belly; **Myl** – mylohyoid. **SMGl** – submandibular gland. **FA** – facial artery.

Discussion

The blood supply of the lower lip and chin – mentolabial region, is complex and is provided by inferior labial and submental arteries as well as anastomosing branches between them called horizontal and vertical labiomental arteries [2,11]. The mental artery is only supplemental to this anastomosing network [11]. The patterns of blood supply may be different, with different enlargement of individual anastomotic branches, but the inferior labial artery is always present according to Pinar et al. [4,5], Al-Hoqail and Meguid [1] and Schulte et al. 2001[6]. Very rare, the inferior labial artery might

be absent and then it is replaced by its contralateral fellow [9]. In 4 to 20%, according to two different studies [4, 5], vertical labiomental artery – a direct continuation of submental artery, is the major blood supply to inferior lip, together with a small inferior labial artery – a finding consistent with our report.

Because of its large size and unusual point of passing over the mandible, the reported here submental/inferior labial artery variation might be important in surgical procedures of the submandibular and mentolabial regions. In plastic and reconstructive surgery, rising platysma myocutaneous flap [6, 10] based on submental artery extending into inferior labial artery might impair inferior lip blood supply [3, 11].

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