THE COURSE OF ARTERIA FACIALIS WITHIN THE
SUBMANDIBULAR REGION

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SUMMARY: Suprahyoid dissections are commonly used operations in otorhinolaryngological surgery. Ligation of the facial artery is one of its important steps. Within the digastic triangle, the facial artery neighbors the superficial lobe of the submandibular gland. The major anatomy textbooks state that the facial artery grooves posterosuperior part of its lateral surface. However, there are some disagreements in the otorhinolaryngological practice about the course of facial artery. In clinical series it has been reported that the artery may run on the lateral or inferior surfaces of the gland, or through it. In this study, cadaver dissections of 44 submandibular regions were performed and intraoperative observations of 12 unilateral neck dissections were evaluated. 47 (83.93%) of the 56 specimens disclosed that the route of the artery approached the deep aspect of the superficial part from posteriorly, passed above it, and emerged between its superficial surface and the masseteric insertion on the mandible. In 7 (12.5%) regions the facial artery was wholly surrounded by lobules of the gland, emerging superficially between the gland and the masseteric insertion. In the remaining 2 regions (3.57%), the facial artery followed the inferior surface (ventral aspect) of the superficial part.

Key Words: Facial artery, Submandibular salivary gland, Neck dissection, Localization

INTRODUCTION

Surgery of the submandibular (digastic) triangle is important in otorhinolaryngological (ORL) practice, due to both lymphatic metastasis of head and neck cancers, and salivary gland diseases (7, 8). The course of the facial artery in the triangle, and its relation with the submandibular gland shows variations. These variations affect the surgical approach to the gland (4).

The purpose of this study was to look for the relation of the facial artery and its cervical branches with the gland.

MATERIAL AND METHODS

Cadaver dissections of the facial artery and its cervical branches were performed on 44 submandibular regions⁵ in Gazi University, Department of Anatomy and Hacettepe University, Department of Anatomy. Besides, course of the facial artery was noted in 12 surgical unilateral neck dissections performed in the otolaryngology department of Gazi University (the diagnosis being laryngeal cancer in 6, mouth base cancer in 2, and sialoadenitis in 4 cases). Specific attention was paid to the location of the facial artery, its relation with the submandibular gland and its cervical branches.
RESULTS

In all specimens, the facial artery emerged to the digastric (submentobilue) triangle on the medial side of the stylohyoid muscle and the posterior belly of digastric muscle. Within the triangle, after a course of about 10 to 15 mm, the artery emerged to the deep fascia of the submandibular gland. Then, 47 (84.5%) of the 56 specimens disclosed that the route of the artery approached the lateral surface of the superficial part of the gland from posteriorly, passed above it, and emerged between its lateral surface and the muscular insertion on the mandible (Fig. 1). In 7 (12.5%) halves, the facial artery was wholly surrounded by lobules of superficial and deep parts of the gland, emerging superficially between the gland and the muscular insertion (Fig. 2). In the remaining 2 halves, 3.5%, the facial artery passed on the inferior surface (ventral aspect) of the superficial part (Fig. 3).

In all cadavers, the artery was symmetrical on both left and right sides, with only one exception presenting a route through the gland on the left and posterior to the gland on the right. No variation was observed in the courses of ascending palatine, tonsillar and submental arteries, related to the aforementioned variations, these normal findings were not demonstrated in the figures.

DISCUSSION

The relation of the facial artery with the superficial part of the submandibular gland is well stated in both major anatomical and surgical textbooks. It is known that the facial artery neighbors the superficial part of the submandibular gland, and mostly it runs on the postero-superior part of the gland's lateral surface, lying at first deep to the gland and then emerging between its lateral surface and the mandibular attachment of the medial pterygoid, and reaches the mandible's lower border (1, 2, 3, 4, 5, 6, 7, 8, 9, 10). It has been
stated in surgical textbooks that the course of the facial artery within diagastric (submandibular triangle) shows 3 modifications (3, 4, 6). However, no numeric data was available about the percentages of these variations. In this study, we found that facial artery presented 3 different courses (84 %), posteriormost of the lateral surface; 12.5 %, through the lobules of the gland; 3.5 %, inferior surface) in the diagastric triangle without any modification of its cervical branches.

We think that this data will be a good rule of thumb for the ORL surgeons in daily practice.

* 8 cadavers, 10 individual heads at Gazi University, and 4 full cadavers at Hacettepe University.

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