

THE COURSE OF ARTERIA FACIALIS WITHIN THE SUBMANDIBULAR REGION

Rabet GÖZİL, Ph.D.,
Semih KESKİL, M.D.,

Engin ÇALGÜNER, Ph.D.,
Yusuf KEMALOĞLU**, M.D.

Sezgin İLGİN*, Ph.D.,

Gazi University, Faculty of Medicine, Departments of Anatomy and Otorhinolaryngology**,
Ankara, Turkey

Hacettepe University, Faculty of Medicine, Department of Anatomy*, Ankara, Turkey

Gazi Medical Journal 7 : 19-21, 1996

SUMMARY : *Suprahyoid dissections are commonly used operations in otorhinolaryngological surgery. Ligation of the facial artery is one of its important steps. Within the digastric 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 (digastric) 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 regions* 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 (submandibular) 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 %) 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 masseteric 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 masseteric 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 course of 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

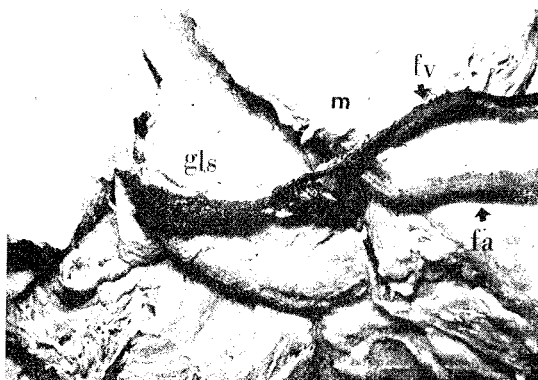


Fig - 1 : The right facial artery locates postero superior part of the lateral surface of the superficial part of submandibular gland (gls.Glandula submandibularis; fa. facial artery; Fv. facial vein; m. Mandible).

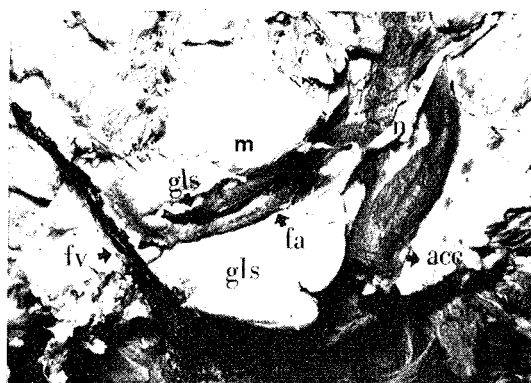


Fig - 2 : The left facial artery runs through the lobules of the gland (acc. arteria carotis communis; gls, glandula submandibularis; fa. facial artery; fv. facial vein; m. mandible; n. nervus hypoglossus).

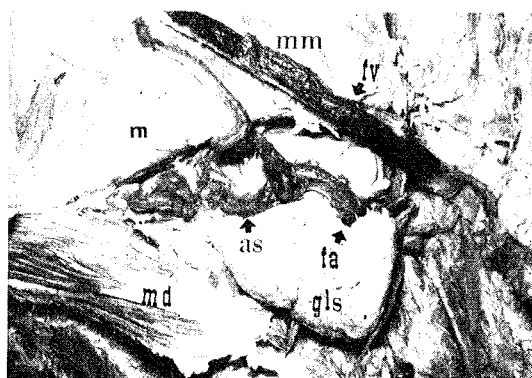


Fig - 3 : The left facial artery passes on the inferior surface (ventral aspect) of the superficial part (as, arteria submental; gls, glandula submandibularis; fa. facial artery; fv. facial vein; m. mandible; md. anterior belly of the digastric muscle; mm. masseter muscle).

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 digastric (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 %), posterosuperior of the lateral surface: 12.5 %, through the lobules of the gland: 3.5 %, inferior surface) in the digastric 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.*

Correspondence to : Dr.Rabet GÖZİL
Gazi Üniversitesi Tıp Fakültesi
Anatomi Anabilim Dalı
Beşevler
06500 ANKARA - TÜRKİYE
Phone : 312 - 214 10 00 / 6976

REFERENCES

1. Carlson GW : Surgical Anatomy of the Neck. Surg Clin North Am 1993; 73: 843.
2. Ellis H : Clinical Anatomy: A revision and applied anatomy for clinical students. 8th edition. Oxford Blackwell Scientific Publications, Oxford pp 318, 1992.
3. Lore JM Jr : An atlas of head and neck surgery. 3rd Edition. WB Saunders, Philadelphia pp 678 . 1988
4. Montgomery W : Surgery of the upper respiratory system. Vol 1, 2nd edition. Lea and Febiger. Philadelphia pp 266. 1989.
5. Moore KL : Clinically oriented anatomy. 3rd edition. Williams and Wilkins, Baltimore pp 665-666, 805. 1992.
6. Paparella MM, Shumrick DA, Gluchman JL, Meyerhoff WL : Otolaryngology, Vol3. Head and Neck. 3rd edition. WB Saunders . Philadelphia pp 2120, 1991.
7. Romanes GJ : Cunningham's Manual of Practical Anatomy. Vol 3: Head and Neck and Brain. ELBS with Oxford University Press pp 129, 1992.
8. Snell RS : Clinical anatomy for medical students. 4th editon. Little Brown and Co., Boston pp 798, 1992.
9. Stern SJ : Anatomic correlates of head and neck surgery. Head and Neck July/August 1992; 14(4) : 328-331.
10. Warwick R, Williams PL : Gray's Anatomy. 37th edition. Longman. Edinburgh pp 1253, 1992.