

Case Report

BILATERAL ANATOMICAL VARIATION IN THE ARTERIAL SUPPLY OF FACE INVOLVING THE FACIAL AND TRANSVERSE FACIAL ARTERY

Vrushali S. Kolte *¹, Seema Khambatta ², M. V. Ambiyee ³.

*¹ Postgraduate Student, ² Additional Professor, ³ Professor and Head.

Department of Anatomy, Topiwala National Medical College and B. Y. L. Nair Charitable Hospital, Mumbai, INDIA.

ABSTRACT

We present a case-report whereby a bilateral variation in the arterial supply of face was seen. The facial artery which is the main artery of face was seen terminating in the lower part of the face, as the inferior labial artery and few other branches; the transverse facial artery, which supplements the facial artery normally, was seen to enlarge and take over the course of facial artery, giving the superior labial and lateral nasal branches. The small pre-masseteric branch arising from facial artery was seen only on right side of face. It was absent on left side. Accurate knowledge of the normal and variant arterial anatomy of the facial artery is important for vascular radiology and will provide an anatomical basis to assist surgeons in performing maxillo-facial surgeries successfully. The details of this variation and its clinical significance are discussed herein.

KEYWORDS: Facial Artery; Transverse Facial Artery; Face; Inferior labial; Superior labial; Lateral Nasal.

Address for Correspondence: Dr. Vrushali S. Kolte, First Floor, Room No. 26, Kondaji Building No.1, Jerbai Wadia Road, Parel. Mumbai - 400012. Maharashtra, India. Contact No.: +91 9029527532/+86 18618204152. **E-Mail:** drvrushalikolte@gmail.com, drvrushalisorap@hotmail.com

Access this Article online

Quick Response code



Web site: International Journal of Anatomy and Research
ISSN 2321-4287
www.ijmhr.org/ijar.htm

Received: 16 Feb 2014

Peer Review: 16 Feb 2014

Accepted: 09 March 2014

Published (O):30 March 2014

Published (P):30 March 2014

INTRODUCTION

The facial artery and superficial temporal artery arise from the external carotid artery. The facial artery which is usually the main artery of the face, is superficial and pursues a tortuous course from the anteroinferior border of masseter upto the medial angle of the eye. The tortuosity presumably allows it to stretch when the face is distorted during jaw opening. It supplies branches to the adjacent muscles and skin of the face. Its named branches on the face are the pre-masseteric artery, the superior and inferior labial arteries and the lateral nasal artery. The part of the artery distal to its terminal branch is called the angular artery.

Premasseteric artery is a small inconstant artery. When present, it passes upwards along the anterior border of masseter and supplies the

surrounding tissues.

The inferior labial artery arises just below the angle of the mouth, passes upwards and forward sinuously near the margin of the lower lip, between the muscle and the mucous membrane.

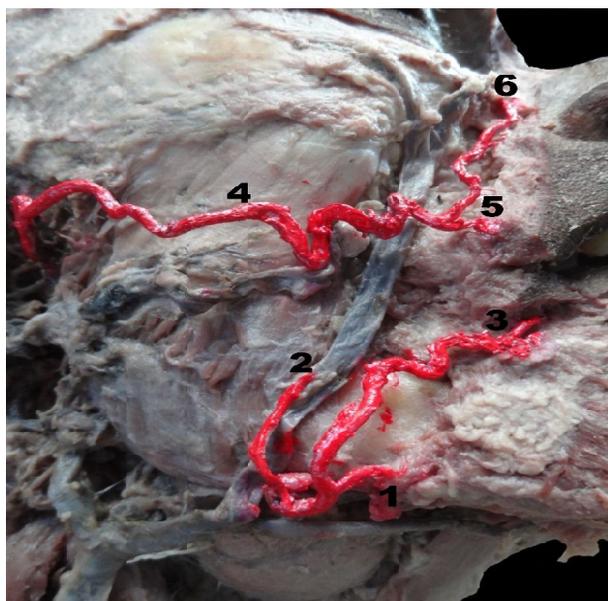
Superior labial artery is larger and more tortuous than the inferior labial artery, and has a similar course along the superior labial margin.

Lateral nasal artery is given off by the side of the nose. It may be replaced by a branch from the superior labial artery [1].

Facial artery is known to show some variations in its origin, course and branching pattern [2].

Superficial temporal artery arises as the terminal branch of external carotid in the parotid gland behind the neck of the mandible.

Fig. 1: Blood Supply Of Dissected Right Side of Face.



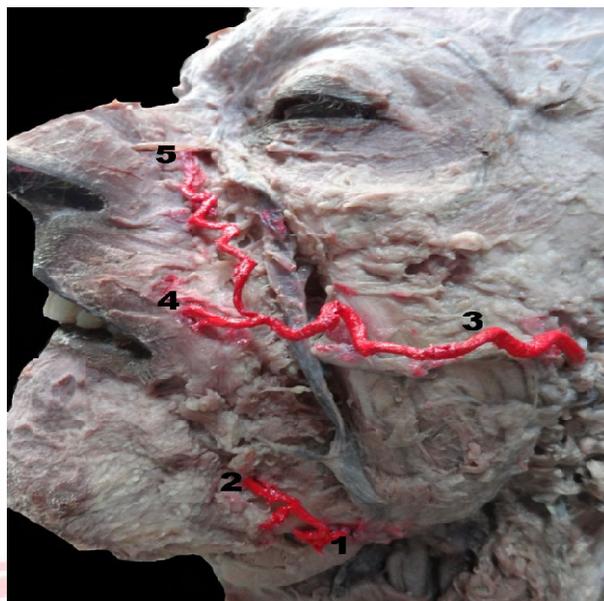
1: Facial Artery, 2: Pre-masseteric Artery, 3: Inferior Labial Artery, 4: Transverse Facial Artery, 5: Superior Labial Artery, 6: Lateral Nasal Artery.

Its named branches are the transverse facial, auricular, zygomatico-orbital, middle temporal, frontal and parietal arteries. Transverse facial artery traverses the gland, crosses the masseter between the parotid duct and the zygomatic arch and divides into numerous branches. The branches anastomose with the facial, masseteric, buccal, lacrimal and infraorbital arteries, and may have a direct origin from the external carotid artery[1].

CASE REPORT

During routine classroom dissection, we found a bilateral variation in the arterial supply of face of a middle-aged male cadaver. The facial artery which is the main artery of face was found to be very small, measuring about 1.78mm and 1.70mm in external diameter at the level of antero-inferior angle of masseter muscle on right and left side respectively and terminated as inferior labial artery on both the sides. The transverse facial artery was very prominent, measuring about 2.6mm and 2.4mm in its maximum external diameter on right and left side respectively, and took over the further course and branches of the facial artery, thus making a significant contribution to the blood supply of face (Figures 1, 2). It gave the superior labial branch and then continued as lateral nasal artery. This variation was seen bilaterally.

Fig. 2: Blood Supply Of Dissected Left Side of Face.



1: Facial Artery, 2: Inferior Labial Artery, 3: Transverse Facial Artery, 4: Superior Labial Artery, 5: Lateral Nasal Artery

An additional small branch, pre-masseteric artery (Figure 1) was seen on the right side, arising from the facial artery which ended by supplying the masseter muscle. However this branch was absent on the left side. The cervical course of facial artery was normal on both sides.

DISCUSSION

There have been many reports mentioning about the variations of facial artery. Ezure et al.[3] also reported a case where the left facial artery was completely absent, and it was compensated by the transverse facial artery which had a larger than normal diameter.

Lohn et.al [4] conducted a study on 201 facial arteries and suggested that the facial artery predominantly terminated as lateral nasal artery in 49% of cases. In 5% cases it was undetectable, with complete transverse facial artery dominance. Tubbs et al[5] also reported a case of unilateral agenesis of the facial artery with compensation by a giant transverse facial artery.

According to a study of 40 facial arteries by Midy Det al.[6], the facial artery terminated as angular artery in 27.5% cases, labial (superior) in 40%, nasal in 30% cases and abortive artery in only one case. When the facial artery terminated before reaching the lower lip, it was called abortive artery.

Examination of 284 hemifaces by Loukas M et al [7] showed five types of facial artery termination labeled "A" through "E". Type A (135 cases, 47.5%): facial artery terminated by bifurcating into superior labial artery and lateral nasal; Type B (110, 38.7%): facial artery terminating as superior labial artery and lateral nasal and lateral nasal continuing as superior alar artery; Type C (24, 8.4%): facial artery terminating as superior labial artery; Type D (11, 3.8%): facial artery ending as superior alar artery; Type E (4, 1.4%): facial artery terminating as a rudimentary twig without providing any significant branches. The present case may be considered similar to the Type E of the above study; however in this case, the facial artery is terminating by giving inferior labial branch.

Premasseteric branch of facial artery which was first described by Adachi [8] in 1928 is likely to be injured causing severe bleeding during maxillofacial surgeries. Kumar N et al [2] also found an unusual posterior (premasseteric) branch of the facial artery on the face.

CONCLUSION AND CLINICAL SIGNIFICANCE

Understanding of the anatomy of the facial artery is necessary because it is involved in various types of facial surgery such as rhinoplastic and orofacial surgery and can be used as a pedicle for some flap, such as nasolabial skin and oral mucosal flaps. The very rich vascularization of the face permits the construction of numerous facial flaps [9]. Facial artery is selected as a target for super-selective intra-arterial chemotherapy during the treatment of some cancers of the head [3]. The reconstruction of lip defects using the "Abbe" flap and other lip flap procedures involves surgical manipulation of one of the major branches of the facial artery, specifically the superior labial artery [9].

The facial artery musculo-mucosal (FAMM) flap was introduced by Pribaj et al. [10] has many advantages with its long rotational arc, but its use is limited by variations in the course of the facial artery. Therefore, knowledge about the precise course and branching pattern of the facial artery is required.

Conflicts of Interests: None

REFERENCES

- [1]. Standring S, ed. Gray's Anatomy. The Anatomical Basis of Clinical Practice. 40th Ed., Edinburgh, Churchill Livingstone. 2009; 490-491.
- [2]. Kumar N, Nayak SB, Shetty S, Guru A. Unusual posterior (premasseteric) branch of facial artery – a case report. IJAV. 2011; 4:161-3.
- [3]. Ezure H, Mori R, Ito J, Otsuka N. Case of a completely absent facial artery. IJAV. 2011;4: 72–74.
- [4]. Lohn JW, Penn JW, Norton J, Butler PE. The course and variation of the facial artery and vein: implications for facial transplantation and facial surgery. Ann PlastSurg, 2011;67(2):184-8.
- [5]. Tubbs RS, Salter EG, Oakes WG. Unilateral agenesis of the facial artery with compensation by a giant transverse facial artery. Folia Morphol (Warsz) 2005; 64: 226-228.
- [6]. Midy D., Mauruc B., Vergnes P., Caliot P., A contribution to the study of the facial artery, its branches and anastomoses; application to the anatomic vascular bases of facial flaps, Surg Radiol Anat, 1986, 8(2):99–107.
- [7]. Loukas M, Hullet J, Louis RG Jr, Kapos T, Knight J, Nagy R, et al. A detailed observation of variations of the facial artery, with emphasis on the superior labial artery. Surg Radiol Anat. 2006;28(3):316-24.
- [8]. Adachi B. Arterien system der Japaner. Band I, Kyoto, Verlag der Kaiserlich-Japanischen Universität zu Kyoto. 1928; 73–77.
- [9]. Marx C, Kumar P, Reddy S, Vollala VR. Bilateral variation of facial artery: a case report. Romanian Journal of Morphology and Embryology 2008, 49(3):399–401.
- [10]. Pribaz J, Stephens W, Crespo L, Gifford G. A new intra oral flap: facial artery musculomucosal (FAMM) flap. Plast Reconstr Surg. 1992;90(3):421-9.

How to cite this article:

Vrushali S. Kolte, Seema Khambatta, M. V. Ambiyee. BILATERAL ANATOMICAL VARIATION IN THE ARTERIAL SUPPLY OF FACE INVOLVING THE FACIAL AND TRANSVERSE FACIAL ARTERY. Int J Anat Res 2014;2(1):256-58..