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Case Report

A cadaveric study of accessory parotid gland: A case report

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Abstract

A pair of parotid glands, mostly serous salivary glands situated infront and beneath each ear canal, to empty their secretions through parotid duct into the mouth's vestibule. Each gland is located in front of the temporal bone's mastoid process and behind the mandibular ramus. The group of salivary tissues that are located directly in front of the Stensen's duct or main parotid duct is known as the accessory parotid gland. Accessory Parotid gland has a significant role in surgical removal of parotid gland i.e. the reoccurance of the tumor may result from a parotidectomy that fails to remove an accessory parotid gland that is far away. A rare case of accessory parotid gland without secondary duct was found during our routine dissection which is at left side of the face and is superior to the parotid duct. A precise understanding about parotid gland and accessory parotid gland may play vital role in planning for surgical intervention like parotidectomy which helps to prevent the reoccurrence of tumors.

Keywords: Accessory Parotid Gland, Parotid Gland, Anatomical variations, Cadaveric Study, Stenson's Duct.

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1. Introduction

The parotid glands, a pair of mostly serous salivary glands situated in front and beneath each ear canal, to empty their secretions through parotid duct into the mouth's vestibule.[1] Each gland is located in front of the temporal bone's mastoid process and behind the mandibular ramus. Feeling along the face, beneath the angle of the mandible and in front of each ear will reveal the gland on eitherside.[2] When viewed from the outside, the gland has a roughly wedge-like form.[1,2] Three pairs of salivary glands are present in Humans i.e, the parotid, sub-mandibular, and sublingual. Located in front of the ear, the parotid is the largest. It weighs roughly 15 grams and helps roughly 25% of our entire salivary secretion. Saliva is released via the Stenson's duct, which opens across from the upper second molar tooth. Salivary alpha-amylase, also known as "ptyalin," is an enzyme found in saliva that aids in digestion by converting starch into maltose.[1,2] Each gland has a lengthy excretory channel called the parotid duct that emerges from the front, just below the masseter muscle. The duct enters the mouth on the inside of the cheek, typically across from the maxillary second molar, after piercing the buccinator muscle. On the inside of the cheek, a little tissue elevation known as the parotid papilla indicates where the parotid duct opens.[1]

The four surfaces of the parotid gland are superior, anteromedial, posteromedial, and superficial or lateral. Anterior, posterior, and medial edges of the gland are its three boundaries. The parotid gland has two ends: the inferior end, or apex, and the superior end, which takes the shape of a tiny superior surface.[3-5] The parotid salivary glands, which arise early in the sixth week of pregnancy, are the first major salivary glands to form.[6-7] These glands' epithelial buds are situated close to primordial mouth's labial commissure on the inside of the cheek.[8,9] These buds branch to create solid cords with rounded terminal ends close to the growing facial nerve after growing posteriorly toward the otic placodes of the ears. them cords are later canalized and form ducts at about 10 weeks of fetal development; the largest of them is the parotid duct for the parotid gland. The glands' acini are formed by rounded ends of the cords. At roughly 18 weeks of gestation,

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the parotid glands start secreting through the parotid duct. Once more, the surrounding mesenchyme gives rise to the gland's supporting connective tissue.[2,8,9]

The group of salivary tissues that are located directly infront of the Stensen's duct or main parotid duct is known as the accessory parotid gland. Normally, they are found on the masseter muscle's lateral surface.[1-3] They typically have a distinct duct that empties into main parotid duct and had a separate blood supply.[4-5] An incidence rate of accessory parotid tissue varies from 7.5% to 56.[1,10,14] One possible risk factor for parotitis and parotid malignancies is the existence of an auxiliary parotid gland. The accessory parotid gland is affected by any pathology that affects the parotid gland. Therefore, when treating clinical issues related to the parotid, doctors and surgeons need to have a thorough understanding of accessory parotid. This case study focuses on the existence of an accessory parotid gland without secondary duct located anterior to the Stensen's duct.

2. Materials and Methods

During a routine dissection in the Department of Rachana Sharir at the National Institute of Ayurveda (Deemed University), Jaipur, Rajasthan, India, an uncommon case of an accessory parotid gland without a secondary duct was identified. The study was conducted on a 72-year-old male cadaver, which had been embalmed and preserved using formaldehyde. The cadaver was among those donated by individuals for the purpose of medical education and anatomical research.

3. Case Report

The accessory parotid gland without secondary duct was identified during a routine dissection (**Figure 1**). An accessory parotid gland was identified unilaterally on the left side, superior to the primary parotid duct, during the dissection of the face region on a 72-year-old male cadaver using the Grants dissector technique. The accessory parotid gland was 3cm away from the main parotid gland (**Figure 2**). The dimension of accessory parotid gland was 2cm in length and 1cm in breadth which is directly draining into main parotid duct or Stensen's duct. Like in typical accessory parotid situations, the secretions of this accessory gland may empty straight into the main duct without the need for a secondary duct.

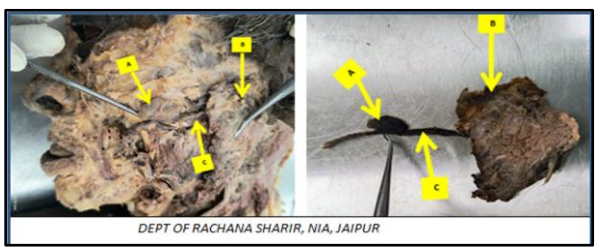

Figure 1: (A) Accessory parotid gland **(B)** Parotid gland **(C)** Parotid duct

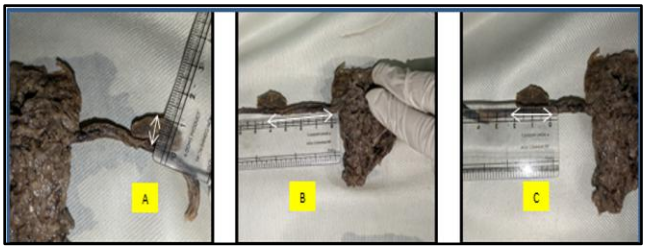

Figure 2: (A) Breadth if accessory parotid gland is 1cm **(B)** Distance b/w parotid gland and accessory parotid gland 4cm **(C)** Length of accessory parotid gland is 2cm

The parotid plexus, a network of intercommunications between the various branches of the facial nerve, covered this accessory parotid. There were intercommunications in the form of a loop that was mostly formed between the upper buccal and zygomatic branches and connected by the marginal mandibular branch.

4. Result

The Accessory Parotid Gland without secondary duct was found unilaterally on the left which is superior to the main parotid duct.

5. Discussion

According to research study conducted by Jack Frommer, A study involving 96 dissections of human parotid glands examined the incidence, size, location, and histological features of accessory parotid gland. The findings revealed that 21% of cases had distinct accessory gland located at varying distances from the main parotid gland. Histologically, there were no significant differences between the accessory and primary parotid glands within the same facial region. Age-related changes, including reduced glandular components, increased fat deposition, and fibrosis, were not more prominent in accessory glands compared to the main gland. Due to their histological similarity, diseases affecting the major parotid gland may also involve accessory parotid gland. Additionally, incomplete removal of accessory parotid gland during parotidectomy may lead to tumor recurrence.[1]

According to study conducted by Ahn et al. An APG typically lies on or above the major parotid duct and ha one or more tributaries that drains into the major parotid duct also called as stenson;s duct, even though it is totally separated from the main parotid gland. Since the parotid duct connects an APG to the major parotid gland indirectly, they reasoned that failure to remove or irradiate an APG could be linked to tumor recurrence. They have actually seen a case of parotid cancer that included both the major parotid gland and a distinct APG. The tumors in the main gland and the APG did not show a continuous lesion on a CT scan or in surgical specimens, although having the identical histology. Without any continuity in the salivary tissue between the primary parotid gland and the APG, the tumor's ultimate histology revealed acinic cell carcinoma in both. In their opinion, this

example highlights the therapeutic significance of identifying and completely removing an APG in the treatment of a parotid carcinoma by demonstrating that tumor cells from the main gland can be transplanted or metastasized to the APG or vice versa via the Stensen's duct.[14]

The comprehensive knowledge of anatomical variation of Parotid gland helps in differential diagnosis of mid-cheek masses such as parotid gland epidermoid cyst or arteriovenous malformation, Stensen's duct stone, lipoma, neoplasm, haemangioma or adnexal tumors, neural tumors, haematoma, benign and malignant adenopathy, metastatic disease, benign and malignant tumors of accessory parotid tissue.

6. Conclusion

One notable anatomical variation in the Indian population is accessory parotid gland. A good knowledge of all variation for general practitioners, plastic and maxillofacial surgeons, radiologists, otolaryngologists, and traumatologists is important both academically and clinically.

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9. Conflict of Interest

None.

Reference

1. Frommer J. The human accessory parotid gland: its incidence, nature and significance. *Oral Surg Oral Med Oral Pathol.* 1977;43(5):671-6.
2. Fehrenbach MJ, Herring SW. Illustrated anatomy of the head and neck. 4th ed. St. Louis: Elsevier; 2012. p. 154.
3. TeachMe Anatomy. 2015; Available from: https://teachmeanatomy.info/
4. Nanci A. Ten Cate's oral histology: development, structure, and function. 8th ed. St. Louis: Elsevier; 2013. p. 255.
5. Bath-Balogh M, Fehrenbach MJ. Illustrated dental embryology, histology, and anatomy. 3rd ed. St. Louis: Elsevier; 2011. p. 135.
6. Nanci A. Ten Cate's oral histology: development, structure, and function. 8th ed. St. Louis: Elsevier; 2013. p. 273.
7. Arhakis A, Karagiannis V, Kalfas S. Salivary alpha-amylase activity and salivary flow rate in young adults. Open Dent J. 2013;7:7-15.
8. Moore KL, Persaud TVN. The developing human: clinically oriented embryology. 7th ed. Philadelphia: Saunders; 2003. p. 203-20.
9. Afify SE, Maynard JD. Tumors of the accessory lobe of the parotid gland. *Postgrad Med J*. 1992;68(800):461-2.
10. Ramachar SM, Huliyappa HA. Accessory parotid gland tumors. *Ann Maxillofac Surg*. 2012;2(1):90-3.
11. Skandalakis JE, Colborn GL, Weidman TA, Foster RS Jr, Kingsnorth AN, Skandalakis LJ, et al. Skandalakis' surgical anatomy: the embryologic and anatomic basis of modern surgery. Vol. 2. Athens: Paschalidis Medical Publications; 2004. Chap. 1 – Neck.
12. Toh H, Kodama J, Fukuda J, Rittman B, Mackenzie I. Incidence and histology of human accessory parotid glands. *Anat Rec.* 1993;236(3):586-90.
13. Ahn D, Yeo CK, Han SY, Kim JK. The accessory parotid gland and facial process of the parotid gland on computed tomography. *PLoS One.* 2017;12(9):e0184633.
14. Mangalgiri A, Mahore D. Accessory parotid gland: its surgical importance. *Int J Med Res Rev.* 2016;4(10):1903-6.

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