



AN ACCESSORY PAROTID GLAND AND ITS CLINICAL SIGNIFICANCE.

Babita Kujur

Senior resident, Department of Anatomy, AIIMS, Bhubaneswar

Naina Wakode*

Associate Professor, Department of Anatomy, AIIMS, Bhubaneswar *Corresponding Author

ABSTRACT

An accessory parotid gland (APG) is a collection of salivary tissue usually separated from the main parotid gland. It lies between the zygomatic arch above and the parotid duct below. On routine dissection of head and neck region, we found an accessory parotid gland measuring 35x23 mm on right side of the face, in a male cadaver aged about 60 years. It was triangular in shape, with its base almost continuous with the main parotid gland and apex reaching upto the anterior border of masseter muscle. It drained into the same Stenson's duct measuring 65 mm in length and 4.45 mm in external diameter. Further dissection was done to find out its relationship to nearby structures. Knowledge of APG and its surrounding structures would help surgeons and clinicians to distinguish between APG and any other mid cheek mass (lipoma, cyst, and lymphangioma). Also help in selecting appropriate anatomical landmarks during parotidectomy.

KEYWORDS : Accessory parotid gland tumor, Stenson's duct, parotidectomy, marginal mandibular nerve.

INTRODUCTION

The paired parotid glands are the largest of the salivary glands. Each has an average weight of 25 gm and is an irregular, lobulated, yellowish mass, lying largely below the external acoustic meatus between the mandible and sternocleidomastoid. Sometimes a small, usually detached part called the accessory parotid gland (pars accessoria or socia parotidis) lies between the zygomatic arch above and the parotid duct below. [1]

An accessory parotid gland (APG) is an anterior extension of the parotid gland found in 21–69% of cadaveric cases [2, 3-5]. It usually ranges in size from a pea to a kidney bean and has a flattened appearance resulting from compression between the masseter muscle and skin [2, 4]. The accessory parotid glands have their own blood supply from the transverse facial artery and have secondary duct emptying into the Stenson's duct. [6] There are two types of anterior extension of the parotid gland: one is facial process which is attached to the main gland. The other is accessory parotid gland, which is detached from the main gland. The average distance of accessory parotid glands from the anterior edge of the main gland is about 6 mm. However, the farthest reported APG was found on the buccal pad of fat at the anterior border of the masseter muscle, suggesting a great v Histologically the accessory parotid gland and the main gland are similar so pathology of the main gland could also involve the accessory parotid gland. Although tumors arising from an APG represent only 1–8% of all parotid gland tumors, 26–52% of all APG tumors are malignant, which is a much higher rate compared to the < 20% malignancy rate for tumors of the main parotid gland. [4, 5] Failure to remove a distantly detached accessory gland during parotidectomy could lead to tumor recurrence.

So, here lies the importance of the knowledge of APG, as a complete parotidectomy can be hindered by missing an APG. As well as clinical suspicion and awareness of APGs are important to establish appropriate management plans for mid-cheek masses and to differentiate them from other soft-tissue masses, such as an epidermoid cyst, lipoma, hemangioma and lymphangioma.

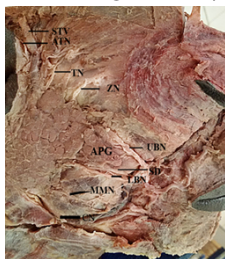


Figure 1: Showing accessory parotid gland (APG) along with main parotid gland (MPG) and peripheral branches of Facial nerve-TN-temporal nerve; ZN- zygomatic nerve; UBN-upper buccal nerve; LBN- lower buccal nerve; MMN- Marginal mandibular nerve and CN- Cervical nerve. SD- Stenson's duct; ATN- Auriculotemporal nerve; STV-Superficial temporal vein.

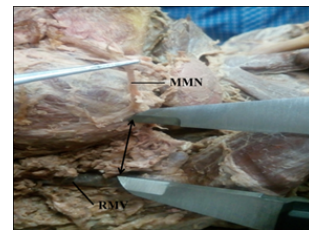


Figure 2. Showing distance between retromandibular vein (RMV) and marginal mandibular nerve (MMN)

CASE STUDY

During routine first-year undergraduate dissection of face in the department of anatomy, AIIMS, Bhubaneswar, we found an accessory parotid gland in a male cadaver aged 60 years while demonstrating parotid gland.

Further dissection was done to demonstrate its detailed anatomy i.e. its size, shape location and its relation to nearby structures. The accessory parotid gland was unilaterally present on right side, which was triangular in shape lying just above the parotid duct (fig-1). Base of APG was directed laterally and was almost continuous with the main parotid gland. Its apex was directed medially reaching up-to the anterior margin of the masseter muscle. The base of APG was measured 23mm and the length from midpoint of base to apex was 35mm. The main parotid duct was 65 mm in length having an external diameter of 4.45mm. No separate or secondary duct was found arising from APG. Distance of the accessory parotid gland from the zygomatic bone was 10mm and that from the angle of the mandible was 40mm. The distance of various peripheral branches of the facial nerve in the face i.e. temporal nerve, zygomatic nerve, buccal nerve and marginal mandibular nerve from the point of emergence of these nerves from the parotid gland to the midpoint of the accessory parotid gland were - 49.29mm, 37.12mm, 11.9mm, 9.27mm and 46.08mm respectively. Distance of the APG from the tragus was 53.57mm and that of zygomatic nerve and buccal nerve from the tragus was 38 mm and 35 mm respectively. Distance of retromandibular vein from the point of emergence below the parotid gland to the marginal mandibular nerve was 9.23mm (fig.2) Distance from the zygomatic bone to the buccal nerve and from angle of mandible to marginal mandibular nerve were 34.9mm and 7.85mm respectively.

DISCUSSION

Accessory parotid gland tumors were reported in 1–7.7% of all the parotid gland tumors [4, 5]. For surgical treatment, these tumors can be approached through either of two incisions i.e. standard modified Blair's incision or mid cheek incision. In mid cheek incision, the tumors are approached through a limited incision over the tumor in the middle of the cheek. This approach is associated with a

higher incidence of damage to facial nerve branches, because of the superficial location of the buccal and zygomatic branches of the facial nerve. [2, 3]

The best surgical approach to tumors in the accessory parotid gland is via a standard parotidectomy incision with an anterior extension and concomitant superficial parotidectomy. This approach to accessory parotid gland tumors is superior as it provides a better margin of resection and minimizes functional and cosmetic deformities. Most importantly, there is less chances of injury to branches of the facial nerve. [6]

The various landmarks used for parotidectomy are facial nerve trunk and its branches, retromandibular vein, angle of mandible, marginal mandibular nerve and buccal branch of facial nerve. We found the distance from the zygomatic bone to the buccal nerve, from retromandibular vein to marginal mandibular nerve and from angle of mandible to marginal mandibular nerve were 34.9mm, 9.23mm and 7.85mm respectively which were slightly less as compared to the findings of W.Zhong et al [7]. Appropriate landmarks may be used during parotidectomy if any one of the landmark is obscured by growth of the tumor.

Researchers have found that the distance of APG from the main gland ranged from 1 to 37mm [2, 8] but in our case APG was almost continuous with the main gland. This can be explained on the basis that an APG is a kind of developmental variation of a premature parotid gland, and as the main parotid gland matures and develops with age, the APG would become fused with the main parotid gland, becoming a facial process. Indeed, the weight and volume of the parotid gland usually increase with increasing age; thus an APG can become a facial process as the parotid gland grows large enough to be continuous with the APG [9]

The size of APG reported by other authors was less as compared to ours which was much larger, measuring 35 X 23 mm. [2] It was almost continuous with the main gland and reaching up-to the anterior margin of the masseter muscle.

There was only one duct draining the gland. However, cases with two separate ducts, one from main parotid gland and other from accessory parotid gland draining separately or APG draining through accessory duct into the Stenson's duct were reported. [6, 10] In our case the length of the Stenson's duct was higher compared to other researchers. [2,10] Wangyong Zhu et al have reported that the Stenson's duct was significantly longer in patients with parotitis as compared to the healthy subjects.

Thus APG is a normal anatomical extension of main parotid gland which is more prone to any pathology. Surgeons should be careful while exposing APG during parotidectomy because of its close proximity to facial nerve branches and select appropriate anatomical landmarks.

CONCLUSION

An accessory parotid gland can be misdiagnosed as lipoma, cyst or hemangioma due to lack of appropriate knowledge. So, we believe that this case report will add to the literature of accessory parotid gland and will aid as an anatomical guide to the surgical intervention involving parotid gland.

REFERENCES

1. Standring S. The anatomical basis of clinical practice. In: Livingstone EC, editors. Gray's Anatomy. 40th ed. Edinburgh; 2008. P.495.
2. Fromer J. The human accessory parotid gland: its incidence, nature and significance. *Oral Surg Oral Med Oral Pathol*; 1977;43:671–6.
3. Lin DT, Coppit GL, Burkey BB, Nettekville JL. Tumors of the accessory lobe of the parotid gland: a 10-year experience. *Laryngoscope*. 2004; 114(9):1652–5.
4. Newberry TR, Kaufmann CR, Miller FR. Review of accessory parotid gland tumors: pathologic incidence and surgical management. *Am J Otolaryngol*. 2014; 35(1):48–52.
5. 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.
6. Ramachar SM, Huliappa HA. Accessory parotid gland tumors. *Ann Maxillofac Surg* 2012 Jan; 2(1):90–3.
7. W.Zhong, Ashwell K. A cadaveric study of surgical landmarks for retrograde

8. parotidectomy. *Annals of medicine and surgery*; 2016;9:82-85.
8. 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)
9. Mahne A, El-Haddad G, Alavi A, Houseni M, Moonis G, Mong A, et al. Assessment of age-related morphological and functional changes of selected structures of the head and neck by computed tomography, magnetic resonance imaging, and positron emission tomography. *Semin Nucl Med*. 2007; 37(2):88–102.
10. Zhu W, Hu F, Liu X, Guo S, Tao Q. Role of the Accessory Parotid Gland in the Etiology of Parotitis: Statistical Analysis of Sialographic Features. *PLoS ONE* 2016;11(2).