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Aberrant Accessory parotid gland with accessory parotid duct

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Abstract

Background: An accessory parotid gland (APG) is a collection of salivary tissue usually separated from the main parotid gland, lying anteriorly just above the commencement of the parotid duct. APG draining by a ductule in to the main parotid duct is a common finding, but APG draining by a separate duct is a rare occurrence. In the present study dissections of parotid glands were carried out to find out the incidence of APG with accessory parotid duct.
Methods: Total 50 parotid glands were dissected from both the sides of 25 cadavers in the Department of Anatomy at Shri Shankaracharya Institute of Medical Sciences, Bhilai, during a period from October 2017 – July 2019.
Result: Out of 50 parotid glands dissected, overall incidence of APG was noted in 2 (4%) cases. In case 1, APG was observed on right side while in 2nd case APG was observed on left side lying on parotid duct detached from the main mass of parotid gland. Presence of separate duct has also been observed arising from APG in both the cases. In case 3, we found duplication of parotid duct on right side.
Conclusion: APG is a prominent morphological variation in Indian population. A thorough knowledge of anatomical variation of the accessory parotid gland/duct as well as anatomical knowledge of presence of double parotid ducts is important for performing sialographic studies and surgeries on the face.
Keywords: Accessory parotid gland, Parotid duct, Dissections, Cadavers, Anatomy.

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1. Introduction

The parotid gland is one of the most important major salivary gland in human beings. The variation of this gland depends on location and morphology. A common anatomical variant is that of an accessory parotid gland.APG is defined as a salivary tissue which is separated from the main parotid gland and lying on masseter muscle in front of the Stensen's duct (parotid duct) [1].They are found in 20% of general population. The most common location of APG tissue is an extra major salivary gland in front of the parotid gland. They have their own blood supply and secondary ductule emptying into the Stensen's duct [2].

However the accessory parotid is the site of congenital and acquired lesions. When present, it may complicate parotidectomies, promote parotitis, and serve as a potential site for benign and malignant lesions to arise. Any disease process which affects salivary glands may affect accessory parotid gland but the tumours of accessory parotid gland are rare [3-5]. Failure to remove a distantly separated accessory gland during parotidectomy could be a cause of tumor recurrence. Though accessory parotid gland tumors are exceptionally rare, they occur most commonly in the buccal area. Because the accessory parotid glands are separate from the actual parotid gland, tumors are not always found right away [2]. So, it is very important to

have knowledge about accessory parotid gland while performing surgeries for parotid tumors. The present study was undertaken to find out the anatomical variations in APG with accessory parotid duct.

2. Materials and Methods

The present study was conducted in the Department of Anatomy at Shri Shankaracharya Institute of Medical Sciences, Bhilai, during a period from October 2017 – July 2019. During the study period a total of 25 cadaveric dissections of parotid glands were carried out to find out the incidence of accessory parotid gland. Total 50 parotid glands were dissected from both the sides of 25 cadavers. The Cadavers dissected for 2016 were also used for carried out study.

3. Results

A total of 25 cadaveric dissections of parotid glands were studied, this included 25 left and 25 right parotid glands. Out of 50 parotid gland dissections, overall incidence of accessory parotid gland was noted in 2 (4%) cadavers, one on right side and another one on left side. In one case duplication of parotid gland was noted on right side.

In case 1 (Figure 1) accessory parotid gland was observed on right side lying on parotid duct detached from the main mass of the parotid gland. Also the presence of separate duct has been observed arising from accessory parotid gland.

In case 2 (Figure 2), accessory parotid gland was observed on left side lying on parotid duct detached from the main mass of the parotid gland. The presence of separate duct has also been observed arising from accessory parotid gland.

In one male cadaver [in case 3 (Figure 3)], we found duplication of parotid duct unilaterally (on right side). Both parotid ducts were carefully traced from their origin in the parotid gland to fusion with each other at the anterior border of the masseter muscle to form Stensen's duct.

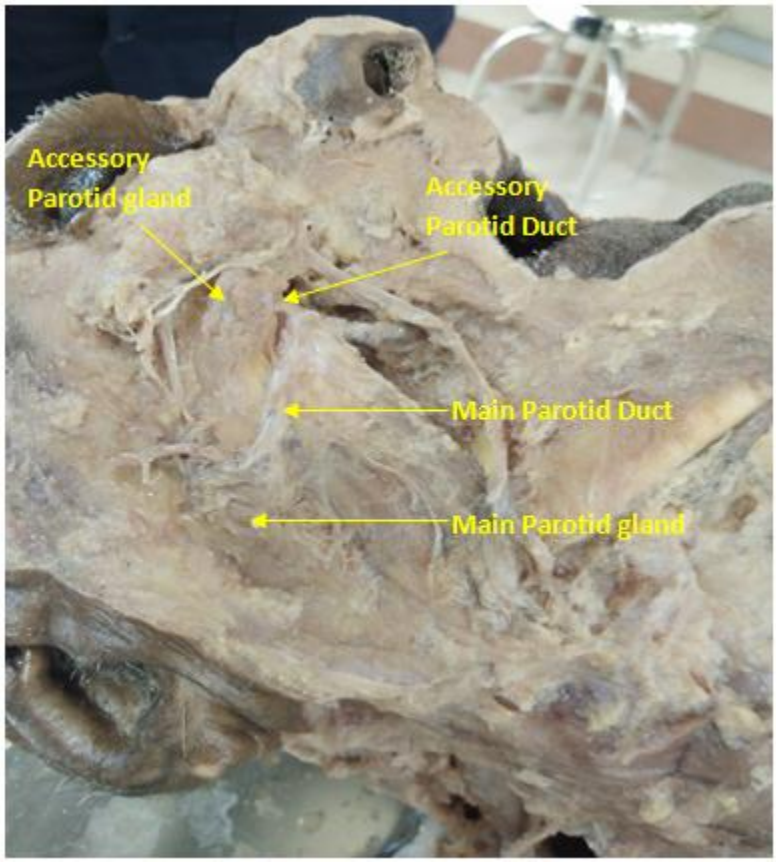

Figure 1: Showing Accessory Parotid gland with accessory parotid duct (Case 1)

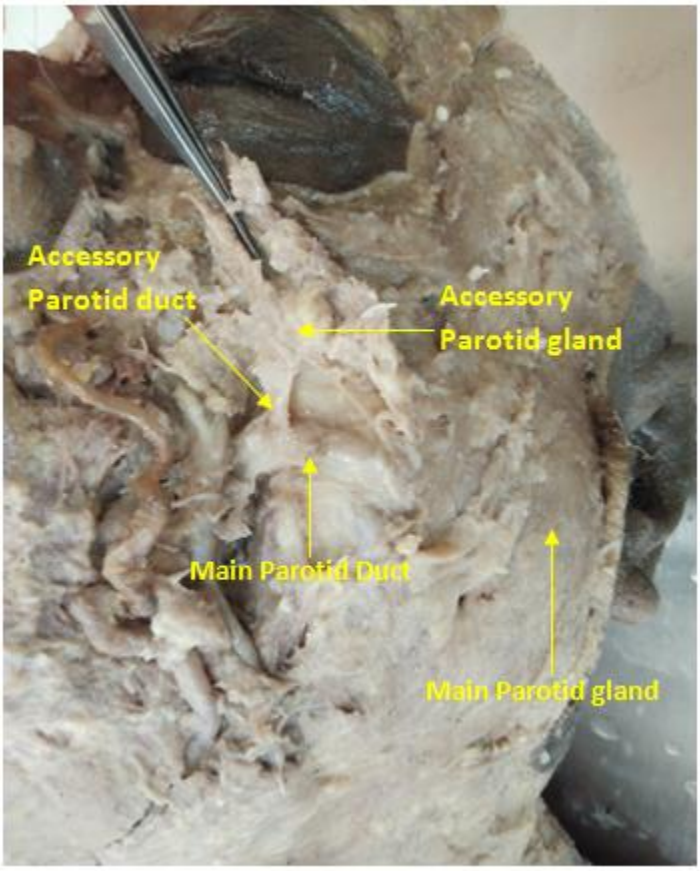

Figure 2: Showing Accessory Parotid gland with accessory parotid duct (Case 2)

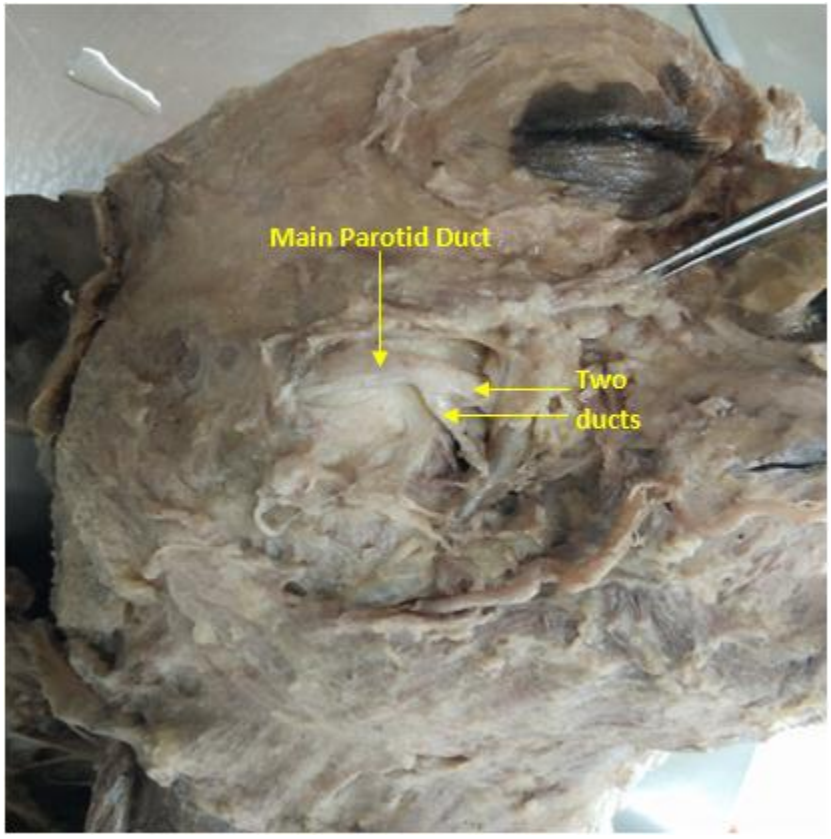

Figure 3: Showing Duplication of parotid duct (Case 3)

4. Discussion

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 [6]. There are two types of anterior extension of parotid gland one is "facial process" which is attached directly to the main gland. The other is "detached glandular mass" or "accessory parotid gland which is completely separated from the main gland. Accessory parotid gland is located approximately 6 mm anterior to the parotid gland proper, between the skin and the masseter muscle, along an imaginary line that extends from the tragus to a point midway between the ala of the nose and the vermilion border of the lip [7]. However, the farthest reported APG was found on the buccal pad of fat at the anterior border of the masseter muscle, suggesting a great variation. Histologically the accessory parotid gland and the main gland are similar so pathology of the main gland could also involve the accessory parotid gland [8]. These glands, mostly pea sized, unilateral, are located superior to the main parotid duct, anterior to the masseter, and are isolated from the main parotid gland. They drain via one or two small ductules into the main parotid duct [2].

The accessory parotid gland is little known and seldom mentioned in the literature [9], exists in 20—61% individuals according to various autopsy studies [10-12]. Frommer *et al* first described the incidence of accessory parotid gland in 21% of general population [4]. In the present study incidence of accessory parotid gland was noted in 2 cases that is total incidence was 4% among 25 cadavers. However on right side accessory gland was noted in 1 case that is incidence of 2% while on left side accessory parotid gland was noted in 1 case that is 2% cases. So the incidence was less as compared to previous studies [13, 14].In a study of 228 cadaver dissections the incidence was found to be 56% [15]. In another study of 96 cadavers accessory parotid was present in 21% of cadavers [4]. Such significant incidence of accessory parotid suggests that during parotidectomy efforts should be made to identify accessory parotid, which will further reduce the chances of recurrence.

Moreover, the accessory parotid gland is the commonest site for pleomorphic adenoma. It may present as a slowly progressive mid cheek mass. They are more in accessory parotid than main mass of parotid gland. The accessory parotid not often mentioned variant is separate from main parotid gland should be addressed properly to ensure complete removal of disease. This is very important in malignancy for surgical clearance. 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 [8].

In addition, 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 [16, 17].Similarly in our cases (Case 1 and 2), the presence of separate duct has also been observed arising from accessory parotid gland.

We found duplication of parotid duct on right side in one male cadaver. Both parotid ducts were carefully traced from their origin in the parotid gland to fusion with each other at the anterior border of the masseter muscle to form Stensen's duct. Aktan *et al* reported double parotid ducts on the right side of face in a cadaver. They considered these ducts as extension of collecting ducts, which should be fused within parotid gland normally. Both ducts were fused with each other before reaching the buccinator muscle [18]. Similar variation was found by Fernandes *et al* on the right side, but origins of both ducts have not been traced in parotid gland [19]. Bailey reported incidence of double parotid duct in 7% of population [20]. Astik and Dave found double parotid ducts bilaterally in a 50-year-old male cadaver of Asian origin. On both sides the two ducts fused at the anterior border of the masseter muscle to form one duct, which opens in the oral cavity opposite the crown of upper second molar tooth. Microscopic study of parotid ducts on both sides and measurement of diameters of superior and inferior ducts on both sides revealed both ducts were main parotid ducts [21].

5. Conclusion

Accessory parotid gland is a prominent morphological variation in Indian population. Anatomical knowledge of the accessory parotid gland / duct is important for performing sialographic studies and surgeries on the face.

However, the anatomical variation of the parotid duct has been reported as a rare occurrence with only a handful of literature report. These variations though rare, are likely to encounter during surgical procedures on parotid gland, routine dissection classes and at autopsy. A thorough anatomical knowledge of presence of double parotid ducts is essential in diagnosis of congenital fistula from accessory parotid gland by CT sialography and CT fistulography and avoiding iatrogenic injury to buccal

branch of facial nerve in parotid gland surgery, parotid duct surgery and some facial cosmetic surgery.

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