Case Report:
Unusual Case of Elongated Accessory Parotid Gland with a Prominent Duct

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Abstract: Accessory parotid glands (APG) are occasional collections of salivary tissue separated from main parotid gland situated on masseter muscle and just above the commencement of the parotid duct. The APG exists in approximately 21-61% of individuals. Though APG gland draining by a duct into main duct is quite common, occurrence of an elongated prominent APG with a separate duct opening into main parotid duct is a rare occurrence. We present here a rare case of elongated right APG with a prominent duct of its own, which was communicating into parotid duct at the anterior border of masseter.

Key Words: Accessory parotid gland, prominent duct, buccal branches, facial nerve, communication

Introduction:
The parotid glands (PG) are paired and largest of the salivary glands in humans. In 20% of cases, a small detached part of salivary tissue called accessory parotid gland (APG) lies on masseter in front of main gland and usually above or anterior to Stenson’s or parotid duct (PD).[1] The APG have their own blood supply and secondary ductule emptying into the PD.[2] PD emerges from the anterior border of the gland by the confluence of two or three tributaries and crosses masseter. At the anterior border, it turns sharply medially and pierces buccal pad of fat, buccinator and buccal mucosa. It opens into vestibule of mouth at the level of crown of upper 2nd molar tooth.[3] The PG develops as an ectodermal furrow from angle of primitive oral fissure running dorsally between the 1st arch and maxillary process. The groove is converted to form a tube which forms PD. From lateral end of tube cords of epithelial cells project and subsequently canalised to form acini and ductules of parotid gland.[3] Early division of the PD and epithelial sprouts from both ducts might lead to development of two parotid ducts and their ramifications within the PG.[4] Knowledge of presence of prominent duct of APG is essential for surgeons who are planning for surgery in this region to avoid injury to facial nerve and accidental damage to main PD.

Case Report:
The present case was found during routine dissection of an adult male cadaver in the Department of Anatomy, Kasturba Medical College, Manipal, India on the right side there was a presence of an elongated accessory gland with a separate duct. (Fig.1) APG gland was located in front of main gland on masseter muscle and above the PD. A prominent duct was arising from accessory gland and opened into parotid duct. The accessory gland was traversed by a communicating branch between upper and lower buccal branches of facial nerve. No such anomalies were found on left side.

Discussion:
The parotid glands are largest of the salivary glands, projecting forwards on the masseter, where a small usually detached part lies usually in front or above the PD. The gland is drained by the main PD which opens into the oral cavity. The APG reportedly occurs in 21-61% of population.[1] These glands, are unilateral, mostly pea sized located above to the main PD and are separated from the main PG gland and drain via one or two small ductules into the main PD. APGs are independent glandular units with respect to their location and function through earlier they were considered as mere extensions of the PG. They have high rate of malignant tumors (26-50%) than those of main PG (18-20%).[5]
Parotid gland; UBN: upper buccal nerve; LBN: Lower buccal nerve; [*:communication between upper and lower buccal branches of facial nerve passing through accessory parotid gland]

Normally the PD emerges from the anterior border of the PG and opens in the vestibule of mouth.[3] Aktan et al., reported double parotid ducts on the right side of face in an adult male cadaver. They considered these ducts as extension of collecting ducts, which might have fused normally within substance of the PG.[6] Similar type of variation was found by Fernandes et al., on the right side, but origins of both ducts have not been traced up to parotid gland.[7] Bailey reported incidence of double parotid ducts in 7% of population.[8] Rajesh BA et al., found in an adult male cadaver double parotid ducts on both sides of face which united at the anterior border of masseter muscle to form a single duct which opened into oral cavity opposite to the crown of 2nd molar tooth.[4] The knowledge of true dimensions of excretory ducts is important in duct endoscopy and lithotripsy as cited by Zenk et al.[9] and also in diagnosis of congenital fistula from an APG by CT sialography, CT fistulography. Avery et al., described the development of parotid gland in six stages pertaining to the growth, cytodifferentiation and morphogenesis influenced by intrinsic and extrinsic factors. The cell specific gene expression and cell-cell and cell-matrix interaction and growth factors influence the synthesis and deposition of type I and type III collagen. These are required for branching morphogenesis. The collagen synthesis stabilizes and maintains the branch points and specific growth factors regulate the branching patterns.[10]

Embryogenesis

The parotid gland is developed during 5th week as an elongated ectodermal furrow running dorsally from the angle of primitive oral fissure between the first arch and maxillary process. Later the groove elongates and is converted into a tube which forms parotid duct and opens medially into the angle of primitive mouth. The blind lateral end grows and branches to form to form glandular part of gland containing secretory acini. Subsequently, the angle of the mouth is shifted medially by fusion of maxillary and mandibular processes, and the duct opens thereafter on the inside of the cheek at some distance from the angle of the mouth. The APG is derived from a similar branching and glandular proliferation, arising from the tube more anteriorly and clearly separated from the main parotid tissue. However, in present case we postulate that around the same time as the main duct develops from the furrow between the maxillary and mandibular processes, at about 4 weeks of development, the primeval groove duplicates and grows cranially and posteriorly to form two ducts separately.[3]

Conclusion

Any disorder that affects the main parotid gland may also affect the APG but tumors of the accessory parotid glands are rare. Failure of resection of a distantly separated APG during parotidectomy could lead to tumor recurrence. Though APG tumors are exceptionally rare, they occur most commonly in the buccal area. Because the accessory parotid glands are separated from the main parotid gland, tumors are not always found right away. Knowledge of APG is important for performing sialographic studies and surgeries on the face. High resolution ultrasonography also helps in identifying the salivary calculi and accessory salivary gland tissue. The information presented in the case report is extremely critical for all head and neck surgeons who deal with parotid gland tumors. Hence, it is very important to have knowledge about APG while performing surgeries for parotid tumors.

References: