

## TOPOGRAPHIC ANATOMY OF BUCCAL AND LABIAL GLANDS IN SHEEP

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### ABSTRACT

Ten adult sheep of local mixed breed of either sex were selected to study the topographic anatomy of buccal and labial glands. The buccal glands of sheep were arranged in three rows viz. dorsal, middle and ventral. The dorsal buccal glands were distributed over the buccinator muscle, in front of the masseter muscle and masseteric groove below the depressor labii maxillaris muscle between the superior labial artery, dorsal buccal nerve and the superior labial vein. The middle buccal glands extended in front of the masseteric groove from the point of intersection of transverse facial artery with facial and superior labial veins rostral to parotid duct. The ventral buccal glands were located on the lateral aspect of horizontal ramus of mandible, dorsal to ventral buccal nerve and ventral to buccinator nerve and inferior labial vein. The labial glands were grouped as commissural, dorsal labial or superior labial and ventral labial or inferior labial. The commissural labial glands were located under the skin rostral to the insertion of the zygomaticus muscle. The superior labial glands were distributed in two zones viz. external and rostral (nasolabial) zones. The inferior labial glands were the continuation of the commissural labial glands into the inferior labium between the mucosa and orbicularis oris muscle internally and the skin externally.

**Key words:** Topographic anatomy, buccal gland, labial gland, sheep

Saliva, important for digestion, is secreted from major and minor sets of salivary glands in domestic ruminants. Besides the three pairs of major salivary glands- the parotid, mandibular and sublingual; there are minor salivary glands located in the mouth which add their secretions to the saliva. Most of the research work has been carried out in relation to major salivary glands whereas the research work conducted on minor (buccal and labial) salivary glands is very scanty. Hence, the present study was conducted to explain the detailed topographic anatomy of buccal and labial glands in sheep.

### MATERIALS AND METHODS

The present study was undertaken on ten healthy adult sheep of either sex of local mixed breed. The heads were procured from the local abattoir immediately after the slaughter of animal. The heads were brought to the department where they were properly fixed in 10% formalin solution to study the gross anatomical localization and distribution of buccal and labial glands through dissection.

### RESULTS AND DISCUSSION

The buccal glands of sheep were located under the malaris and zygomaticus muscles on the lateral aspect of the cheek. The glands were distributed anterior to the facial artery, facial vein, parotid duct and masseteric groove merging with the labial gland rostrally (Fig. 1). Superiorly, it was related with the dorsal buccal nerve. Laterally, it was covered by the masseter muscle, fascia and skin of that region while medially, the gland blended with the buccal mucosa. The buccal glands were found arranged in three rows viz. dorsal, middle and ventral as reported in domestic ruminants (Habel, 1975; Nickel *et al.*, 1979) and horse (Stinson and Calhoun, 1993). The dorsal buccal glands in sheep were lanceolate in shape, lobulated and distributed between the superior labial artery, dorsal buccal nerve and the superior labial vein in front of the masseteric groove. The glands were distributed over the buccinator muscle, in front of the masseter muscle and below the depressor labii maxillaris muscle (Fig. 1). The dorsal buccal gland was regarded as a zygomatic gland in camel (Smuts and Bezuidenhout, 1987) and carnivores (Miller; 1964; Nickel *et al.*, 1979). The middle buccal gland was almost quadrilateral in shape and formed the

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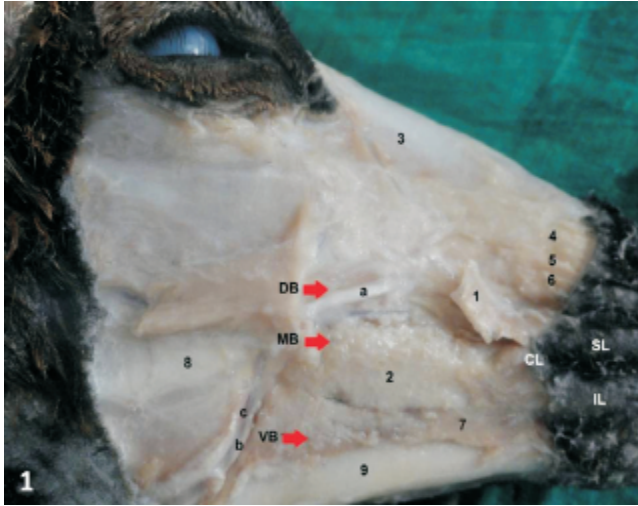


Fig 1. Dissected head of sheep showing the distribution of dorsal (DB), middle (MB) and ventral (VB) buccal glands in situ. CL=Commissural labial gland; SL=Superior labial gland; IL=Inferior labial gland; a=Buccal nerve; b=Facial vein; c=Facial artery; 1=Zygomatic muscle; 2=Buccinator muscle; 3=Levator nasolabialis; 4=Levator labii maxillaris; 5=Depressor labii maxillaris; 6=Caninus muscle; 7=Depressor labii mandibularis; 8=Masseter muscle; 9=Mandible.

widest row of the buccal glands. It extended in front of the masseteric groove from the point of union of transverse facial artery with facial and superior labial veins rostral to parotid duct. It was located between dorsal and ventral rows of buccal gland separated from the former by superior labial vein and from the latter by buccinator nerve and inferior labial vein (Fig. 1). The lobules were loosely arranged as compared to dorsal and ventral buccal glands. The deeper lobules were darker than the superficial lobules. Rostrally, it merged with the commissural labial gland. The ventral buccal gland in sheep was the most compact one among the buccal glands and was triangular to prismatic in shape. It was situated on lateral aspect of horizontal ramus of mandible, dorsal to ventral buccal nerve and ventral to buccinator nerve and inferior labial vein (Fig. 1). The lobules were very distinct. The depressor labii mandibularis muscle merged with the fascia of the gland at middle of the horizontal ramus of mandible and continued anteriorly to merge with the lower lip, forming the ventral boundary of the gland and its fibres interlaced with the capsule of the gland in its anterior half freely. These findings were in agreement to the

observations made by Raghvan (1964), Habel (1975), and Parida and Das (1991) in domestic ruminants.

The labial glands in sheep were present in three groups viz., commissural, dorsal and ventral labial glands. The commissural labial glands were found distributed under the skin rostral to the insertion of the zygomaticus muscle embedded in the orbicularis oris muscle (Fig. 1). The glands appeared lobulated and pinkish in colour. These extended between the superior labial artery and inferior labial vein along the angle of mouth. The distribution of the labial glands in sheep was more towards the commissure of the lips even though some isolated lobules of the gland scattered in the other parts of the upper and lower lips were also found. Similar distribution of labial glands was reported in cattle (Habel, 1975) and buffalo (Gupta *et al.*, 1995, 1999). However, Sloss (1954) reported that the labial glands in pig were poorly developed and were located at the commissural half of lower lip. The dorsal labial glands in sheep were distributed in two zones i.e. external and rostral (nasolabial). The external zone continued rostrally from the commissural labial glands distributed under the skin and orbicularis oris muscle over the mucosa (Fig. 1). The gland was traversed and supplied by the superior labial artery. The rostral zone of dorsal labial gland was comprised of globular aggregations of the glandular lobes, which were wider at the philtrum but narrower towards the commissure. These constituted the nasolabial gland, which was lobulated and running parallel to denticulate papillae of the superior lip.

Their duct traversed externally and opened into the skin under the nostril and above the rima oris (Fig. 1). Internally these were covered by mucosa and externally by orbicularis oris muscle. Labial nerve formed the external marginal of nasolabial gland and their branches ramified into it. The inferior labial gland in sheep was formed by the continuation of the commissural labial gland into the inferior labium between the mucosa and orbicularis oris muscle internally and the skin externally (Fig. 1). The lobular glandular tissue appeared pale in colour and lobulations of the gland were much smaller. It was traversed and supplied by labial vessels and innervated by mental nerve.

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