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Gross morphology study of oropharynx of the mute swan (*Cygnus olor*)

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Abstract

The study was conducted on the oropharynx of the mute swan (*Cygnus olor*). The oropharynx involved as prehensile organ along with tongue, studying of the gross morphological characters maybe help full to identify during forensic cases and other pathological conditions in mute swan. In oral cavity, upper bills was spatula like shape with black base on tip and the lower bill having a central median line. Both the upper and the lower bill have lamellae at its lateral side. The roof of swan was flat and having a prominent median longitudinal ridge continued with cranial and caudal papilla within the ridge. Choanal slit was relatively larger with visible oval depression present with numerous papilla thorn like directed caudally posterior.

Keywords: gross morphology, oropharynx, mute swan

Introduction

Mute swan (*Cygnus olor*) is a very large white flying water bird belongs to species of swan and a member of the waterfowl family "Anatidae". The name "mute" derives from it being less vocal than other swan species. Mute swans are popular bird for waterfowl seen in park lakes, as well as water areas in zoos or bird collections. It habits on shallow coastal ponds, estuaries, ponds, bogs and streams flowing into lakes. Mute swan diet consists mainly of aquatic vegetation, along with wide range of prey which including frogs, tadpoles, fish. Knowledge of the anatomy of the oropharynx important to identify structural features that may involve in prehensile of food, as well as to provide a key evidence for recognition of pathology conditions in these structures. The present study aimed to investigate the anatomical structural adaptations of the oropharynx in the mute swan involved in its feeding mechanisms.

Materials and Methods

Sample specimen for the study was collected from adult mute swan brought for post mortem examination to the Department of Veterinary Pathology, College of Veterinary and Animal Sciences, Thrissur, Kerala, India. The bill along with tongue was collected and rinsed in saline and immersed in 10 % neutral buffered formalin, various gross morphological and morphometric parameters were recorded by using a digital camera with 12X zoom (Nikon). The gross photography of an individual bill with various views, showing characteristics features were recorded.

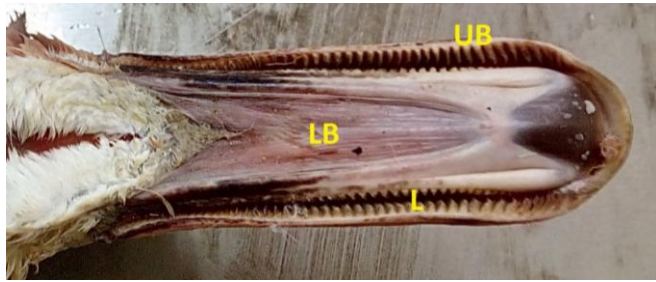
Results and Discussion

In mute swan, there was lack a definite line of demarcation between the oral and pharyngeal cavity. It was merged to provide a common oropharyngeal cavity that it is extended from bill to the oesophagus. Similar oropharyngeal cavity observation were recorded in muscovy duck by Igwebuik and Anagor (2013) [1]. The oropharynx was flat spoon shaped confined to the shape of the bill. The oropharyngeal cavity was guarded by upper and lower bill (Fig. 1). The teeth and lips are absent as it was replaced by a thorny lamellae arranged at the edges of bill, which act as sieve to retain food particles taken up along with water while foraging.

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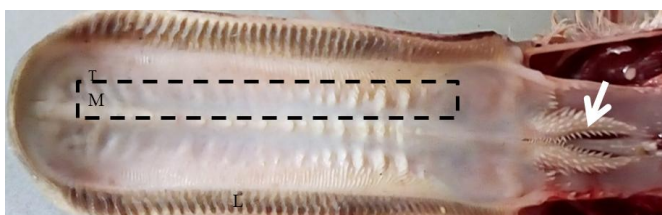


UB- Upper bill LB- Lower bill L-Lamellae

Fig 1: Bill of Mute swan Ventral view

The bill was broad and flat spoon shaped. The upper bill was formed by premaxilla and the lower bill formed by mandible. Both upper and lower bill had lamellae on lateral sides and covered by thick horny sheaths, but the upper bill of horny sheath extend beyond the borders of the lower bill when bill was in closed position. These finding are in agreement with Nickel *et al.*, (1997) [2]. In this study, bill was broad and flat spoon in shape, similar observation were made by Nickel *et al.*, (1997) [2] in duck and goose and in ostrich by Tadjalli *et al.*, (2008) [3]. The shape of the bill varied in different species, broad and shovel shaped in Muscovy duck (Igwebuikue and Anagor, 2013) [1] and curved, flat, hard with a sharp extremity in partridge (Rossi *et al.*, 2005) [4], The wide variation in the morphology of the avian beak was related to the adaptation for prehension, type of food, feeding habits, climate conditions and bills aids in the incomplete break-down of food (Iwasaki, 2002) [5].

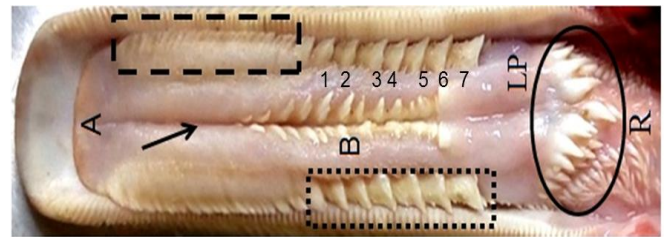
The roof of the bill consisted of hard palate cranially and pharynx caudally. The rostral part of the hard palate was divided into left and right halved by a prominent median longitudinal ridge with median swelling in front and a few papillae of varied in size seen throughout the median longitudinal ridge from rostral to caudal. The lateral border of the hard palate had a numerous orderly arranged row of notches lamella and transversal mucosal folds are extends obliquely from the lateral edges of the hard palate towards the median ridge. The most-caudal aspects of the hard palate formed by the point of origin of the choanal slit (Fig. 2). These observation were in agreement with that Nickel *et al.*, (1997) [2]. The choanal slit was elongated narrow anteriorly and broad caudally. Choanal slit was divided into right and left compartments by a median ridge bounded by numerous caudally directed papillae arranged in several rows on the choanal area and edges of the choanal slit. The choanal cleft was communicating between the oral and nasal cavities. Choanal slit was short in duck and goose (Nickel *et al.*, 1977) [2]. The papillae organizing around choanal cleft obstruct escaping of foods into cleft and the others facilitate the movement of nutrients into the esophagus. In the infundibular cleft, a transverse row of papillae was noticed and cleft was bounded by pharyngeal folds.



M- Median ridge T- Transverse mucosal folds L-Lamellae Arrow - Choanal slit Dashed line - papillae

Fig 2: Roof of the oropharynx of the Mute swan

The floor of the oropharynx was presented by a concave depression between the lower bill of rami. The tongue was strictly limited to the rostral part and laryngeal mound presented in caudal part of the floor of oropharynx. Tongue in swan was long and oval shaped. Apex was flat, spatula shape with its dorsal surface smooth and ventral surface triangular shape white plate of lingual nail. Body of the tongue was divided by a prominently equal halves by longitudinal median groove with a thick ridges on either side of the groove extended up to lingual prominence. Laryngeal mound located caudal to the tongue with oval laryngeal cleft is glottis opening of the behind the laryngeal mound two to three rows of caudally.



A- Apex of tongue, B- Body, R- Root, LP -Lingual prominence

Fig 3: Floor of the oropharynx of the swan

Dashed line- small conical papillae Dotted line- large conical papillae Black arrows- median groove Black arrowheads- lingual comb Asterisk bilateral swelling Round line- papillae on caudal border

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References

1. Igwebuikue UM, Anagor TA. The morphology of the oropharynx and tongue of the muscovy duck (*Cairina moschata*). *Veterinarski arhiv*. 2013; 83(6):685-693.
2. Nickel R, Schummer A, Seiferle E. *Anatomy of the Domestic Birds*. Verlag Paul Parey, Berlin. 1977; 5:202.
3. Tadjalli M, Mansouri SH, Poostpasand A. Gross anatomy of the oropharyngeal cavity in the ostrich (*Struthio camelus*). *Iranian J of Veterinary Res*. 2008; 9(4):316-323.
4. Rossi JR, Baraldi-Artoni SM, Oliveira D, Cruz CD, Franzo VS, Sagula A. Morphology of beak and tongue of partridge *Rhynchotus rufescens*. *Ciência Rural*. 2005; 35(5):1098-1102.
5. Iwasaki S. Evolution of the structure and function of the vertebrate tongue. *J of Anatomy*. 2002; 201:1-13.