

Submandibular Lingual Entrapment in Herbivorous Waterfowl – A discussion of its Aetiology

Danny Brown BVSC(Hons) BSc(Hons) MACVSc(Avian Health)

Glasshouse Mountains, Queensland, Australia, 4518.

geckodan@bigpond.com

Exotic DVM (Vol 6.6, pg 4) featured previously an article by Dr Bruce Levine on a unique method of surgical management of Submandibular Lingual entrapment in a goose. In that article, the inciting cause of the initial entrapment was hypothesised to be associated with a neurological deficit. This article will describe the aetiology of this relatively common condition when seen as an early stage lesion, rather than as an end stage lesion as Dr Levine had seen it.

As the Federal patron of our national Pheasant and Waterfowl Association, I am exposed to an above average number of waterfowl cases (from an Australian perspective). The aetiological precursor to tongue entrapment is seen regularly throughout Australia. This has been reported in Brown (1997) and Brown (2002) I have been involved in 14 cases from clientele plus numerous (>20) cases in my own waterfowl collection and those of friends.

The primary initiating cause of this problem is that of food entrapment lateral to the frenulum and within the intermandibular space. Under normal grazing conditions, waterfowl have the opportunity to select grazing material that best suits their dietary needs. In captive situations, they must make the best of what is available. Whilst waterfowl keepers do their best to provide optimum access to suitable forage, environmental conditions and local vegetation types may limit this. When these larger herbivorous waterfowl (geese, swans and shelducks) consume grass forage it is usually grasped by the anterior beak and pulled sideway across the lateral filtering lamellae which act much like a serrated knife. With soft, supple greenery such as short, well watered grass is grasped, it breaks away into short manageable pieces. When longer, dryer or fibrous grass species are grasped it often requires repeated sideways movements to break the grass or invariably it is pulled out from the base, leaving the waterfowl to swallow a large length of grass. It is this material that may become rolled up into a small ball which becomes lodged sublingually. Once a sublingual grass ball is in position it then subsequently allows other food materials such as mash or grains to become trapped and incorporated into a firmer, more resilient mass. In most cases, these masses are eventually dislodged with normal mastication or whilst dabbling in water. In occasional cases they may remain for extended periods resulting in the stretching of the intermandibular skin and the subsequent accommodation of progressively larger food masses. In extreme cases or cases of chronic food entrapment, the intermandibular skin

stretches to a size that allows the tongue to move ventrally and become trapped in such a way that it cannot become spontaneously repositioned by the bird.

If observed early in the progression of the syndrome, the food material is easily expressed with your finger and removed. If these birds are kept away from grazing for a period of 7-10 days then the pouch usually tightens back to its original shape. I have two Black Swans (*Cygnus atratus*) in my own collection that need to be caught up as often as fortnightly in periods of dry weather (resulting in poorer grass quality) to dislodge entrapped food material.

In more advanced cases, such as that reported by Dr Levine, the resultant pocket in the intermandibular skin becomes permanent. Surprisingly, most of these affected birds are still able to obtain enough nutrition to survive. One extreme case, (in a Black Swan, *Cygnus atratus*) that I have treated had an entrapped tongue for a period of 18 years before being presented to me (diagnosed as a young swan as having an inoperable throat neoplasia). This swan's sublingual pocket was not unlike that in the goose reported by Dr Levine. It was treated surgically by resecting the redundant sublingual intermandibular skin and placing an oesophagostomy feeding tube for 1 week to reduce downward pressure on the suture line. Ironically, this bird was lost to follow up as it was eaten by a fox 3 weeks after the feeding tube was removed. The utilisation of Dr Levine's surgical technique may have made the feeding tube unnecessary as downward pressure on the suture line would have been limited. Another case, in an Australian shelduck (*Tadorna tadornoides*), had resulted in the tongue being trapped under such tension that the tongue tip was forced dorsally and at the time of surgery the tongue had bent upwards into a hook. In addition to corrective surgery to the intermandibular space, the tongue tip was amputated as its deformed position prevented the mouth from being closed. This individual did well postoperatively.

I do not believe that there is any significant neurological damage causing or associated with this condition. It is my opinion that failure to reposition the tongue is determined by the depth of the sublingual pocket or by the degree of disuse atrophy in chronic cases. In the majority of cases, the ability of the bird to withdraw the tongue from the pocket and reposition it dorsally is inhibited by the physical ability to retract the tongue caudally enough to clear the posterior margin of the base of the mandible. The majority of the muscular development of the tongue revolves around dorsal and cranial tongue movement and caudal movement is a lesser priority.

In cases where the entrapment has been chronic, I believe that simple disuse atrophy may be involved. This is indicated by a degree of tongue weakness upon initial correction but improved function over time.

The presentation of this syndrome in its early stages is significantly more common in young birds particularly in cygnets between two and 4 months of age. Chronic cases are more common in older birds, either due to neglect of younger bird conditions or due to their ability to feed on coarser, more fibrous material (which is less likely to spontaneously clear itself from entrapment).

Further Reading

Brown, D, 1997 “A guide to Pheasants and Waterfowl – Their Care and Management”, ABK Publications, Tweed Heads, Australia.

Brown, D , 2002, in “ Proceedings of the Association of Avian Veterinarians – Australian Committee Annual Conference” ,”Biomedical and Surgical Aspects of Waterfowl Management”, Echuca, Australia.