

## Scientific Report

# Surgical correction of a congenital partial ankyloglossia in a calf

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## Summary

A 40-day-old male Holstein breed calf with a complaint of inability of moving the tongue in and out as well as difficulties with breastfeeding was referred to the veterinary clinic. A notch in the middle of the tongue tip was evident during oral examination. In addition, a thin tissue band between the ventral surface of the tongue and floor of the oral cavity was seen in the calf. A diagnosis of partial ventral ankyloglossia was made. Horizontal to vertical frenuloplasty was performed to correct the ankyloglossia. The day after the surgery, greater mobility of the tongue was evident. It was concluded that most of the clinical signs, including problems during eating and breastfeeding were due to limitation of tongue movements. Horizontal to vertical frenuloplasty may improve clinical full function of tongue movement.

**Key words:** Calf, Ankyloglossia, Frenuloplasty

## Introduction

Ankyloglossia, commonly known as tongue-tie, is a congenital oral anomaly characterized by an abnormally short lingual frenulum, which may result in a varying degree of decreased tongue tip mobility (Hernandez and Negro, 1999). Congenital anomalies of the tongue are rare in calves, with the most common being microglossia, bird tongue, lateral protrusion, ankyloglossia, and double tongue (Orhan *et al.*, 2001). Many of the conditions affecting the calf tongue require surgical correction. Due to its distinct features, special surgical techniques are used to correct many tongue disorders. Excellent results come from appropriate selection of cases and surgical techniques, even in those cases in which a large part of the tongue has to be removed (Warkany, 1975).

## Clinical report

A 40-day-old male Holstein breed calf

with a complaint of inability of moving the tongue in and out as well as difficulties with breastfeeding was referred to the veterinary clinic. At the time of the examination, the owner reported that drooling had been evident for approximately 20 days and that he had first noticed that the calf was unable to bellow. The owner was unaware of any other oral or systemic abnormalities. Physical examination revealed that the calf was unable to protrude the tongue properly. Throughout the examination, it drooled so much that the ground became wet where he was standing. The tip of the tongue had an abnormal shape and deviated ventrally when the calf attempted to protrude the tongue. A notch in the middle of the tongue tip was evident during oral examination. In addition, a thin tissue band between the ventral surface of the tongue and floor of the oral cavity was seen in the calf (Figs. 1 and 2). This tissue band was extended from the lingual frenulum to the gingiva of the mandibular incisors. The calf was unable to shape its tongue as a ladle while eating, and

some food had dropped from the mouth when it began to eat. No other lesion in the oral cavity was seen. The diagnosis was ankyloglossia.



**Fig. 1: Rostral view of the calf with ankyloglossia**



**Fig. 2: Lateral view of the calf with ankyloglossia**



**Fig. 3: Photograph of the calf with ankyloglossia after horizontal to vertical frenuloplasty**

### **Surgical technique**

Horizontal to vertical frenuloplasty was performed to correct the ankyloglossia. The calf received detomidine (100 µg/kg bw), midazolam (0.5 mg/kg bw), and ketamine (10 mg/kg bw) intravenously (iv), as a mixture of the drugs. The calf was then positioned in lateral recumbency. The mouth was held open with cloth bands to expose the tongue. The tongue was retracted dorsally. The first incision began at the tip of the tongue near its fusion to the gingiva and the frenulum was sharply divided in a horizontal fashion at the junction of the frenulum with the ventral surface of the tongue, creating a diamond shaped defect. The incision was continued posteriorly until the tongue was sufficiently released to allow protrusion of the tip well beyond the lower incisor. Care was taken to avoid injury to the lingual frenulum and the sublingual salivary gland ducts. Minor bleeding was controlled with electrocauterization. The incisions were closed in a vertical fashion, with simple interrupted sutures using 3-0 polyester (Fig. 3).

### **Postoperative care**

Postoperative care included flunixin meglumine (2 mg/kg, intravenously) to control the pain. Prophylactic antibiotics were not recommended because infection is distinctly uncommon in this circumstances.

### **Outcome**

The day after the surgery, greater mobility of the tongue was evident. Sutures were removed 10 days later. After discharging the animal, telephone follow ups were done at 6 and 12 months post surgery and the animal state was satisfactory.

### **Discussion**

Ankyloglossia is a general term that describes a group of congenital anomalies characterized by limitation of tongue movement (Messner and Lalakea, 2000). In humans, attachment of the tongue tip to the hard palate is referred to as superior ankyloglossia, whereas attachment of the tongue to the lingual frenulum is referred to as inferior ankyloglossia (Wright, 1995). It

has been reported that in humans the incidence of complete inferior ankyloglossia is lower than the incidence of partial inferior ankyloglossia. Partial inferior ankyloglossia has been reported in a goat, dog and a calf (Wolff, 1980; Mouli, 1993; Nair and Bandopadyay, 1994; Kiliç and Sarierler, 2004).

Ankyloglossia is rarely combined with other anomalies in human, such as cleft palate, blepharophimosis or microstoma (Warkany, 1975). The calf previously reported to have ankyloglossia also had a 3 cm cleft at the tip of the tongue. In a goat with partial ankyloglossia a thyroglossal cyst under the base of the tongue was observed (Nair and Bandopadyay, 1994). No abnormalities other than the ankyloglossia was observed in the calf described in this report.

In individuals with ankyloglossia, most of the clinical signs are due to limitation of tongue movements, including problems during eating and swallowing and difficulties maintaining good oral hygiene (Kiliç and Sarierler, 2004). In the present report, the abnormalities in the calf was drooling of saliva, a variety of problems including dysfunction of breastfeeding and bellow mechanism. Drooling of saliva may have been related to abnormalities of the swallowing mechanism and has been reported with partial and complete inferior ankyloglossia (Kiliç and Sarierler, 2004).

Some difficulties have been encountered during endotracheal intubation of children with ankyloglossia (Jones and Derick, 1998). Partial ankyloglossia was identified in a dog because of an inability to protrude the tongue sufficiently to allow passage of an endotracheal tube (Wolff, 1980). For this reason, the calf was not intubated and injectable drugs were used to maintain anesthesia in the calf described in this report.

In humans, frenotomy (simple release of the lingual frenulum) and frenuloplasty (release with plastic closure) are the most commonly used surgical procedures for treatment of ankyloglossia. The preferred

frenuloplasty techniques are the horizontal-to-vertical plasty and Z-plasty repair that may be used in human medicine (Lalakea and Messner, 2002). In veterinary medicine, V-shaped and horizontal to vertical technique were described (Wolff, 1980; Kiliç and Sarierler, 2004). In this report the horizontal-to-vertical plasty was used.

In conclusion, to the authors' knowledge, congenital partial ventral ankyloglossia has not been reported previously in Holstein calves and horizontal-to-vertical frenuloplasty may improve clinical full function of tongue movement.

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