Modified Weber-Fergusson approach for caudal maxillectomy and infraorbitotomy in dogs and cats

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Introduction
The Weber-Fergusson approach was first described by Dr. Weber in German and later modified by Dr. Fergusson in English. It is one of the most commonly used transfacial approaches to the midface for the resection of maxillary and infraorbital tumors in humans. However, the original Weber-Fergusson approach is not available for canine or feline radical maxillectomy because the morphology of human skull is totally different from that of small animal's skull. The objective of this clinical study was to describe the procedure of modified Weber-Fergusson approach for the surgical removal of caudal maxillary and infraorbital masses in dogs and cats.

Materials and Methods
Fourteen dogs and 3 cats with caudal maxillary and/or infraorbital masses were included in this study. All patients underwent the caudal maxillectomy and/or infraorbitotomy with the modified Weber-Fergusson approach (Figures 2 & 3).

Results (Table)
The modified Weber-Fergusson approach was feasible in all patients. Postoperative necrosis in the tip of buccolabial flap was observed in 1 cat with aspergillosis. Refractory oronasal fistula occurred in 2 dogs with SCC and 1 dog ameloblastic fibroma. In the patients with tumor, histopathological clean margin was obtained in 9/12 dogs and 2/2 cats.

Conclusion
The modified Weber-Fergusson approach is suggested to provide better exposure and outcomes for canine and feline caudal radical maxillectomy and infraorbitotomy.

Figure 1. Weber-Fergusson approach. The incision line is drawn through the vermillion border, along the philtrum of the lip, extending around the base of the nose and ala, along the facial nasal groove, and extends infraorbitally a little bit below the cilium to the external canthus. The maxillary and infraorbital area is clearly exposed for the tumor resection after the transfacial skin flap is peeled off.

Figure 2. CT findings of Case #9 with squamous cell carcinoma. The green area indicates the mass, and red line is skin incision line. Medical records of the patients were reviewed for signalment, histopathological diagnosis, the extent of exposure for the tumor resection, surgical outcome, specific complications related to the approach, and histopathological clean margin.

Figure 3. Caudal maxillectomy & infraorbitotomy with modified Weber-Fergusson approach in Case #9. (A) The rostral incision line was set up on 1 to 2 centimeters rostral for surgical margins. The incision line extended near the internal canthus, infraorbitally a little bit below the lower eyelid, and along the zygomatic arch. After the skin incision, the lip was cut on the rostral incision line, and the gingival mucosa was cut along the tumor. The buccolabial flap was created. (B) One centimeter block resection of zygomatic arch was performed to cut the infraorbital vessels and nerves via the window for the reduction of blood loss. Osteotomy was then performed. (C) The tumor infiltrating the infraorbital area was bluntly isolated with the prevention of eye damage. (D) The resection of tumor was completed. (E) The mucosal flap was created from the buccolabial flap. The branches of superior labial artery was preserved during the creation of the flap. (F) The flap was apposed to the hard palate mucosa in simple interrupted suture pattern. Knots of the sutures were mostly laid inside. (G) The skin was apposed from rostral side to zygomatic arch in simple interrupted suture pattern. (H) The gloss findings after the closure.

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