

Repair of a Traumatically Induced Oronasal Fistula in a Cat with a Rostral Tongue Flap

JOHN J. ROBERTSON, DVM and PAUL W. DEAN, DVM

Repair of an extensive oronasal fistula in a cat was accomplished by the use of a tongue flap. The dorsal surface of the tongue was debrided of mucosa and the edges were trimmed to produce a bleeding surface. Rotation of the tongue 180° upon its long axis allowed the debrided surface to be sutured in apposition with the palatine mucosa. The mouth was wired closed and the cat was fed blenderized canned cat food for 4 weeks through a pharyngostomy tube. The tongue pedicle was amputated in successive stages to stimulate collateral circulation. Complications included a partial dehiscence along one edge of the suture line, which was corrected by resuturing.

A SPAYED FEMALE domestic short hair cat weighing 2.5 kg was presented for reconstruction of a defect involving the hard palate. Eight months previously, the owner acquired the cat as a stray, at which time the defect was present.

Physical examination revealed a thin cat with a dull hair coat. The temperature, pulse, and respiration were normal. A small amount of exudate was noted at the left naris. A 1.5 cm in diameter circular defect of the hard palate was seen at the level of the second and third premolar teeth, centered slightly to the left of the midline. The defect involved approximately 30% of the area of the hard palate. The remaining palatine mucosa was smooth and glistening, and appeared grossly to be scar tissue (Fig. 1). Hair and necrotic material packed the opening of the defect, which extended into the nasal cavity. The buccal reflection and lip on the affected side were contracted with scar tissue. Various methods of repair of the oronasal fistula were discussed with the owner. A guarded prognosis for successful surgical repair was given due to the size and location of the lesion. The owner elected surgical reconstruction of the hard palate to be attempted using a tongue flap.

Routine preanesthetic laboratory work was unremarkable and no pulmonary lesions were seen on thoracic radiographs. Radiographs of the skull and a nasal series indicated a 1.5 cm diameter bony defect in-

volving the left palatine process of the maxilla. Increased opacity of the left nasal cavity was present. No bony proliferation was noted.

The cat was premedicated with atropine sulfate (0.15 mg) and meperidine HCl (5.0 mg) intramuscularly. Antibiotics (amoxicillin, 100 mg orally twice daily) were given 24 hours before surgery. Anesthesia was induced with ketamine HCl (20 mg) intravenously. The cat was placed in dorsal recumbency and the ventral cervical area was prepared for aseptic surgery. A pediatric endotracheal tube was inserted between tracheal rings 3 and 4 after exposure of the trachea, and the cat was subsequently maintained on 1% halothane/oxygen gas anesthesia. A pharyngostomy tube was inserted through an incision in the left piriform fossa. The tube extended distally in the esophagus to the level of the mid thorax. The tube was secured to the skin with a tape cuff and two nonabsorbable sutures.

Before oral surgery, the oropharynx was packed with gauze and the debris was removed from the fistula and nasal cavity. The nasal cavity was flushed with a copious amount of diluted povidone-iodine solution. A biopsy specimen was taken from the nasal turbinates and submitted for histopathologic evaluation. The cat was placed in dorsal recumbency, the mouth was tied open, and the oral cavity and fistula were swabbed with 10% povidone-iodine solution.

From the Veterinary Teaching Hospital, University of Missouri, Columbia, Missouri.

Reprint requests: Dr. John J. Robertson, Veterinary Teaching Hospital, University of Missouri, 1600 E. Rollins Road, Columbia, MO 65211.

After sharp resection of the margins of the defect, a periosteal elevator was used to elevate the oral mucosa subperiosteally for a distance of 3 mm circumferentially around the defect. The edges of the rostral one third of the tongue were trimmed to produce a bleeding surface and a strip approximately 2 mm wide along the periphery of the dorsal surface was debrided. The tongue was rotated 180° along its long axis and the tip was sutured beneath the edge of the elevated mucosa of the hard palate using horizontal mattress sutures of 4-0 polydioxanone.* This resulted in the debrided dorsal surface of the tongue coming into direct contact with the elevated palatine mucosa. The mattress suture pattern was continued for approximately 270° around the defect (Fig. 2).

A 0.045 Kirschner wire† was positioned just rostral to the root of the canine tooth and used to drill a hole from lateral to midline to lateral in both the maxilla and through the body of each mandible. The gauze in the oropharynx was removed and the jaws were wired shut by passing a single strand of 20 gauge orthopedic wire through the predrilled holes in a mattress pattern. A gap of 3 mm was left between the incisor teeth. Recovery from anesthesia was uncomplicated.

Two weeks after the first surgery, the cat was reanesthetized. There was partial healing of the tongue to the palate with dehiscence along the left margin of the graft. The edge of the tongue was debrided and resutured as previously described. The right one half of the tongue pedicle was severed at the junction of the distal one third of the tongue with the proximal two thirds and the right lingual artery ligated. The left side of the pedicle containing the left lingual artery was left intact and the jaws were wired shut as before. The mouth was reopened 2 weeks later and the left pedicle attachment was severed. The remaining small defect at the caudal aspect of the fistula was closed with mattress sutures.

Results of the microscopic examination of the nasal conchal biopsy showed normal and necrotic bone with a polymorphonuclear cell invasion characteristic of a pure inflammatory response. No neoplastic cells were seen. The cat was maintained via the pharyngostomy tube for a total of 4 weeks on a commercial diet blenderized to a gruel with water. An optimum weight of 3.5 kg was estimated and the caloric requirements calculated at 250 calories per day.¹ The caloric requirement was met by feeding the cat four times daily through the pharyngostomy tube. Four weeks postop-



Fig. 1. A 1.5 cm defect was present in the hard palate at the level of the second and third premolars and slightly to the left of midline. Notice the smooth "scarred" appearance of the palatine mucosa.

eratively, the pharyngostomy tube was removed and the incision was left to heal as an open wound. The cat was fed free choice canned cat food after removal of the oral wires, and gained 1 kg by the eighth postoperative week. The nasal exudate ceased 1 week after the first surgery and the cat exhibited no interference with either drinking or grooming due to the shortened tongue. One year after surgery, the cat was doing well and the palatine defect remained closed.

Discussion

Defects of the palatine process are repaired by various rotating pedicle flaps, mucoperiosteal flaps, or

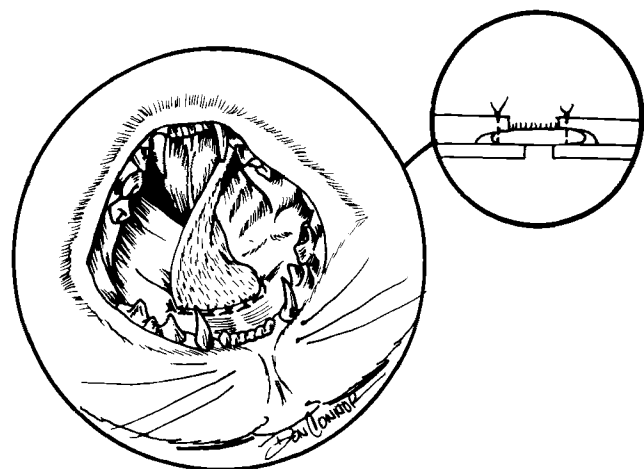


Fig. 2. The tongue was rotated 180° and the debrided dorsal surface sutured beneath the elevated palatine mucosa (see insert).

* PDS, Pitman-Moore, Washington Crossing, NJ 08560.

† Kirschner Medical Corporation, P.O. Box 218, Timonium, MD 21093.

mucoperiosteal slip procedures.^{2,3} The buccal mucosa of the lip of this cat consisted of contracted scar tissue, and a buccal flap did not seem practical even if several teeth were removed. The thin and sclerotic appearance of the rostral palatine mucosa reduced the chances of a successful outcome if mucoperiosteal techniques were used. Prosthetic appliances have been described in the human literature,⁴ but are rarely utilized in veterinary medicine because the devices are expensive, easily lost, and must be routinely cleaned to prevent halitosis and accumulation of debris. The rostral tongue flap was used in this case to provide ample soft tissue coverage, and abundant blood supply to increase the chance of a successful outcome.⁵ Debridement of the dorsal surface of the rostral edge of the tongue was performed because of difficulty in stripping the thin mucosa along the ventral surface. This necessitated the 180° rotation of the tongue for apposition of the two debrided surfaces. Careful dissection of the ventral surface would eliminate the need for rotation. The periosteum was included with the elevated palatine mucosa to add strength to this tissue.⁶ The debrided tip of the tongue was inserted beneath the palatine mucosa to oppose the bleeding surfaces. The delayed healing of the left margin of the graft after the first surgery was probably due to move-

ment at the graft bed interface.⁶ The pedicle amputated in two stages to stimulate collateral circulation to the grafted tissue. Use of the tongue for grooming and drinking does not seem to pose a problem when only the rostral one third of the tongue is amputated.[‡]

‡ Withrow SJ, Colorado State University, Personal communication.

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