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Postoperative Flap Dehiscence in Dogs and Cats Undergoing Oral Surgery: A Case Series

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Abstract

Objective: To describe the signalment, comorbidities, surgical characteristics, and outcome of dogs and cats with postoperative oral flap dehiscence after oral surgery at a veterinary referral center.

Animals: Medical records of dogs and cats undergoing oral surgery over a 37-month period (January 2022 to January 2025) were reviewed. Of 630 animals (350 dogs, 280 cats) undergoing oral surgery, 13 (8 dogs, 5 cats) with confirmed postoperative flap dehiscence were included.

Clinical Presentation: Affected dogs had a median age of 3.0 years (range, 0.6–10) and weighed a median of 12.5 kg (range, 6.5–41.9); affected cats had a median age of 11 years (range, 4.9–14.3) and weighed a median of 4.9 kg (range, 3.6–7.3). Most procedures were extractions, and 8 of 13 dehiscence involved a canine tooth site. Dehiscence was identified at a postoperative recheck at a median of 7 days (range, 5–20) and most often involved a flap margin or corner.

Results: The cause of dehiscence was not identified in 11 of 13 animals; comorbidities, including chronic kidney disease, entropion, and allergic dermatitis, were present in 8 of 13. Revision surgery was required in 3 of 8 dogs (37.5%) but none of the cats. All 13 animals healed; 3 dogs needed revision surgery, one needing two.

Clinical Relevance: Postoperative oral flap dehiscence was uncommon in this population but occurred without an identifiable cause in most cases. These descriptive findings can help general practitioners recognize dehiscence, anticipate that most cases heal without further surgery, and understand when revision surgery may be needed, particularly in dogs.

Keywords: *complications, extraction, flap dehiscence, post-operative*

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1. Introduction

Oral flap dehiscence, a term describing postoperative separation of a surgical mucogingival flap from adjacent tissues, is a recognized complication of oral surgery in dogs and cats.[1,2,3] It is usually attributed to excessive tension on the closure or insufficient tissue to cover the defect, particularly following dental extractions, trauma surgery, or tumor excision.[2,4] This complication compromises healing by primary intention and often results in healing by secondary intention when surgical revision is not pursued, a less predictable and more prolonged process. Affected animals may show pain, inappetence, behavioral abnormalities, and self-harm, leading to escalating discomfort, oral dysfunction, and slow wound healing, commonly requiring more frequent clinical attention.[5] In extreme situations, dehiscence may result in failure of the treatment, which necessitates additional surgeries, repeated anesthesia, prolonged recovery period, and increased financial costs.

Dehiscence may be associated with patient-related factors, including underlying systemic disease. It may also be influenced by potentially modifiable surgical or planning-related factors. Mucogingival dehiscence has been described after extraction of maxillary canine teeth and after attempted palatal defect repairs.[2,6,7] Dehiscence in these cases may result in the formation of a new oronasal fistula or involve a pre-existing fistula, potentially complicating healing and requiring careful postoperative management. Palatal repair is associated with significant dehiscence, with failure rates reported as high as 50%, predominantly at the hard–soft palate junction.[2,6]

Wound healing is influenced by systemic factors, and underlying medical conditions can predispose cats and dogs to flap dehiscence after oral surgery. Immunosuppression, whether drug-induced, resulting from viral infections, or endocrine conditions such as hyperadrenocorticism and diabetes mellitus (DM), can adversely affect wound healing.[8,9] Corticosteroids, whether therapeutically induced or endogenously produced in disease states such as Cushing's disease, interfere with wound healing by reducing capillary invasion, inhibiting fibroblast proliferation, and retarding epithelialization.[9,10] Chronic hypercortisolemia and long-term glucocorticoid therapy impair wound healing and increase skin fragility, and may therefore be relevant to flap healing in veterinary patients.[8,11]

Radiation or chemotherapy given after surgery may hinder the healing of wounds.[12–14] Though veterinary studies on oral flaps post-radiation are scarce, it is prudent to consider prior or pending radiotherapy as a risk for oral flap dehiscence.[12,14]

Metabolic disorders, such as DM, can negatively impact wound healing by causing vascular dysfunction and impaired immune responses. Nutritional status also affects the ability to heal, because sufficient protein levels are required to retain tensile strength of the wound. A serum albumin concentration of less than 2.0 g/dL may result in slow wound healing and poor tissue strength. Flap dehiscence risk is enhanced in animals with hypoalbuminemia due to malnutrition, protein-losing illness, chronic illness or cancer. Another factor is old age because of immune system weakness and loss of cell regenerative capacity.[15] Success in oral surgical procedures, especially in preventing flap dehiscence, has been related mostly to careful technique and strict adherence to established surgical principles.[4,16]

One of the most significant and common causes of oral flap dehiscence is excessive tension at the surgical site. The tension can be either intrinsic, where the sutures used are too tight and lead to the strangulation of the tissues, or extrinsic where the available tissue is too little to cover the defect, thereby causing the flap margins to be pulled excessively. In both cases, blood circulation is impaired, and the mechanical strength of flap is depleted, which predisposes the risk of wound breakdown. To minimize the risk, surgical techniques include releasing incisions, larger flap designs, and tension-relieving sutures. Flap mobilization should be confirmed intraoperatively by periosteal release or buccal/labial advancement.[2,4,17,18] Tissue viability and handling are also critical in dental procedures. Flaps that are excessively thin or traumatized are prone to necrosis, and inappropriate handling can predispose to dehiscence.[4]

Several factors have been documented as contributors to mucosal flap dehiscence, including excessive tissue tension, inadequate bony support at the suture line, infection, compromised vascular supply, particularly in random-pattern flaps, limited tissue availability for flap development, suboptimal flap design, and poor surgical technique.[2,4,17,19] Thorough debridement of infected or necrotic tissue is essential before closure, as oronasal fistulae and inflammation markedly increase the risk of flap failure.

Suturing methods and material used play a vital role in maintaining flap integrity and preventing dehiscence in the oral cavity. Knot exposure can cause localized trauma, stimulate an inflammatory response, and promote plaque accumulation, all of which can trigger patient behaviors, increasing the risk of wound dehiscence.[20] The choice of suture material is crucial in oral surgery, with absorbable monofilament sutures such as poliglecaprone 25 generally preferred because they are less irritating to the oral mucosa and less prone to bacterial colonization than braided multifilament material.[4,7] In a prospective trial in cats, simple interrupted sutures with and without a buried knot were compared at extraction sites; the buried knot was associated with less inflammation, but dehiscence rates did not differ.[21] This suggests that though suture technique is crucial, tension and tissue condition are also important.

The location and anatomy of the surgical site strongly influence the risk of dehiscence. Closure in areas of thin, poorly vascularized mucosa is inherently less robust than in regions of thicker well-vascularized buccal mucosa. Inadequate bony support under the suture line is a known cause of failure.[2,4,6,17] In a multicenter retrospective study of 459 dogs undergoing mandibulectomy or maxillectomy, mostly for oral tumors, maxillectomy increased the odds of incisional dehiscence or oral fistula formation compared with mandibulectomy (OR 1.8; 95% CI 1.1 to 3.1).[22]

Dental extractions, particularly of maxillary canine teeth, also carry increased risk of oronasal fistula formation because of thin overlying mucosa and limited soft tissue available for tension-free closure. In contrast, mandibular alveolar injuries are typically smaller and better supported by adjacent tissues, which allows for more reliable healing.[3,7] Breed and species differences may also influence the risk of flap failure. Cats in general have thinner mucosa and are more sensitive to chronic oral inflammation, which can delay healing after surgery.[7,23] Clinicians also report that dogs that habitually chew vigorously are more likely to disrupt surgical closures, although this association remains anecdotal rather than well quantified in literature.

In clinical practice, post-operative care is a significant concern for preventing dehiscence of the flap in dogs and cats. Self-trauma because of compulsive behaviors such as licking, pawing, or chewing can compromise wound integrity. Thus, activity is restricted, and protective devices such as an Elizabethan collar or a basket muzzle are commonly utilized to protect the surgical site from additional injury or impairment of healing because of chewing or poking with paws. Due to the high bacterial load of the oral cavity, successful antimicrobial treatment and cleansing, including chlorhexidine mouth rinses, may be beneficial to healing.[7,24,25] Regular follow-up examination allows for early identification of possible complications such as suture failure or infection, with corresponding long-term surgical success.[26]

Dental extraction is among the most common oral surgical procedures in dogs and cats,[16] yet published information on dehiscence at extraction sites is largely limited to reviews and textbook chapters,[3,4,7] prospective studies of suture pattern and knot placement,[21,27] and a retrospective evaluation of secondary healing after maxillary first molar extraction.[28] Despite the clinical significance of flap dehiscence to our knowledge no published case series describes the patients, surgical details, and outcomes of dogs and cats with flap dehiscence after extraction-type oral surgery. Because the complication is uncommon, any one practice sees few cases, so detailed descriptions of affected animals are useful to clinicians. The objective of this retrospective case series was to describe the signalment, comorbidities, surgical details, clinical course, and outcome of 13 animals (8 dogs and 5 cats) that developed postoperative oral flap dehiscence following dental extractions or other oral surgical procedures at a veterinary referral center over a 3-year period. The findings are intended to help general practitioners identify, understand, and manage this complication in their own practices.

2. Methods

2.1. Case Selection and Inclusion Criteria

This retrospective case series was conducted at a single veterinary referral center over 37 months (January 2022 to January 2025). Medical records were reviewed to identify dogs and cats that developed postoperative oral flap dehiscence following oral surgical procedures. Dehiscence was diagnosed by clinical examination at a postoperative recheck. The general oral-surgery caseload (630 animals: 350 dogs, 280 cats) included surgical extractions, surgical coronectomies, benign oral tumor removals and dentigerous cysts; malignant oral tumors were not included. Inclusion criteria were: (1) dogs or cats that underwent oral surgery, including tooth extractions, coronectomies, odontoma/benign oral tumor removal, or oronasal fistula repair; and (2) documented flap dehiscence

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confirmed at postoperative follow-up. All animals were scheduled for two postoperative rechecks at the referring veterinarian. The first was performed 5–14 days after surgery and the second 14–20 days after surgery, depending on owner availability. The referring veterinarian documented each recheck with photographs and followed the referral center's postoperative instructions. Complete mucosal healing was defined as intact, closed mucosa without a suture-line gap or exposed bone. Healing was assessed at 14 days. If dehiscence was first identified at the second recheck, healing was confirmed at the final recheck. Animals requiring revision surgery were re-operated at the referral center and followed until the mucosa healed.

2.2. Surgical Procedures and Postoperative Medications

Surgical extractions, coronectomies, odontoma removal and oronasal fistula repair were performed as described previously.[29–31] All procedures were performed by residents under supervision or by a specialist. Sutures were absorbable monofilament, simple interrupted: poliglecaprone 25 (Monocryl, Ethicon) and a glycolide–caprolactone polymer (Monofast, KRUUSE). In all 13 animals the flap was a pedicle flap with vertical releasing incisions. Antibiotics after dehiscence were prescribed by the referring veterinarians at their discretion, generally when purulent discharge or exposed necrotic bone was present; dehiscence without infection was managed with topical antiseptic care alone.

Dogs received meloxicam (Loxicom 1.5 mg/mL oral suspension; Norbrook Laboratories, Newry, Northern Ireland), acetaminophen (Paracetamol 500 mg tablets; Zentiva Pharma Ltd, Prague, Czech Republic), amoxicillin-clavulanic acid (Synulox 500 mg palatable tablets; Zoetis UK Ltd, Leatherhead, Surrey, UK) and clindamycin (Antirobe 150 mg capsules; Zoetis UK Ltd). Cats received meloxicam (Loxicom 0.5 mg/mL oral suspension; Norbrook), amoxicillin-clavulanic acid (Synulox 50 mg tablets; Zoetis UK), clindamycin (Antirobe 25 mg capsules; Zoetis UK) and buprenorphine (0.8 mg/mL transmucosal solution; compounded veterinary preparation, UK). The oral rinse was chlorhexidine gluconate (Hexarinse; Virbac).

2.3. Data Collection

For each of the confirmed cases of surgical flap dehiscence, the following variables were collected:

- Patient-related data: age, breed, sex, body weight, and presence of comorbidities.
- Surgical variables: procedure type and indication, flap design and release technique, suture material and size, suture pattern used, and the clinician level (resident or specialist).
- Postoperative variables: analgesic regimen, use of oral rinses, antibiotic administration (if any), day of the recheck at which dehiscence was identified, evidence of self-trauma or mechanical disruption, need for revision surgery, and final healing status, plus site and assumed cause of dehiscence and antibiotics given after dehiscence.

2.4. Statistical Analysis

Descriptive statistics were applied. Categorical variables such as sex, clinician level, and antibiotic use were summarized as frequencies and percentages. Continuous variables including age, weight, and days to recheck are reported as median (range). The present work was a retrospective review of client-owned animals; owner consent for publication of case details was obtained.

3. Results

In a population of 630 veterinary patients (350 dogs and 280 cats), dental and oral procedures were predominantly tooth extractions and coronectomies (partial removal of the tooth crown while preserving the root). Specifically, 311 dogs (88.9%) underwent either surgical extractions (255) or extraction combined with coronectomy (56); none had coronectomy alone, while the remaining 39 dogs (11.1%) were treated for benign oral tumors or dentigerous cysts. In the feline cohort, 279 cats (99.6%) received extractions (192), coronectomy alone (20) or both (67), with only one cat (0.4%) requiring treatment for dentigerous cyst.

Notably, coronectomy-only procedures were not performed in dogs (56 dogs had coronectomy together with extraction), while 20 cats received coronectomies without complete extraction of the tooth.

Of 350 dogs, 8 (2.3%) and, of 280 cats, 5 (1.8%) developed oral flap dehiscence (13/630, 2.1% overall). Median age was 3.0 years (range 0.6 to 10; IQR [1-7.8]) in dogs and 11 years (4.9 to 14.3; IQR [5.0-14.1) in cats; median weight was 12.5 kg (6.5 to 41.9; IQR [6.8-25.8]) and 4.9 kg (3.6 to 7.3; IQR [4.2-6.4]), respectively. Dogs were 4 spayed females, 1 intact female and 3 intact males; cats were 4 neutered males and 1 spayed female.

Among the canine patients (n = 8), comorbidities were identified in 5 dogs, with specific conditions including allergic dermatitis (1 dog), otitis (2 dogs; one bilateral, treated with glucocorticoids until 7 days before surgery), bilateral entropion (1 dog), and a history of mandibular osteosarcoma previously treated with radiotherapy (1 dog). The remaining 3 dogs had no documented comorbidities. In the feline cohort (n = 5), comorbidities were noted in 3 cats, comprising chronic kidney disease IRIS stage III (1 cat), ventricular arrhythmia with concurrent allergic dermatitis (1 cat), and obesity with a body condition score of 8/9 (1 cat). Two cats had no reported comorbidities.

Clinician level was resident in 11 (84.6%) and specialist in 2 (15.4%) procedures. Among the canine cases (n=8), the most common procedures were dental extractions, including the left maxillary canine (204) and the left mandibular canine (304), right mandibular canine (404) and right mandibular premolars (407, 408), accounting for 50% (4 dogs) of the cases. Other interventions were the extraction of a deeply impacted left maxillary fourth premolar (208) (12.5%), the removal of an odontoma of the left mandibular molars 309 and 310 (12.5%), and the removal of an unerupted right maxillary incisor 102 (12.5%).

One dog (12.5%) underwent surgical repair of an oronasal fistula in the left maxilla. In the feline cohort (n=5), the majority of procedures involved extraction of tooth 204 (left maxillary canine), observed in 60.0% of cases. Additional treatments included removal of a root remnant of 204 (20.0%) and a coronectomy of tooth 404 (20.0%). For intraoral soft-tissue closure, Monofast and Monocryl (glycolide–caprolactone copolymers) sutures were used in 5 and 8 animals, respectively. A 4/0 gauge was applied for dogs (5/0 added in 2 dogs), while a 5/0 gauge was used for felines, with sutures placed in a simple interrupted pattern. Postoperative pain management was as follows: dogs, acetaminophen (8/8) with meloxicam (7/8); cats, buprenorphine (4/5) and/or meloxicam (4/5). Antibiotic therapy was limited, with only one canine patient receiving systemic antibiotics; chlorhexidine rinse was used in 5 dogs and no cats.

Dehiscence was documented at a median of 7 days (range 5 to 20; IQR [5.5-10.0]) after surgery. It involved a flap margin or corner in 8 animals, the central area in 2, and was not described

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Table 1. Individual patient-level data for dogs and cats with postoperative flap dehiscence.

Patient	Type of procedure	Cause of procedure	Suture material	Oral post-op medicines	Post-op check	Revision surgery	Post dehiscence antibiotics	Cause of dehiscence	Location of dehiscence	Healed
Case 1	Repair oro-nasal fistula left maxilla	Chronic oro-nasal fistula left maxilla	Monofast 4/0	meloxicam, acetaminophen, amoxicillin and clavulanic acid	19 days	Yes	No	unknown	Central area	Yes
Case 2	Extraction 304	Periodontal disease	Monocryl 4/0	meloxicam, acetaminophen	10 days	No	Yes. Amoxicillin–clavulanic acid 15mg/kg BID 7 days	unknown	Not described	Yes
Case 3	Extraction 404	Complicated crown fracture	Monocryl 4/0	meloxicam, acetaminophen*	5 days	No	Yes. Amoxicillin–clavulanic acid 15mg/kg BID 7 days	unknown	Rostral margin	Yes
Case 4	Extraction deeply impacted 208	Impacted 208	Monocryl 4/0	meloxicam, acetaminophen*	5 days	No	Yes. Amoxicillin–clavulanic acid 12.5mg/kg BID 14 days	unknown	Distal margin 207	Yes
Case 5	odontoma 309, 310	Odontoma	Monocryl 4/0 and 5/0	meloxicam, acetaminophen*	20 days	No	No	unknown	Mesial margin	Yes
Case 6	Extraction 407, 408	TR following radiotherapy	Monocryl 4/0	meloxicam, acetaminophen	8 days	Yes (2 surgeries)	Yes. Amoxicillin–clavulanic acid 15mg/kg BID 7 days	adverse effects of his previous radiotherapy, necrotic bone. Osteosarcoma	Not described	Yes, after second revision
Case 7	Extraction 204	Attrition	Monofast 4/0	meloxicam, acetaminophen*	6 days	Yes	No	chewing on something hard. Bone fragment in the flap	Rostral and caudal margin	Yes
Case 8	Extraction unerupted 102	Unerupted	Monofast 4/0 and 5/0	acetaminophen*	5 days	No	Yes. Clindamycin 11 mg/kg SID	unknown	Mesial and distal margin	Yes
Feline 1	Extraction 204	Complicated crown fracture 204	Monofast 5/0	buprenorphine	6 days	No	Yes, amoxicillin–clavulanic acid 13 mg/kg BID 10 days	unknown	Not described	Yes
Feline 2	Extraction root remnant 204	Draining sinus, root remnant 204	Monofast 5/0	buprenorphine, meloxicam	10 days	No	No	unknown	Distal margin	Yes
Feline 3	Coronectomy 404	Tooth resorption type 2	Monocryl 5/0	buprenorphine, meloxicam	7 days	No	Yes. clindamycin 11mg/kg SID 7 days	unknown	Central area	Yes
Feline 4	Extraction 204	Complicated crown fracture	Monocryl 5/0	buprenorphine, meloxicam	7 days	No	Yes. amoxicillin–clavulanic acid 12.5mg/kg BID 14 days	unknown	Mesio-ventral corner	Yes
Feline 5	Extraction 204	Complicated crown fracture	Monocryl 5/0	meloxicam	9 days	No	No	unknown	Rostroventral corner	Yes

All closures were simple interrupted. All flaps were pedicle flaps with vertical releasing incisions. Oral post-operative medications: Dogs: meloxicam 0.1 mg/kg every 24 hours, amoxicillin-clavulanic acid 15 mg/kg every 12 hours, acetaminophen 10 mg/kg every 8 hours. Cats: buprenorphine 0.02 mg/kg every 8 hours, meloxicam 0.05 mg/kg every 24 hours. (*) in Oral post-operative medicines: chlorhexidine gluconate 0.12% oral rinse every 12 hours. TR = tooth resorption; BID = twice daily; SID = once daily. Teeth are identified by the modified Triadan system.

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in 3. The cause was unknown in 11 (84.6%); in 1 dog it was necrotic bone after radiotherapy with osteosarcoma and in 1 dog chewing on a hard object with a bone fragment in the flap. After dehiscence, antimicrobials were given to 5 dogs (amoxicillin-clavulanic acid 4, clindamycin 1) and 3 cats (amoxicillin-clavulanic acid 2, clindamycin 1), generally when purulent discharge or exposed necrotic bone was present. The other 5 animals (3 dogs, 2 cats) were managed with topical antiseptic care alone. Revision surgery was required in 3 of 8 dogs (37.5%) that developed wound dehiscence. All 13 animals healed (8/8 dogs, 5/5 cats). Case 6 did not heal after the first revision surgery and needed a second revision about 2 months after the dehiscence, with more aggressive alveoloplasty, further alveolar bone removal and a tension-free mucoperiosteal flap with new margins. It then healed. All five cats healed without needing additional surgical intervention. Comprehensive patient-level data are detailed in Table 1.

4. Discussion

Oral flap dehiscence was uncommon in this referral population (13 of 630 animals, 2.1%), and in the 13 affected animals (8 dogs, 5 cats) reoperation was required in 3 of 8 dogs (37.5%), whereas none of the cats required additional surgery. Dehiscence was documented at a median of 7 days after surgery and had no identified cause in 11 of 13 animals. In the present study, all closures in both dogs and cats were performed using a simple interrupted suture pattern, so its effect could not be assessed. Although the buried-knot technique has been reported to reduce local inflammation at extraction sites in cats, with dehiscence rates similar to exposed knots,[21] knot type was not recorded in the present

cases. Suture pattern therefore cannot be linked to dehiscence in this series. Recent prospective data on dogs suggest the same. Pegg and colleagues compared simple interrupted and simple continuous patterns in Greyhounds and found no significant difference in dehiscence rates, though the continuous pattern was significantly faster to apply.[27] They also reported that mandibular canine extraction sites were the most prone to major dehiscence regardless of pattern, highlighting the importance of anatomic and mechanical stress points. Factors that may contribute to such sites include masticatory forces, movement of the tongue, thin or curved mucosa, and, at maxillary sites, proximity to the nasal cavity.[7] In that study, sites closed with a simple interrupted pattern accumulated more debris and showed greater inflammation over time compared to continuous closures.[27] These reports suggest that flap design, tension, and site-specific mechanical factors may play a more critical role in oral flap healing than the choice of suture pattern alone. In the present series, 8 of 13 dehiscences involved a canine tooth site (5 maxillary, 3 mandibular), but the number of canine extractions in the 630-animal caseload was not recorded, so this cannot be read as an increased risk. Canine teeth are not necessarily the most frequently extracted teeth. In a large feline series, for example, periodontitis was least often observed at the canine teeth among extracted teeth.[32] However, canine extraction often requires a surgical approach with flap closure. Maxillary canines were also the teeth most commonly affected in dogs with oronasal or oroantral fistulas secondary to periodontal disease.[33] The high absolute count in this series may therefore reflect procedural frequency, site-specific risk, or both. The number of canine extractions in the caseload was not recorded. Site-specific dehiscence rates cannot be calculated or compared between canine and non-canine sites, maxillary and mandibular sites, or dogs and cats. The data describe where dehiscence occurred, but they do not allow comparative risk to be attributed to any site. Excessive tension, whether from overly tight sutures or inadequate tissue release, is thought to predispose to ischemia, suture-line necrosis, and mechanical failure. Taney and colleagues identified high suture tension and limited tissue availability as leading risk factors for hard palate mucoperiosteal flap failure.[2] Tension was not measured in the present cases, and the cause of dehiscence was unknown in 11 of 13, so this mechanism remains a hypothesis here. Dehiscence involved a flap margin or corner in 8 of the 10 animals in which the location was described, which fits with, but does not prove, a role for local tension. All 13 flaps were pedicle flaps with vertical releasing incisions. This design provides exposure and tension relief, but the flap depends on its base for blood supply. Poor flap design, reduced perfusion, and excessive tension are recognized causes of flap dehiscence.[2] Releasing incisions made to increase mobility may reduce perfusion if the flap base is narrow.[3,7] The corners where the releasing incisions meet the flap margin are also areas of high tension on the suture line. Periosteal release and broad-based, slightly divergent releasing incisions are recommended to reduce tension and preserve blood supply.[3,7,30] Because all affected animals had the same flap design, these mechanisms remain hypothetical. The present data cannot show that flap design contributed to dehiscence.

Comorbidities were recorded in 8 of 13 animals (5 dogs, 3 cats). One cat had chronic kidney disease, and one dog had received radiotherapy, which may theoretically affect healing; however, our dataset cannot confirm direct causation. One dog with otitis had received glucocorticoids until 7 days before surgery, which can impair mucosal healing,[9,10] whereas allergic dermatitis, entropion, obesity, and arrhythmia have no clearly established link to oral flap healing. Dehiscence occurred despite postoperative analgesia in all animals and chlorhexidine rinses in 5 dogs, although this design cannot show whether these measures lowered the risk. The dog with necrotic bone after radiotherapy (osteosarcoma) required two revision surgeries before healing, consistent with reports that prior irradiation impairs flap healing[12], and with preoperative radiation or chemotherapy increasing the odds of dehiscence in dogs undergoing mandibulectomy or maxillectomy.[22] In one dog, dehiscence was attributed to chewing on a hard object, with a bone fragment in the flap. After dehiscence, the referring veterinarians prescribed antibiotics when purulent discharge or exposed necrotic bone was present, and managed dehiscence without infection with topical antiseptic care alone. This approach is consistent with the responsible use of antimicrobials, which favors reserving systemic antibiotics for clinical infection.[24,34] Indications were not uniformly recorded, and drug and duration varied. No conclusion can therefore be drawn about the effect of antibiotics on healing. The following points come mainly from published reports rather than from these cases. Closures should be as tension-free as possible. This can be accomplished by periosteal scoring, full thickness releasing incisions, or advancement flaps as necessary.[4] Careful wound bed preparation, including debridement of necrotic tissue and irrigation of contaminated sockets, is essential to reduce bacterial load and foster healing.[2] Rigorous postoperative care, including soft or blended diets for 7–10 days, multimodal analgesia, and, when indicated, chlorhexidine mouth rinses, or Elizabethan collars, can minimize self-trauma and optimize healing.[26] Because dehiscence was documented at a median of 7 days (range, 5–20) after surgery, a recheck within the first 1 to 2 weeks would allow early detection.

This study has some limitations. Being retrospective, it cannot establish causation, and its small sample size (13 cases) limits generalizability. Additionally, the cases were sampled based on the records in one referral center, which could create referral and documentation biases. Tension was not measured, knot placement and number of throws were not recorded, the location of dehiscence was not described in 3 animals, and recheck timing varied with owner availability. Flap design was the same in all affected animals (pedicle flaps with vertical releasing incisions) and was not extracted for the 630-animal caseload, so any association with dehiscence cannot be assessed. Antibiotic choice and duration after dehiscence were decided by the referring veterinarians and were not standardized. Also, the study was limited to cases where flap dehiscence occurred; no comprehensive demographic, procedural, and clinical data for non-dehiscence cases were available, and thus no comparison or risk-factor analysis was possible with the general surgical population. Most procedures (11 of 13) were performed by residents, but the distribution of clinician level in the whole caseload was not available, so this cannot be interpreted. The findings are compatible with the view that oral flap dehiscence has several contributing factors, but this series cannot identify which were responsible. Strengths include a defined 37-month period, a known caseload of 630 animals that allowed an estimate of incidence at this center, a scheduled recheck protocol with photographic documentation, and complete outcome data for all 13 animals.

Reporting followed the CARE guidelines where applicable.[35] The patient-perspective item does not apply to veterinary patients. Future prospective audits of dental surgery should record a standard set of variables. These include tooth and site, extraction type, flap design and release technique, suture material and pattern, clinician level, comorbidities, corticosteroid use, and

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postoperative care. Dehiscence and healing should be defined in advance, with a fixed recheck schedule and photographs. Antibiotic indication, drug, and duration should be recorded. The same data should be collected for animals without dehiscence.

This study highlights that oral flap dehiscence, although relatively uncommon, remains a clinically important complication of veterinary dental surgery. In most animals no cause could be identified from the record, and this series does not establish risk factors. Although this investigation was retrospective in nature and comprised a relatively small number of cases, these descriptive findings can help clinicians recognize dehiscence early and counsel owners: all animals healed; all cats healed without further surgery, whereas 3 of 8 dogs required revision surgery (one needed two).

REFERENCES

[1] Guzu M, Rossetti D, Hennet PR. Locoregional Flap Reconstruction Following Oromaxillofacial Oncologic Surgery in Dogs and Cats: A Review and Decisional Algorithm. *Front Vet Sci*. 2021;8:685036. doi:10.3389/fvets.2021.685036

[2] Taney K, Smith MM, Cummings NP, Lozano AJ. Risk factors for failure of hard palate mucoperiosteal flap repair of acquired oronasal communication in dogs: a pilot study. *Frontiers in Veterinary Science*. 2021;8:762842.

[3] Bezuidenhout AJ, Verstraete FJ, Lommer MJ, Arzi B. *Oral and maxillofacial surgery in dogs and cats*. Elsevier; 2020.

[4] Zacher AM, Marretta SM. Oral and maxillofacial surgery in dogs and cats. *Veterinary Clinics: Small Animal Practice*. 2013;43(3):609-649.

[5] Watanabe R, Frank D, Steagall PV. Pain behaviors before and after treatment of oral disease in cats using video assessment: a prospective, blinded, randomized clinical trial. *BMC Veterinary Research*. 2020;16(1):100.

[6] Peralta S, Campbell RD, Fiani N, Kan-Rohrer KH, Verstraete FJM. Outcomes of surgical repair of congenital palatal defects in dogs. *J Am Vet Med Assoc*. Dec 1 2018;253(11):1445-1451. doi:10.2460/javma.253.11.1445

[7] Reiter AM, Gracis M. *BSAVA manual of canine and feline dentistry and oral surgery*. 2018.

[8] Lux CN. Wound healing in animals: a review of physiology and clinical evaluation. *Veterinary dermatology*. 2022;33(1):91-e27.

[9] Wang AS, Armstrong EJ, Armstrong AW. Corticosteroids and wound healing: clinical considerations in the perioperative period. *The American journal of surgery*. 2013;206(3):410-417.

[10] Weinberg E, Tagger-Green N, Lusthaus M, et al. The impact of corticosteroid administration at different time points on mucosal wound healing in rats: an experimental pilot in vivo study. *Biology*. 2022;11(9):1309.

[11] Hardy L, Gil-Morales C, Maunder C, Paran E. Skin fragility in a cat presenting with pituitary-dependent hyperadrenocorticism. *Journal of Feline Medicine and Surgery Open Reports*. 2023;9(1):20551169231171245.

[12] Amsellem P. Complications of reconstructive surgery in companion animals. *Veterinary Clinics: Small Animal Practice*. 2011;41(5):995-1006.

[13] Farese JP, Withrow SJ. Surgical oncology. *Withrow and MacEwen's Small Animal Clinical Oncology*. Elsevier; 2013:149-156.

[14] Laing E. Problems in wound healing associated with chemotherapy and radiation therapy. *Problems in Veterinary Medicine*. 1990;2(3):433-441.

[15] Winkler KP. Factors that Interfere with Wound Healing in Small Animals. 2025. https://www.merckvetmanual.com/emergency-medicine-and-critical-care/wound-management-in-small-animals/factors-that-interfere-with-wound-healing-in-small-animals

[16] Charlier C. Oral surgery–extractions. *Wiggs's Veterinary Dentistry: Principles and Practice*. 2019:229-245.

[17] Peralta S, Nemec A, Fiani N, Verstraete FJ. Staged double-layer closure of palatal defects in 6 dogs. *Veterinary Surgery*. 2015;44(4):423-431.

[18] Peralta S, Manfra Marretta S. Acquired palatal defects. 2020:404-414.e1.

[19] Lothamer C, Rawlinson J. Palatal and oronasal defects. *Gastrointestinal Surgical Techniques in Small Animals*. 2020:71-84.

[20] Cedric T. Small Animal Dentistry–A Manual of Techniques. Blackwell Publishing; 2006.

[21] Klim EB, Mestrinho LA, Gawor JP. Effect of a buried knot in the healing process of dental extraction sites: a prospective study in cats. *Journal of Feline Medicine and Surgery*. 2025;27(3):1098612X251314701.

[22] Cray M, Selmic LE, Kindra C, et al. Analysis of risk factors associated with complications following mandibulectomy and maxillectomy in dogs. *Journal of the American Veterinary Medical Association*. 2021;259(3):265-274.

[23] Reiter AM, Brady CA, Harvey CE. Local and systemic complications in a cat after poorly performed dental extractions. *J Vet Dent*. Dec 2004;21(4):215-21. doi:10.1177/089875640402100402

[24] Lobprise H, St Denis K, Anderson JG, Hoyer N, Fiani N, Yaroslav J. 2025 FelineVMA feline oral health and dental care guidelines. *Journal of Feline Medicine and Surgery*. 2025;27(11):1098612X251398793.

[25] Blackburn J, Ousey K, Rippon M, Rogers A, Pastar I, Lev-Tov H. Applying Antimicrobial Strategies in Wound Care Practice: A Review of the Evidence. *International wound journal*. 2025;22(6):e70684.

[26] Khoo TX, Yates G, Chambers B, Ng J. Wound healing complications following folded flap palatoplasty in brachycephalic dogs. *Australian Veterinary Journal*. 2022;100(12):571-578.

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[27] Pegg JE, Hoyer N, Kelley JL, Weir H, Rawlinson JE. Clinical evaluation of intraoral suture patterns using poliglecaprone 25 in greyhound dogs. *Journal of Veterinary Dentistry*. 2022;39(2):112-121.

[28] Bissett L, Niemiec BA. A retrospective evaluation of secondary wound healing for extraction of the maxillary first molar in dogs. *Journal of Veterinary Dentistry*. 2021;38(4):208-215.

[29] Hernandez M. Extraction techniques for canines and carnassial teeth. 2007;

[30] Mark M. Smith V, DACVS, DAVDC (Virginia-Maryland Regional College of Veterinary Medicine, Virginia Tech, Blacksburg, VA). Surgical Management of Oronasal Fistula https://www.vin.com/apputil/content/defaultadv1.aspx?pId=11181&catId=30082&id=3852198

[31] Charlier C. Oral Surgery to Remove Teeth in Cats. *Today's Veterinary Practice*. 2022;(November/December)

[32] Kim C-G, Kwon D, Lee K, Kim SE, Jo HM. The prevalence of reasons for tooth extraction in cats. *Frontiers in Veterinary Science*. 2025;12:1626701. doi:10.3389/fvets.2025.1626701

[33] Sauvé CP, MacGee SE, Crowder SE, Schultz L. Oronasal and Oroantral Fistulas Secondary to Periodontal Disease: A Retrospective Study Comparing the Prevalence Within Dachshunds and a Control Group. *J Vet Dent*. Dec 2019;36(4):236-244. doi:10.1177/0898756420909657

[34] Weese JS, Giguère S, Guardabassi L, et al. ACVIM consensus statement on therapeutic antimicrobial use in animals and antimicrobial resistance. *J Vet Intern Med*. Mar-Apr 2015;29(2):487-98. doi:10.1111/jvim.12562

[35] Gagnier JJ, Kienle G, Altman DG, Moher D, Sox H, Riley D. The CARE guidelines: consensus-based clinical case reporting guideline development. *J Med Case Rep*. Sep 10 2013;7:223. doi:10.1186/1752-1947-7-223

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