

Oropharyngeal Surgery & Suture Selection

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There are many indications for oral and oropharyngeal surgery in veterinary practice. They include:

- * Traumatic abnormalities
- * Biopsy and excision of hyperplastic and neoplastic lesions
- * Congenital and acquired defects
- * Airway obstruction due to anatomical and functional abnormalities
- * Recurrent and persistent infections

Prior to performing oral surgery it is important that an accurate diagnosis has been made based on the history, clinical signs, physical examination, radiography and other imaging techniques, and biopsy when indicated. Concurrent or secondary diseases should be determined and their significance assessed prior to surgery as these may affect the long term prognosis for the patient and the client's willingness to pursue treatment.

Healing of Oral and Oropharyngeal Wounds

Healing of incisions in the oral oropharyngeal tissues is more rapid than in the skin due to earlier and greater phagocytic activity and epithelialisation. Excellent mucosal blood flow, warmer temperatures, greater metabolic activity and a higher mitotic rate contribute to rapid mucosal healing. Apposed wound edges re-epithelialise within a few days. Large defects in the oral mucosa heal by second intention and this can result in scar formation and wound contracture. Reconstructive techniques using tissue flaps are indicated for the repair of large oral mucosal defects.

Principles of Oral and Oropharyngeal Surgery

Atraumatic surgical technique is important to reduce tissue damage and swelling, and to promote tissue healing. Due to the profuse oral blood supply haemorrhage should be anticipated and controlled by pressure and ligation. Cautery should be used sparingly to reduce the incidence ischaemia to the wound margin and subsequent dehiscence.

In all types of reconstructive surgery tension free closure is critical to reduce the incidence of dehiscence. If tissue flaps are being used to repair defects the flaps should be manipulated with stay sutures; the vascular supply to the flap should be maintained, and suture lines should be placed over supporting tissues rather than the defect.

Wound edges should be clean, healthy and sharply incised. Two layer closures are preferable with a deeper suture layer in the connective tissues and the superficial layer in the mucosa. In most situations an appositional suture pattern is preferred.

Antibiotic Requirements

The oral cavity and oropharynx are contaminated and harbour aerobic, facultative and anaerobic bacteria, however saliva is antimicrobial and the blood supply to the oral cavity is excellent in healthy patients thus promoting rapid healing and inhibiting infection.

One dose of prophylactic antibiotic is generally all that is indicated for routine oral surgery is usually given at induction. In debilitated animals or those with severe

periodontal disease therapeutic antibiotics maybe indicated. Amoxycillin and clindamycin provide good cover against common oral bacteria in the dog and cat.

Patient Preparation & Post-Operative Care

When operating in the oral cavity and the oropharynx visualisation maybe dramatically improved by having the patient intubated through a pharyngotomy or tracheotomy incision. Whenever haemorrhage is anticipated or lavage of tissues is required it is advisable to pack the back of the oropharynx with gauze tape to absorb fluid and prevent blood entering the trachea. Patients undergoing major oral surgery such as a maxillectomy should be monitored carefully for blood loss and blood products should be available if needed. Patients should be recovered with their heads down and the endotracheal tube removed with the cuff slightly inflated to help remove any blood clots proximal to the cuff. If there is fluid in the oropharynx suction should be used prior to extubation.

Post-operative swelling of oral mucous membranes can cause potential obstruction of the pharynx especially in brachycephalic breeds. If swelling is anticipated it can be minimized with corticosteroid pretreatment. Patients undergoing oropharyngeal surgery should be monitored carefully for signs of post-operative respiratory obstruction and the patient should be prepared for a temporary tracheostomy if indicated. Analgesics should be given for all patients undergoing oral surgery.

Depending on the type of oral surgery performed soft foods are normally offered the following day. In certain cases such as cleft palate repair or with severe oropharyngeal swelling enteral feeding maybe advisable and should be anticipated prior to surgery so that a feeding tube can be placed at the same time as the oral surgery is performed. Most animals undergoing mandibulectomies or maxillectomies do not require invasive feeding tube placement and can be managed with a temporary nasoesophageal feeding tube if required. Soft foods should be fed until healing has occurred and chewing on sticks and toys etc should be avoided.

Common Post-Operative Complications

Dehiscence usually occurs from 3-5 days post surgery if there is residual disease at the tissue margins, if the blood supply to the tissue has been compromised, if excessive cauterisation has been used, or if there is excessive motion or tension at the surgical site. Patients that have concurrent diseases such as Cushings, renal or liver disease may have compromised wound healing. Patients with anorexia either due to the primary or concurrent disease and those that have been unable to eat normally for a prolonged period prior to surgery may also have a greater incidence of post-operative complications. The nutritional status of all surgical patients should be addressed prior to surgical intervention.

Infection is a potential complication because of the contaminated oral cavity. In the healthy patient when the blood supply to the tissues is maintained and good surgical techniques are used infection at the surgical site is rare.

Inflammation and swelling in the oropharyngeal tissues can result in respiratory obstruction especially in brachycephalic breeds. Gentle tissue handling and good haemostasis are important in reducing the incidence of this complication.

Suture & Needle Selection for Oral & Oropharyngeal Surgery

Many different types of suture materials are currently available and suitable for oral surgery. Suture selection is determined by several factors:

- * Duration of suture requirement for wound healing
- * Risk of infection
- * Effect of suture material on the tissue and wound healing
- * Size and strength of suture
- * Suture handling properties

The ideal suture material is easy to handle, reacts minimally in tissue, inhibits bacterial growth, holds securely when knotted, is non capillary, non-allergenic,

non-carcinogenic and absorbs with minimal reaction after the tissue has healed. Unfortunately there is no ideal suture material for all tissues therefore it is the surgeon's responsibility to select the appropriate suture material for a given procedure and tissue to be sutured. Suture material characteristics that the surgeon should assess prior to use include:

- * Absorbability
- * Capillarity
- * Flexibility
- * Surface characteristics ie tissue drag
- * Tensile strength
- * Size

Due to the rapid healing properties of the oral and oropharyngeal mucosa absorbable suture material is generally preferred (Table 1). With many of the modern synthetic absorbable suture materials there is minimal tissue reaction, loss of tensile strength and absorption times are well documented and provide adequate time for oral incisions to heal, and exposure to oral infection and digestive enzymes does not significantly affect the rate of absorption. Use of modern synthetic absorbable suture material reduces long term tissue and patient irritation, reduces the potential for chronic wound infection at the suture site and avoids the need for suture removal. However surgical gut should be avoided as it is rapidly removed from infected sites and areas exposed to digestive enzymes and the knots loosen quickly in moist areas.

Although the risk of infection in oral surgery is small all oral surgery is considered contaminated and for this reason monofilament suture material is theoretically preferable to multifilament (braided) suture material. Multifilament suture material has greater capillarity and this encourages fluid and bacteria to penetrate the suture. The capillarity of multifilament absorbable suture material can be reduced by coating.

Multifilament sutures also have more friction or drag than do monofilament sutures. Coating of multifilament

suture material reduces drag and associated tissue trauma. The detrimental effects of multifilament sutures is more obvious when handling delicate tissue such as palatal mucosa in young animals when repairing palatal defects. However there are also disadvantages to monofilament sutures. The smooth surface increases the amount of tension required for good apposition of tissues and they have reduced knot security. Monofilament suture materials are also stiffer making handling more difficult and may increase oral irritation to the patient.

In selecting suture material size the smallest diameter material that will hold the wound edges together should be chosen so as to reduce trauma from the passage of the suture through the tissue and to reduce the amount of suture material left in the wound after wound healing has occurred. The smaller the suture size the less its tensile strength. Tension free apposition of oral wound margins is important to allow healing. Sutured wounds in the mouth should not be placed under high tension and therefore 2-0 (metric 3) to 4-0 (metric 1.5) suture material should be adequate for repair of most oral wounds.

Needle Selection

Swaged on needles are preferable to eyed needles for oral and oropharyngeal surgery. With swaged sutures the suture and the needle are a continuous unit, minimizing tissue trauma and increasing ease of use. Oral tissues in the adult are quite tough whilst in young animals the tissue is much more delicate. Cutting needles are preferable either with a tapercut or reverse cutting needle point depending on the toughness of the tissue. The shape and length of the needle body is dependent on the depth and size of the surgical wound. Curved needles are used when working in the mouth. For suturing wounds in the mouth that are accessible a three-eighths needle is most easily handled. As surgical sites in the mouth become more inaccessible ie in the oropharynx a one half circle or five-eighths circle needle is easier to use.

Questions regarding this or on any other veterinary related matter must be discussed with your veterinary surgeon. The information contained herein is of a general nature only and may not relate to the specific conditions exhibited by your pet. Specifics of each case must be discussed with your veterinary surgeon. For further information, fact-sheets for clients and articles for veterinary surgeons, contact <http://members.aol.com/opvet>