How to

Instruments used for biopsy include:

- Hypodermic needle and syringe – for fine-needle aspirate cytology
- Cutting cup forceps – non-endoscopic
- Endoscopic (rhinoscopic) cup forceps
- Needle-guard (plastic cylinder for acquiring suction biopsy, as provided with some spinal needles)
- Surgeon (via rhinotomy)

In diffuse disease, biopsy guidance is not necessary as most areas will be affected. In the case of a mass lesion, a large retrospective study has shown no advantage of direct rhinoscopic biopsy guidance over use of advanced imaging (CT and MRI) to judge the position of the mass. This is probably influenced by the fact that larger biopsy specimens can be procured using larger non-endoscopic cup forceps than with the rather tiny endoscopic variety.

Regardless of the means of biopsy, a complete blood count **and** coagulation tests are necessary even if a bleeding diathesis is not suspected. The safe insertion length of the instrument used, however, must be marked by measuring from the planum nasale and the medial canthus of one of the eyes – the instrument should not be inserted further than this.

The patient should be anaesthetised for nasal biopsy – whether or not rhinoscopy is performed. If advanced imaging (CT or MRI) is going to be performed then it should be done before rhinoscopy or biopsy as these will cause changes on the imaging. An infraorbital local anaesthetic nerve block should be considered if a biopsy is likely. The pharynx is usually packed with swabs or sponges and the patient's nose tilted downwards. Having pre-measured the maximum insertion length of the forceps, they are inserted to the desired location. For biopsy of specific lesions this may be under rhinoscopic guidance, or otherwise 'blindly' based upon estimated location from advanced imaging. Just before reaching the desired location, the jaws of the forceps are opened, before advancing further and then closing. A slight twist as the forceps are pulled out may help to improve specimen yield. Bleeding is expected even in normo-coagulable patients. Haemostasis may be assisted by cold-packs placed over the bridge of the nose. If bleeding is troublesome then application of dilute adrenaline by squirting it up the nostril may assist by causing vasoconstriction. The patient is usually kept under anaesthesia until haemostasis is achieved, though some patients may start to bleed again if they sneeze forcibly.

Remember that if bacterial or fungal culture is required this test will be much more sensitive if performed on a biopsy specimen rather than just a superficial swab.

KEY LEARNING OBJECTIVES

- Understand the indications for nasal biopsy
- Understand the different modes of biopsy guidance,

including advantages and risks

- Understand the diagnostic modalities available for nasal disease

MULTIPLE CHOICE QUESTIONS

1. Which of the following pathogens that may affect the nasal cavity is not present in the UK?
 - a. *Cryptococcus*
 - b. *Aspergillus*
 - c. *Pneumonyssus caninum*
 - d. *Sporothrix schenckii*
2. Which of the following statements regarding nasal radiographs is correct?
 - a. Nasal radiography is highly sensitive but poorly specific for detecting nasal tumours
 - b. Nasal radiography is highly specific but poorly sensitive for detecting nasal tumours
 - c. Nasal radiography has poor sensitivity and poor specificity for nasal neoplasia
 - d. Nasal radiography has high sensitivity and high specificity for nasal neoplasia
3. Which of the following statements regarding nasal biopsies is correct?
 - a. Rhinotomy is usually required for definitive diagnosis of nasal neoplasia
 - b. Rhinoscopic biopsies are the most sensitive technique for diagnosing nasal neoplasia
 - c. Non-rhinoscopic nasal grab biopsies based upon CT or MRI images are as sensitive as any other method
 - d. Nasal biopsies seldom result in bleeding
4. Which of the following is true regarding diagnosis of nasal aspergillosis?
 - a. Enzyme-linked immunosorbent assay (ELISA) serology is highly specific for diagnosis of sinonasal aspergillosis
 - b. Polymerase chain reaction (PCR) of nasal biopsy specimens for *Aspergillus* has high sensitivity and specificity in dogs
 - c. CT changes in sinonasal aspergillosis include turbinate destruction
 - d. Rhinoscopy is not useful for diagnosis of sinonasal aspergillosis in dogs
5. Which of the following statements is correct regarding haemostasis in rhinoscopy?
 - a. Haemostasis is best achieved by packing both nostrils with swabs
 - b. Nasal biopsies seldom result in bleeding
 - c. A platelet count, prothrombin time and partial thromboplastin time are advisable prior to rhinoscopic biopsies
 - d. Haemostasis is best achieved by tilting the patient's head backwards

Treat a corneal ulcer

David Maggs

Treating corneal ulcers is one of the things in ophthalmology that lends itself largely to a 'cookbook' approach if a few golden rules are followed:

- Most heal with minimal veterinary intervention. Therefore, when an ulcer has not healed in 7 days it is a complicated ulcer

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Figure 1: Golden rules of ulcer management in (A) cats and (B) dogs.

- The most critical treatment for an ulcer is removal of the primary cause (everything else is supportive care). Therefore, when an ulcer has not healed in 7 days change your diagnosis, not your antibiotic
- Although trauma is a common cause of ulcers it is not the only one and should only be diagnosed when others have been ruled out. Consider trichiasis, distichiasis, ectopic cilia, foreign bodies, dry eye, eyelid tumours, blepharitis, feline or canine herpesvirus, lagophthalmos, exposure, cranial nerve (CN) V or VII dysfunction, ectropion, etc.
- Bacteria do not cause small animal ulcers
- Always classify every ulcer you treat as complicated (present longer than 7 days or involving stromal loss) or simple (present shorter than 7 days and not involving stromal loss)
- Make application of fluorescein the start of the diagnostic process, not the end. Know the four fluorescein-staining patterns:
 - Floor only; sharp borders (superficial ulcer)
 - Wall and floors (deep stromal ulcer)
 - Walls only (descemetocoele)
 - Indistinct borders +/- halo (Indolent ulcer)
- Infected ulcers are green or deep, or malacic (or any combination of the three)

TREATMENT

Simple ulcer

- Remove the cause (consider an antiviral drug in cats)
- Apply a topical antibiotic
- Consider atropine for pain relief (do not overuse as it reduces tear production)
- Consider systemic non-steroidal anti-inflammatory drugs (NSAIDs)
- Avoid topical NSAIDs/corticosteroids
- Avoid systemic antibiotics

Indolent ulcer

- As for simple ulcer PLUS
- Cotton-tipped applicator debridement PLUS or MINUS

- Grid keratotomy OR
- Burr debridement

Deep (stromal) ulcer

- As for simple ulcer PLUS
- Culture and sensitivity and cytological assessment
- Frequent broad-spectrum bactericidal antibiotics topically
- Consider systemic antibiotics if perforated or vascularised
- Topically applied serum
- Consider referral for conjunctival graft
- Third eyelid flaps are NOT indicated
- NEVER debride or grid

KEY LEARNING OBJECTIVES

- To be able to diagnose and differentiate with confidence indolent, simple, and infected ulcers
- To be able to treat and rationalise all therapies for indolent, simple and infected ulcers
- To know the common causes of ulceration in dogs and cats, and to recognise that trauma is a diagnosis of exclusion

MULTIPLE CHOICE QUESTIONS

- Which statement is true with regard to fluorescein staining of ulcers?
 - Simple ulcers retain stain only on the floor and have sharply demarcated borders
 - Deep ulcers have a halo of stain
 - Indolent ulcers are sufficiently deep that their walls retain fluorescein stain
 - When the walls and floor of an ulcer retain fluorescein stain, the likely diagnosis is a descemetocoele
- What is the most critical element of treating a corneal ulcer?
 - Reducing pain through topical application of atropine
 - Finding and removing the cause

How to

- c. Preventing anterior synechia formation
 - d. Application of a topical antibiotic to prevent infection
3. Which of the following is true when categorising an ulcer as indolent, infected, or simple?
- a. Infected ulcers are deep, green, malacic, or some combination of the three
 - b. Indolent ulcers involve stromal loss
 - c. Simple ulcers need to be present <7 days or be superficial (not involve the stroma)
 - d. Deep ulcers have a halo of fluorescein stain
4. Which of the following is true when an ulcer doesn't

heal in 7 days?

- a. It usually means the client has not been applying the antibiotic appropriately
 - b. It has usually become infected
 - c. Look again for an underlying cause
 - d. Debride it with a cotton-tipped applicator to promote healing and consider a grid keratotomy
5. What is an ulcer with stromal loss best treated with?
- a. Systemically administered corticosteroid
 - b. Twice daily topical antibiotic
 - c. Topically applied serum
 - d. A topical NSAID to control reflex uveitis

Drain a chest

Daniela Murgia

Procedures allowing drainage of the thoracic cavity include thoracocentesis, placement of a thoracostomy tube, and placement of a pleural port. Chest drainage should be always performed using gloves and sterile syringes to minimise the risk of nosocomial infections.

THORACOCENTESIS

Thoracocentesis is a simple therapeutic and diagnostic procedure, which allows quick evacuation of fluid or air from the pleural space. Material needed for thoracocentesis is usually minimal and inexpensive. In most cases, butterfly needles are well suited for thoracocentesis.

The preferred site for centesis is between the seventh and the ninth intercostal space (IS) (Figure 1). If fluid and air are present in the pleural cavity, the needle is inserted approximately halfway up the thoracic wall. If only fluid is

present, the needle should be inserted in the ventral third of the chest wall or in the dorsal third if it is a pure pneumothorax. To avoid the intercostal vessels and nerve, lying on the caudal aspect of each rib, the needle should be introduced close to the cranial costal border. To avoid pulmonary trauma, the needle should be inserted at a 45-degree angle. Once the needle is carefully advanced in the thoracic cavity, with the bevel facing the lung, under ultrasonography control, an assistant should aspirate the fluid and collect it in a kidney dish. A sample of the fluid (5–10 ml) should be submitted aseptically for analysis. This should be preferably collected before beginning any antibiotic treatment.

THORACOSTOMY TUBE PLACEMENT

When frequent or repeated thoracocentesis is required, the placement of a thoracostomy tube is indicated. Valtolina (2009) described the use of small-bore wire-guided chest drains as effective alternative to larger trocar drains (Figure 2). These are 14-gauge polyurethane, 20 cm long (or 12-gauge, 30 cm long) multi-fenestrated thoracostomy drains placed using a modified Seldinger technique.

The use of the guidewire inserted chest tubes is currently replacing the use of the trocar thoracostomy tubes in veterinary medicine. This is based on the experience with humans

Figure 1: Thoracocentesis is usually performed with the animal in sternal recumbence. A rectangular area in the mid-ventral aspect of the thoracic wall is clipped and prepared aseptically (sometimes bilaterally). The preferred site for thoracocentesis is between the seventh and the ninth intercostal space.

Figure 2: Small-bore wire-guided thoracostomy tube kit includes a 14 gauge x 20 cm (or 12 gauge x 30 cm) multi-fenestrated chest tube, two introducers, 60 cm guide wire, suture wings, normally closed valve and tethered cap.