

Diagnosis and Management of Nasopharyngeal Stenosis

Allyson C. Berent, DVM

KEYWORDS

- Nasopharyngeal stenosis • Choanal atresia • Balloon dilation
- Nasopharyngeal stenting • Covered metallic stent
- Balloon expandable metallic stent • Self-expanding metallic stent

KEY POINTS

- Choanal atresia is rare in small animal veterinary medicine, and most cases are misdiagnosed and are actually a nasopharyngeal stenosis.
- Nasopharyngeal stenosis is a frustrating disease to treat because of the high recurrence rates encountered after surgical intervention.
- Minimally invasive treatment options like balloon dilation (BD), metallic stent placement (MS), or covered metallic stent (CMS) placement have been met with good success but are associated with various complications that must be considered.
- The most common complication with BD alone is stenosis recurrence in over 70% of cases.
- The most common complications encountered with MS placement is tissue in-growth, chronic infections and the development of an oronasal fistula. The most common complications with a CMS is chronic infections and the development of an oronasal fistula, but stricture recurrence is avoided.

Nasopharyngeal stenosis (NPS) is a pathologic narrowing within the nasopharynx, which is the cavity caudal to the choanae above the hard and soft palate. This condition results in inspiratory and expiratory stertor that is static, especially during breathing when the mouth is closed. This can occur as a congenital anomaly similar to choanal atresia, or, more commonly, secondary to an inflammatory condition like chronic rhinitis, aspiration rhinitis, surgical manipulation, trauma, or a tumor/polyp.¹⁻⁷ The most common reason NPS is seen in dogs is due to aspiration rhinitis after an anesthesia event,^{4,6,8,9} and in cats, it is most often found at the time of a rescue situation, suspected to be caused by chronic inflammatory disease, herpes virus, or congenital scar tissue development.¹⁰ Nasopharyngeal stenosis has only been described in the veterinary literature in a small number of cases,^{1-9,11-13} and it

Department of Interventional Radiology and Endoscopy, Internal Medicine, The Animal Medical Center, 510 East 62nd Street, New York, NY 10065, USA

E-mail address: Allyson.Berent@amcnyc.org

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was recently reported in abstract form in 46 dogs and cats.¹⁰ Minimally invasive interventions are typically recommended due to the high rate of recurrence after palatal surgeries.¹⁻¹⁴ The most common approaches have been balloon dilation,⁶⁻¹² metallic stent placement,^{3,6,9,10} or a temporary silicone tubing after stenosis dilation.¹⁵ All have been shown to be effective for various indications but can be associated with recurrence and various complications.¹⁻¹⁵

CLINICAL PRESENTATION

Respiratory signs are often consistent with a fixed obstruction that is both inspiratory and expiratory in nature, and resolves with open mouth breathing. Animals can be severely stertorous, dyspneic, or mildly noisy; they can have chronic regurgitation caused by an associated sliding hiatal hernia and megaesophagus. Additionally, they can be obligate open mouth breathers or can have chronic nasal discharge, experience gagging and repeated swallowing, chronic upper respiratory infections, chronic otitis media, and sneezing.¹⁻¹⁵ A thorough history of chronic upper respiratory infections, recent anesthetic events, otitis, or prior surgery is very important.

DIAGNOSIS

The diagnosis of nasopharyngeal stenosis is made during retroflex rhinoscopy of the nasopharynx using a flexible endoscope (**Fig. 1**). Computed tomography (CT) can also be diagnostic, but if the slices are too large, this lesion can be missed (**Fig. 2**). The author typically recommends 1 mm slices, which help identify the lesion and get an exact measurement of the stenosis length and nasopharyngeal diameter, both rostral and caudal to the stenosis (see **Fig. 2**). Imaging should be done from the tip of the nares to the larynx, including the entire nose and nasopharynx, as many patients have concurrent chronic rhinitis. It is also important to realize that most of these patients have an accumulation of mucous rostral to this lesion, and this is often misdiagnosed on CT as a longer stenosis than is actually present. This makes definitive characterization of the lesion length more accurate during retroflex rhinoscopy and antegrade contrast nasopharyngoscopy (**Fig. 3**). The tympanic bullae are often mucous filled as well because of the failure of Eustachian tube drainage, which is impeded chronically by the presence of an NPS. This is rarely of clinical significance.

A thorough oral examination should be performed to ensure there are no palatal defects. These are rare but can be seen, and this may change the therapeutic approach taken.

The nasopharyngeal stenosis is characterized as either a patent membrane, meaning there is a hole through the center of the obstructive lesion (see **Fig. 1**) or an

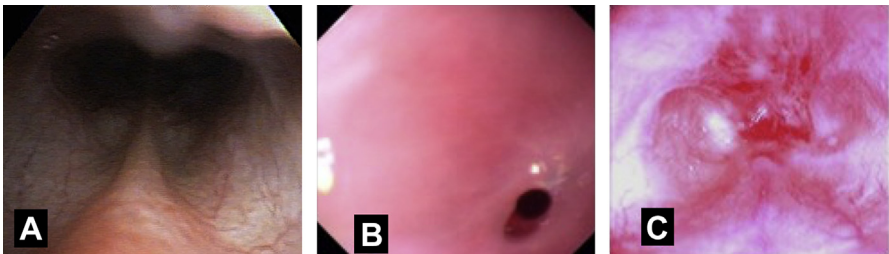


Fig. 1. Endoscopic images of the nasopharynx during retroflex rhinoscopy. (A) Normal nasopharynx in a dog. (B) Patent nasopharyngeal stenosis in a cat. (C) Imperforate nasopharyngeal stenosis in a dog.

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