

DIAGNOSIS OF NASAL AND SINUS DISORDERS

Dr Dharambir S Sethi FRCSEd

Nasal disorders are traditionally diagnosed through careful history and physical examination. However, sinonasal symptoms can provide limited information for diagnosis. Thus, objective information is sought through physical examination. Three methods are typically employed for most patients with long standing sinus or nasal complaints.

They are:

- anterior rhinoscopy (looking into the nose with a headlight and nasal speculum to open nostrils),
- nasal endoscopy (looking into the nasal passages with an endoscope or telescope) and
- CT scan of the sinuses

These techniques reveal important information necessary for proper diagnosis and treatment. Often times, nasal endoscopic findings compliment findings seen on CT imaging, but they are not always the same. Interestingly, abnormalities detected on endoscopy or imaging can be present without symptoms.

NASAL PREPARATION FOR EXAMINATION

In order to facilitate your nasal examination, your nose will typically be sprayed with a decongestant and a topical anesthetic spray, which will numb the lining of your nose.

Please inform the nurse at each visit if you are allergic to either of these medications or should you be taking an MAOI (mono-amine oxidase inhibitor) for depression.

The spray atomizer will help the medicine be delivered adequately. Avoid sniffing in after the nose has been sprayed. Sniffing in can lead to more medication being delivered inside your throat than in your nose.

Anesthetic spray in the throat can cause slight irritation initially followed by a temporary sensation of numbness, perception of difficulty swallowing or even a perception of difficulty breathing even though there is no airway swelling. These side effects can be attributed to the numbness present in your throat.

Additionally, you should not drink or eat until you feel normal return of sensation of your throat (about 1 hour) following an examination with these sprays. This to avoid any inadvertent burn or choking on improperly swallowed food or drink.

The anesthetic spray frequently causes numbness of the front teeth and back of the throat, however, these effects wear off in less than an hour.

Once these sprays have taken sufficient effect, usually after about ten minutes, an endoscope may be used to examine your nose and sinuses. Either a flexible or rigid endoscope is used. Although nasal endoscopy

may be an uncomfortable experience, most patients do not find it to be painful. The endoscopic examination provides useful information regarding the nature and extent of disease present in the nasal cavity and the drainage paths of the paranasal sinuses. Please see below for much greater details regarding endoscopy including photographs)

1. Anterior rhinoscopy

Anterior rhinoscopy is the basic tool of the nasal examination. During anterior rhinoscopy the nostril is spread open with a small blunt speculum and the nasal passages can be directly examined with a headlight. This examination gives limited view of the interior of the nasal cavity.



Figure 01: Anterior rhinoscopy is performed with a nasal speculum and headlight. As evident from the figure above it presents very limited view of the nasal cavity and therefore very minimal diagnostic information.

2. Nasal endoscopy

In contrast to anterior rhinoscopy, nasal endoscopy introduces brilliant illumination into the dark cavities and permits magnified direct visualization of the nasal mucosa, turbinates, sinus openings, crevices and recesses in the nasal cavity. In post-surgical patients, the opened sinuses can be visualised.

Nasal endoscopy helps identify redness, swelling, polyps, crusting, mucous, and/or pus deep in the nasal cavity.

There are two types of endoscopes available for evaluating the sinonasal passages—flexible fiberoptic

endoscopes and rigid telescopes. They differ mainly in terms of patient tolerance and safety.



Figure 02: Shows the rigid and flexible endoscopes.

Flexible endoscopy may be somewhat superior where patient discomfort is concerned but has its limitations. The image quality is generally superior with rigid endoscopy. Rigid endoscopy also has the advantage of being able perform procedures within the nasal cavity.

Photo documentation of an endoscopic evaluation (Photo-Endoscopy) is an excellent tool to follow patient's progress. Despite a mild difference in patient comfort, rigid nasal endoscopy is well tolerated by most patients.

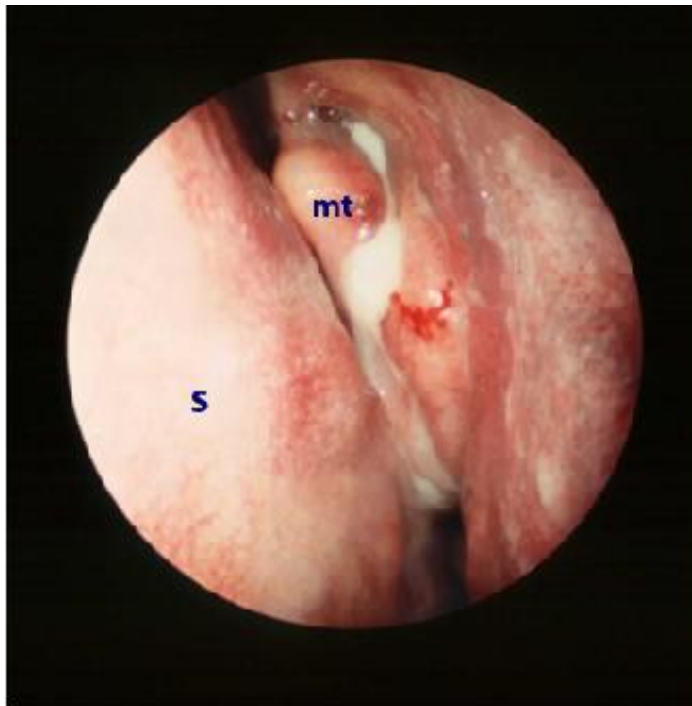


Figure 03: Patient who presented with foul smelling nasal discharge. Nasal endoscopic examination showed pus in the left middle meatus. Examination indicated a maxillary empyema. (s= nasal septum, mt=left middle turbinate)

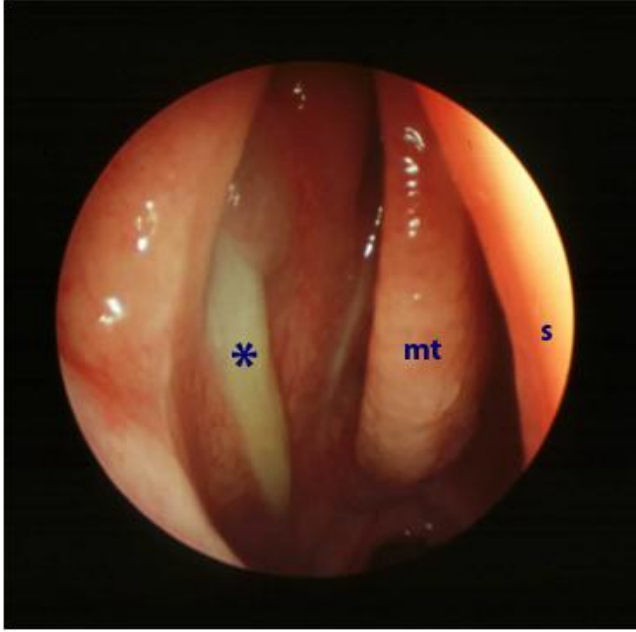


Figure 04: This patient presented with purulent post nasal drip. Nasal endoscopic examination showed pus tracking posteriorly from the right maxillary sinus.



Figure 05: This 42 year old male presented with left nasal obstruction. Nasal endoscopic examination showed a polypoid mass obstructing the left nasal cavity. Biopsy of this mass revealed this to be an **inverting papilloma**, a benign but potentially malignant sinonasal tumor.

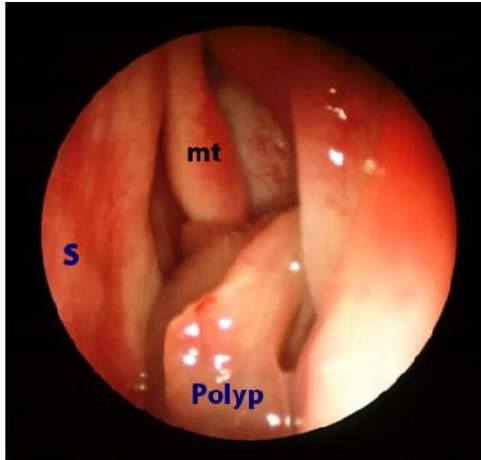


Figure 06a.



Figure 06b.

Figure 06a & b: This patient presented with left nasal obstruction. Nasal endoscopic examination showed a polyp extending from the left middle meatus to the nasopharynx and hanging in the oropharynx as seen above.

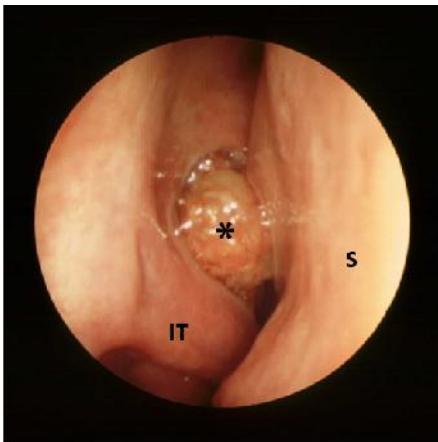


Figure 07: This 52 year old male presented with blood stained nasal discharge from the right side of the nose. Nasal endoscopy showed a growth (asterisk) in the right middle meatus. Biopsy revealed this to be a moderately differentiated carcinoma.

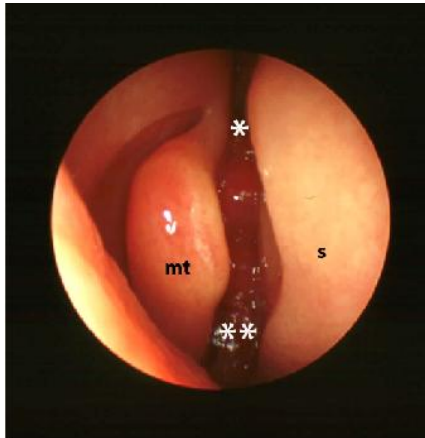


Figure 08: This 50 year old male presented with loss of sense of smell and blood stained nasal discharge. Nasal endoscopic examination showed a “reddish” growth extending from the skullbase (single asterisk)to the floor of the nose (two asterisk). Biopsy of this growth revealed this to be an esthesioneuroblastoma, a tumor of the skullbase that arised from the nerves of the sense of smell.

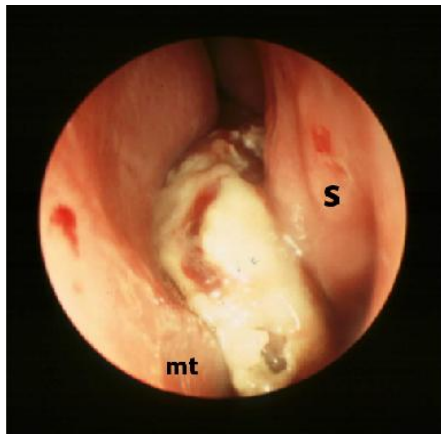


Figure 09: This patient presented with nasal onstruction and blood stained nasal discharge. Endoscopic examination showed a large growth obstructing the right nasal cavity. Biopsy revealed this to be a Undifferentiated Carcinoma.

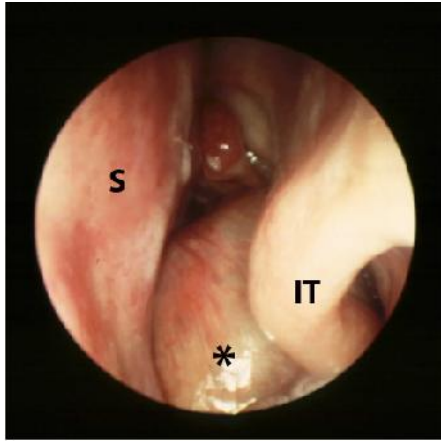


Figure 10a.



Figure 10b.

Figure 10a: Endoscopic examination in a patient with left nasal obstruction showing a polyp obstructing the left nasal cavity. CT scan (Figure 10b) of this patient showed the polyp was a growth arising from the clivus. The diagnosis was established to be a Clival Chordoma.

Figure 10b: CT scan of the patient in Figure 10a. Arrow shows erosion of the clivus.

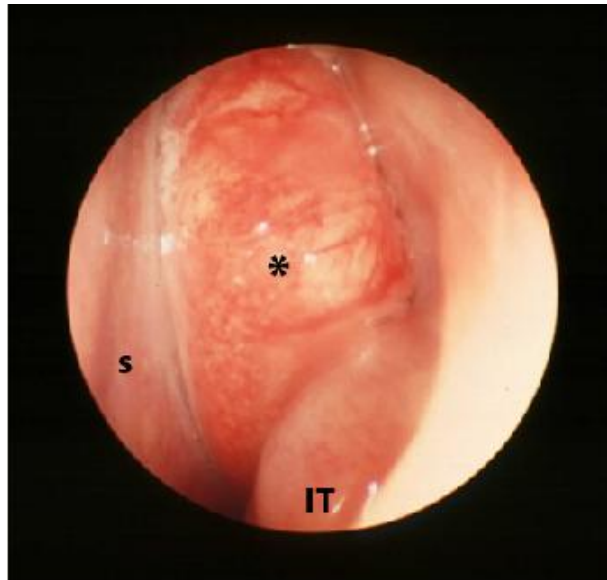


Figure 11a.



Figure 11b.

Figure 11: This 26 year old male presented with nasal obstruction. Endoscopic examination showed a tumor obstructing the nasal cavity. CT scan showed the tumor was arising from the nasal septum (Figure 11b)

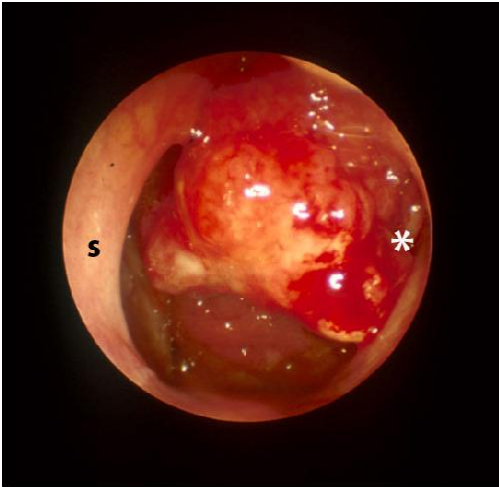


Figure 12: This 21 year old female presented with blockage of the left ear and blood stained nasal discharge. Endoscopic examination showed a large growth effacing the nasopharynx. The white asterisk indicates the location of the obstructed Eustachian tube orifice causing blockage of the left ear. Biopsy of this tumor revealed Undifferentiated Nasopharyngeal Carcinoma.

Risks of Nasal Endoscopy

Nasal endoscopy is a very safe and very well-tolerated procedure. The most common adverse effects of endoscopy are patient discomfort/pain, and feeling faint or lightheaded from anxiety. Rarely, there may be slight bleeding following the procedure but it stops after sometime.

Indications for Nasal Endoscopy

These include but are not limited too:

- Sinonasal symptoms refractory to appropriate empiric therapy or in suspected chronic rhinosinusitis
- Unilateral disease without septal deviation
- Severe and disabling symptoms attributed to the nose or sinuses
- Actual or impending complication of sinonasal disease
- Patients who have sinonasal complaints and are immunocompromised (transplant, diabetes, leukemia, etc.)

3. CT Imaging

CT scan is gold standard for imaging modality for nasal and sinus disorders. CT scans of the sinuses are requested when the history and the nasal endoscopic examination suggests the presence of sinus pathology. Often, CT scans may be done to exclude the presence of pathology.

If endoscopic sinus surgery is indicated, CT scans of the paranasal sinuses are an **ABSOLUTE** requirement as the scans provide a “road map” of the patient’s anatomy which can be very variable. Ideally, the scans should be triplanar, coronal sagittal and axial views.

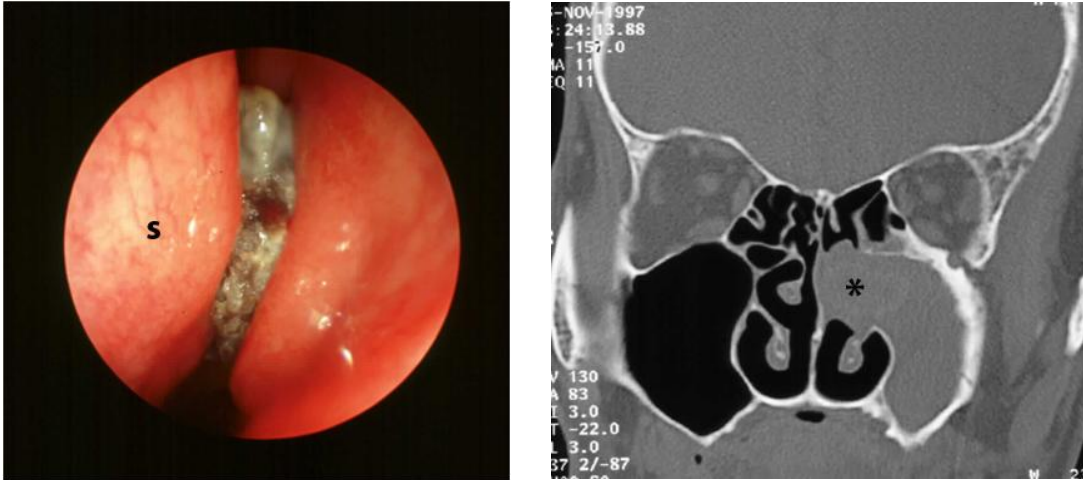


Figure 13a: Endoscopic examination shows a fungal mass in the left middle meatus.

Figure 13b: CT scan of the patient in Figure 13b confirming the mass and shows complete opacification of the left maxillary sinus.

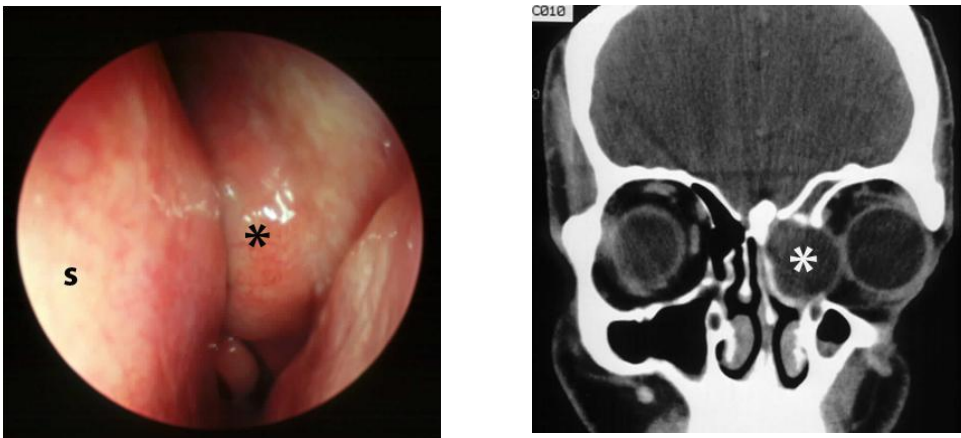


Figure 14a: This patient presented with left double vision. On examination the eye ball was outwards and downwards. Endoscopic examination showed an expansile lesion in lateral nasal cavity (asterisk). CT scan below (Figure 14b) showed the lesion to be a mucocoele.

Hence, a precise diagnosis of nasal and sinus pathology is made by a detailed history, nasal endoscopic examination and CT scans of the paranasal sinuses.