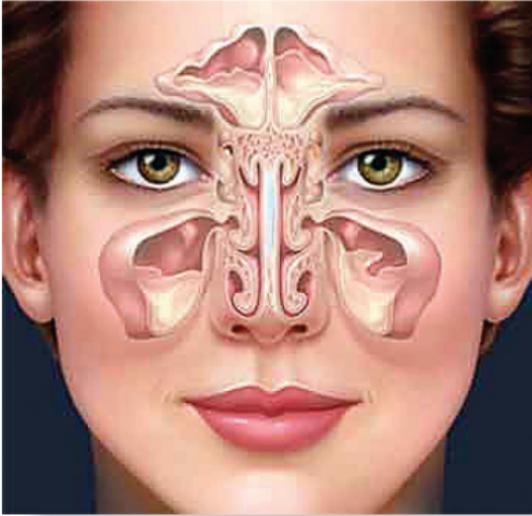


## Sinusitis & Nasal Polyps



### Introduction

Sinusitis is the infection of the sinus cavities. It usually starts as a viral infection of the upper respiratory tract which is then superseded by bacteria. There are 4 pairs of sinuses; maxillary (below the eyes), ethmoidal (between the eyes), frontal (above the eyes) and sphenoidal (behind the eyes). These are normally filled with air. When infected, they become filled with pus and swollen mucosa. If severe, swollen mucosa from the sinuses can protrude into the nasal cavity as polyps. Sinusitis is one of the commonest reasons for patients' visits to the ENT doctor accounting for billions of dollars in healthcare cost in the USA and Europe.

### Symptoms

Sinusitis can be acute (symptoms less than one month), subacute (1 to 3 months) or chronic (more than 3 months)

1. **Purulent nasal discharge** – this is yellowish/ greenish, thick and mucoid from one or both nasal cavities.
2. **Nasal blockage** – from swollen turbinates, polyps or discharge.
3. **Cheek pain, upper toothache** (maxillary sinusitis), **pain between eyes** (ethmoidal sinusitis), **frontal headache** (frontal sinusitis), **vertex headache** (sphenoiditis)
4. **Persistent cough, sorethroat and phlegm in throat** from back drip of mucopurulent discharge from the nose to the throat.
5. Other associated symptoms include **epistaxis**, **hyposmia** (poor sense of smell), **bad breath**, **fever**, **general lethargy**, **middle ear infections**, **snoring** and **poor sleep**.

## Signs

1. Frank pus in nasal cavity (Figure 1), usually tracking backwards to postnasal space and throat.
2. Swollen turbinates, enlarged adenoids (in children)
3. Cheek tenderness on palpation
4. Nasal polyps (Figure 2) – these are swollen mucosa as a result of severe and chronic sinusitis that protrude from the sinuses into the nasal cavity.
5. Occasionally, an infected upper tooth is the cause for isolated maxillary sinusitis.



Figure 1

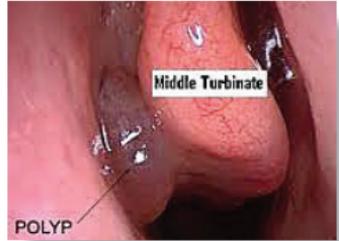


Figure 2

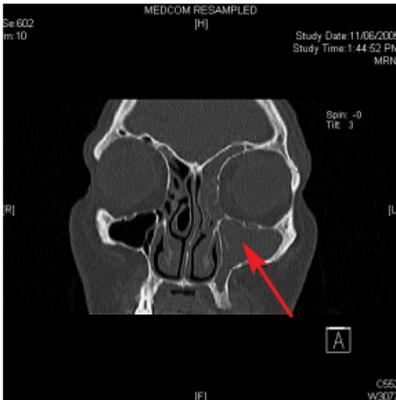


Figure 3

## Investigations

The conclusive test is a CT scan of the sinuses (Figure 3). Endoscopy can be conclusive if frank pus is seen coming from the sinus openings (Figure 1). In chronic sinusitis, or cases where antibiotic treatment does not seem to be effective, a swab for culture and sensitivity is useful in identifying the organism. Plain sinus x-rays are not reliable.

## Treatment

1. **Medical Treatment** - the mainstay is antibiotic therapy although it should only be started if the symptoms do not resolve after 5 to 7 days.
2. **Supportive Treatment** – nasal douching with saline (Figure 4) and intranasal steroid sprays have been shown in studies to hasten recovery. Mucolytics, steroids, antihistamines, decongestant drops are often used and have varied response and effect.
3. **Surgery** – this is reserved for patients whose infections have failed to respond to standard medical treatment. Sinus washouts can be done in clinic under local anesthesia in adults. Children require general anesthesia. However, definitive surgery is recommended if sinusitis does not resolve after 3 months of persistent symptoms or if acute infections occur more than 3 times a year.



Figure 4

### Functional Endoscopic Sinus Surgery (FESS)

This is the definitive surgical procedure for chronic sinusitis and nasal polyposis. This technique was perfected by an Austrian ENT surgeon Stammberger in 1986 and has been the workhorse in the surgical treatment of sinus disease. The procedure is done under general anesthesia as a day surgery case. The sinuses are approached through the nose with endoscopes and opened with special instruments. The surgery is often performed with an **image-guidance system (IGS, Figure 5)**. This is a computerized programme that allows real-time localization of disease and vital structures in the sinus cavities. It lowers the risk of complications and allows confirmation that the surgery is done adequately and completely.

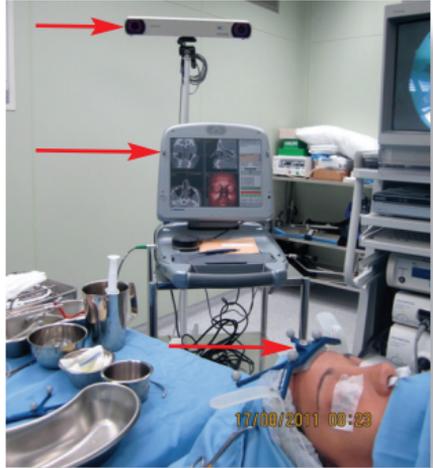


Figure 5

### What to expect after FESS

1. **Mild discomfort** - The procedure is not associated with much pain. However, there may be some discomfort between the eyes and over the forehead.
2. **Blockage** – the sinus cavities will be packed with self-absorbable sponge-like packing that may cause some blockage. This should clear once the nasal cavity is cleaned one week after surgery.
3. **Bleeding** – since there is raw mucosa and bone after surgery, minimal bleeding is to be expected. Although profuse bleeding can occur, it is very uncommon.

### Risks and Complications

The sinus cavities are boxed in by eyes on the outer sides and the brain over the roof. If traversed, it will result in bruising of the eye socket. Rarely, vision is affected. If the skull base is damaged, cerebrospinal fluid (CSF) will leak into the nasal cavity. This can be sealed with a patch and tissue glue at the time of surgery.

### Balloon Sinuplasty in FESS

Using balloons to widen sinus openings in FESS is the latest technique developed to help surgeons resolve sinusitis as atraumatically as possible.

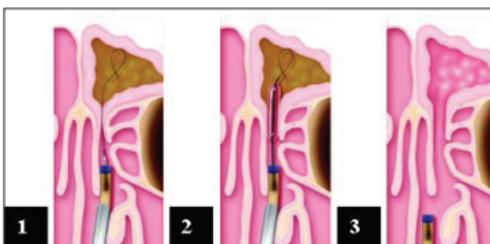


Figure 6

In this technique (Figure 6), a guide-wire is introduced into the sinus through an introducer (1), a balloon is inserted into the sinus over the wire (2) and inflated to widen the sinus opening (3).

Balloon sinuplasty is not suitable for sinusitis affecting the ethmoid sinuses and in nasal polyps. It is most useful in isolated frontal and sphenoid sinusitis. It is also suitable in children in selected cases.

## **Sinusitis in Children**

Symptoms are fairly similar to sinusitis in adults. However, children present in a few different ways.

1. Young children do not complain of symptoms voluntarily and will present late in the disease course. Parents often mistake sinusitis for common colds or nasal allergy and will not seek medical help until the symptoms are more severe.
2. More likely to suffer complications of untreated and undiagnosed sinusitis such as periorbital cellulitis, meningitis. Middle ear infections are also more common.
3. Large adenoids are common in children aged 3 to 8 and will aggravate symptoms and compound treatment by obstructing the postnasal space. Sleep is often affected early in children.
4. Young, apprehensive children will not cooperate in certain nasal procedures such as nasal toilet, douching and postoperative nasal cleaning. This will affect the efficacy of medical and surgical treatment.

## **Sinusitis Treatment in Children**

Children with chronic sinusitis should be treated with prolonged courses of antibiotics and adjunctive therapy before considering definitive surgery. Generally, 4 to 8 weeks of antibiotic therapy is recommended. Adjunctive surgery as sinus washouts and adenoidectomy may be necessary during the antibiotic treatment. In addition, it is important to control concomitant nasal allergy with antihistamines and nasal steroid sprays.

## **Conclusion**

Sinusitis is a very common infection affecting many patients at some point in their life. Symptoms usually resolve with standard medical treatment. However, if symptoms persist more than one month, a full ENT examination is advised.

*Prepared by*

**Dr Gerard Chee**

*Consultant, Ear Nose Throat Surgeon*