

# Medical Focus

## Functional Endoscopic Sinus Surgery (FESS)

### Technical Refinements

#### The Sinuses

The sinuses are four pairs of air filled spaces in the skull. They are distributed over the cheeks, forehead, and between the eyes. Each sinus is connected to the nasal cavity by way of small openings called ostia. Except for the ethmoid sinuses between the eyes, the other sinuses are poorly developed at birth. They normally commence development in later childhood to attain their adult size at the onset of puberty.

Interestingly, no one fully understands the purpose for the sinuses. One explanation is that these air filled spaces make the skull lighter than if it had consisted of solid bone. Another reason may be that they provide a protective buffer zone in injuries of the face, preventing force from being transmitted directly to the vital structure in the skull. Whatever its benefits, one thing is for sure - the sinuses can be the cause of a lot of trouble.

#### Mr Tan's Sinusitis

Mr Tan contracted the infection two years ago. The symptoms first started as a flu, which resulted in a blocked and runny nose. He also had pain over the cheeks, which got worse and reached a crescendo three days later. By then, it had become so painful that he was unable to sleep. He would wake up the next morning feeling that he had not slept at all. The pain of the cheeks had also extended to involve his whole head. By this time, his nose was so blocked that he had to open his mouth to breathe. He would wake up the next day with a very dry and sore throat.

Initially he thought that the symptoms would go away in a week. However, when it continued to persist, and his ability to work was affected, Mr Tan became desperate. Over the next few months, he went around consulting many different doctors and was given a myriad of different medications. He even consulted several Chinese traditional physicians without effect. Finally, a specialist performed an endoscopic

examination of his nose, and found some swelling on the side wall of both nostrils. A subsequent computed tomographic scan (CT scan) demonstrated that he had sinusitis of both his maxillary and frontal sinuses. Sinus surgery was performed under general anaesthesia. One week later, his symptoms of pain, sore-throat, and inability to smell had disappeared. He has also been enjoying very restful and peaceful nights of sleep.

#### The Rigid Hopkin's Endoscopic Rod

With the recent advent of the Hopkin's endoscopic rod, we are now entering a new era of improved visualisation of the nasal cavity and minimally invasive key-hole surgery. The endoscope enables us to make more accurate diagnosis of the causes of sinusitis and to identify new disease processes which could not have been identified before. It has also enhanced our ability to perform sinus surgery by peering through the nostrils instead of having to make unsightly and painful facial incisions.

The new sinus operation that is done through the endoscope is called Functional Endoscopic Sinus Surgery (FESS), pronounced "fest" as in "food-fest". It is an operation that is done on the sinuses using an endoscope with the objective of restoring normal function to the diseased and obstructed sinuses. FESS is the great leap forward that has empowered surgeons to see and operate better in the little confined spaces of the nose and sinuses, thus achieving the objective of disease resolution in a more effective way.

#### The Video Camera

In the past, FESS surgeons had to peer directly into the endoscope by leaning over the anaesthetised patient lying on the operating table. Surgeons tired out easily as they were operating in an uncomfortable and awkward position. Many began to develop neck ache from the many hours straining the neck during FESS surgery. Nowadays in NUH, we are doing our operations through a video attachment to the endoscope that allows us to look at a video monitor while we are operating. It is less of a physical strain. The FESS surgeon can spend a longer time on the operation without tiring out. This translates into increased safety and better outcomes for the patient.

#### The Microdebrider

The microdebrider is a surgical instrument that



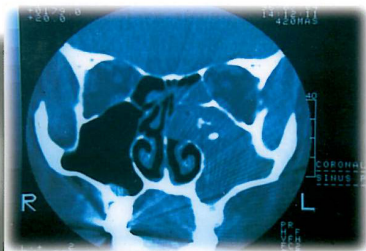
works like a hybrid between a vacuum cleaner and a grass cutter. The cutter chops off unwanted abnormal tissues while the vacuum cleaner sucks it away from the area of operation. The microdebrider has the advantage of allowing the surgeon to remove diseased tissue in a precise manner, cutting it sharply, without tearing and shearing that would have occurred with conventional sinus surgery instruments. This reduces unnecessary damage to the sinus tissues, resulting in less scarring and better healing.

During surgery, blood accumulation in the operating site acts like the recent haze, blurring and reducing visibility with potentially disastrous consequences. Especially in the enclosed confined spaces of the sinuses, complications resulting from such a lack of visibility is exponentially magnified. The microdebrider allows timely and "on-line" removal of blood and tissue, keeping the operation site clean so that the FESS surgeon can proceed safely and smoothly under conditions of good visibility.

#### Conclusion

FESS surgery is still in the process of evolving. Controversy and changing opinions continue to characterise its present state of knowledge. It will be quite a long time more before all the relevant issues are sorted out, and for it to reach maturity. The medical world is still on the learning curve with newer and better instruments and techniques coming onto the market in an attempt to improve patient safety and surgical outcome. Whichever direction it takes, doctors in NUH Department of Ear Nose Throat Surgery, will position themselves, ready to seize on important developments taking place in the FESS world.

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Fungal Sinusitis

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