

The endoscope: new opportunities requiring new skills

Harold Horace Hopkins (1918 - 1994) was a renowned British physicist. His Wave Theory of Aberrations is central to all modern optical design and provides the mathematical analysis which enables the use of computers to create the wealth of high quality lenses available today. In 1960 Hopkins patented the rod lens system, which ingeniously changed the row of glass lenses interspersed by air spaces to one of air lenses interspersed by glass spacers. This led to an increase in optical efficiency of about 8-fold. First, Hopkins found no interest among British or American manufacturers for the rod lens, but Karl Storz saw the potential and it was he who in 1967 manufactured the first of these new endoscopes as part of a long and productive partnership between the two men ⁽¹⁾.

From then on the use of the endoscope in surgery of the nose, the sinuses and the skull base has evolved with enormous speed. In the 20th century most of the effort concentrated on the possibilities of the endoscope to functionally treat the sequelae of chronic rhinosinusitis ⁽²⁻⁵⁾. In the last decade attention has shifted to more extensive use of the endoscope for the management of a variety of abnormalities in the nose, sinuses and in particular of the skull base.

In this issue a number of these newer applications of the endoscope are discussed together with the consequences for the management of our patients. Peter Valentin Tomazic and Heinz Stammberger ⁽⁶⁾ point to the role of a persistent Sternberg's canal in spontaneous cerebrospinal fluid (CSF) leaks and meningoencephaloceles of the lateral recess of sphenoid sinuses. They explain the technique to endoscopically close these defects in the lateral sphenoid sinus. Lesions which extend far laterally in the sphenoid sinus can also be reached but the endoscopic approach may be challenging and as they explain, these CSF closures are less successful than closure at other sites. Despite this, the low morbidity makes the choice for endoscopic surgery instead of transcranial approaches an easy one.

Heathcote and Nair discuss in a minireview the impact of modern techniques on the recurrence rate of inverted papilloma treated by endonasal surgery ⁽⁷⁾. They confirm that endoscopic surgery is now the 'gold standard' for the treatment of the vast majority of inverted papilloma. This is a nice example of how in little more than a decade after the introduction of this new technique to excise inverted papillomas, it has now become the standard of care showing significant advantages over external approaches due to improved visualization of the site of origin of the tumour and the possibilities to work "around the corner". Apart from showing at least equal or even better outcome of endoscopic approaches over open approaches, the authors highlight the increasing understanding about the characteristics of the disease. The same point is made by Bhalla and Wright who show in a prospective fashion that the

pre-operative identification of osteitis can be used in 95% of cases to accurately predict the intra-operative site of attachment of sinonasal inverted papilloma ⁽⁸⁾. Earlier studies had retrospectively shown the osteitis sign and neo-osteogenesis to be reliable markers of the site of attachment of inverted papilloma ^(9,10). Now this is proven in this elegant prospective study to be an almost absolute sign of attachment of the inverted papilloma. With this knowledge it is possible to plan the surgery with optimal preservation of the mucosa with removal of the mucosa and drilling of the area confined to the attachment of the inverted papilloma.

Although the endoscopic approach has won the debate in most benign tumours, the discussion about endoscopic approaches to malignant tumours is still in full swing. Most head and neck surgeons have not acquired the endoscopic skills nor experienced the advantages of the endoscope as much as rhinologists. This results in a healthy skepticism whether this "benign technique" is suitable for the management of malignancies. The primary concern is whether it is possible to adhere to oncological principles: complete en bloc excision with adequate margins of the neoplasm. Secondary concerns include visualization, the ability to achieve hemostasis and deal with vascular complications, and reconstruction. However, a number of case series about the endoscopic management of various sinonasal malignant tumours has been published in recent years ⁽¹¹⁻¹⁴⁾. In this issue Jardeleza et al. contribute to these case series with their experience in endoscopic management of adenocarcinoma in 12 patients ⁽¹⁵⁾. They report an overall disease free survival rate of 91.6% with a median follow-up period of 30 months. Again this is a small series and although contributing to our knowledge, we need larger series of well defined patients with sufficient numbers for meaningful statistical analysis. For that purpose the ERS has invited a group of experts to contribute to an Advisory Board which will consider the present knowledge and published evidence concerning endoscopic techniques in the management of tumours, both benign and malignant, affecting the nose, paranasal sinuses and adjacent skull base. This will be placed in the context of existing techniques, highlight areas where further high quality evidence is required and consider ways in which this may be achieved. The groups of expert, chaired by Valerie Lund, Heinz Stammberger, Piero Nicolai and Paolo Castlenuovo will report in this Journal and at the ERS meeting in Geneva in 2010.

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ERRATUM

In the case report entitled "Septal mucoperiosteal flap for the repair of unilateral choanal atresia" by Ranko Mladina, Ratko Prstačić, Katarina Vuković, Neven Skitarelić (*Rhinology* 47, 320-322, 2009), the surname of Dr Prstačić was unfortunately misspelled. This erratum is meant to show the proper spelling of the surname of Dr Prstačić.