

## Extending endoscopic possibilities in sinus tumour surgery, where will it end?

In this issue of the journal, Minovi reports the results of their series of 89 patients having endoscopic sinus surgery for inverted papilloma (page 205). This is the largest series in the literature<sup>(1)</sup>.

In recent years this journal has published a number of papers on new endoscopic possibilities to approach disease in the nose and sinuses<sup>(2-8)</sup>. Advances in endoscopic instrumentation, along with image guided surgery, and increased experience with endoscopic repair of even large skull base defects, have all opened up new and exciting possibilities. An important reason to approach diseases endoscopically is the apparent reduced morbidity during surgery. However, although some publications address the effects on quality of life in the period of 1-3 years after surgery<sup>(9-12)</sup>, and a few address the difference in efficacy between conventional techniques like Caldwell-Luc and FESS<sup>(13)</sup>, to my knowledge no studies exist that show that endoscopic treatment has indeed a lower co-morbidity than conventional techniques. Another important issue, apart from post-operative morbidity is the efficacy of the surgery. Minovi reports in his study a recurrence rate of the inverted papilloma of 10% which is definitely less than the 18% reported in the largest series of lateral rhinotomy<sup>(14)</sup> and not worse than the 20% mentioned in the historical (conventionally operated) cohort in the meta-analysis of Busquets<sup>(1)</sup>.

When more extensive endoscopic sinus surgery is done, a sound knowledge of areas outside the regular ostiometal complex and ethmoid becomes more and more relevant. Because of the improved imaging techniques and the increasing availability of spiral CT scan with multiplanar or 3D reconstructions, pre-operative imaging has become indispensable and recently a number of studies have been published in this journal on various aspects of CT scanning of the more remote parts of the paranasal sinus<sup>(7, 15-19)</sup>.

At the present time we undertake meticulous excision of inverted papilloma because of the chance of malignant transformation. In this issue Papon and colleagues provide interesting information on the content of MMP-2 and MMP-9 in inverted papilloma (page 211). They show that a significantly increased number of MMP-9 positive inflammatory cells in the lamina propria can be found adjacent to the hyperplastic epithelium compared to the lamina propria adjacent to nonhyperplastic epithelium (reference Papon). Recently Katori et al. showed that precancerous lesions of inverted papilloma exhibited elevated levels of MMP-2 and 9 and these expressions may be associated with early events in IP carcinogenesis<sup>(20)</sup>. In the future immunohistochemical examination of the inverted

papilloma biopsy may help us to decide the risk of malignant transformation and thus indicate the extent of the surgery we have to perform.

Apart from inverted papilloma, juvenile angiofibroma is also more and more often treated endoscopically<sup>(21,22)</sup>. Angiography with preoperative embolization has been shown to reduce intraoperative blood loss and improve intraoperative endoscopic visualization.

There are some early reports of successful removal of malignant sinonasal tumors by endoscopic methods (reviewed in<sup>(23)</sup>). However, until recently the differing expertise and experience of endoscopic sinus surgeons and head and neck (oncologic) surgeons seems to have limited the application of the endoscope in surgery for malignant sinonasal tumours. We will need surgeons experienced in both the oncologic management of sinonasal neoplasia and endoscopic techniques to bridge this gap and capitalize on the advantages of the endoscope without losing sight of oncological principles and the natural history of these rare tumours. In the hands of experienced and skilled surgeons, complete endoscopic removal of benign and most malignant tumours will be the future.

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