

## Short Communication

# Combined approach intranasal endoscopic and external Lothrop procedure in chronic frontal sinus disease

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### Abstract

The endoscopic approach to the fronto-ethmoidal recess (FER) in the treatment of chronic frontal sinus disease is now widely accepted. The Lothrop procedure was first described in 1914, but was largely replaced with more invasive open frontal sinus procedures until the advent of the rigid Hopkins' rod, since when it has enjoyed renewed popularity.

We describe a modification of this technique which allows both transnasal endoscopic and external direct visualization of the FER and frontal sinus and a direct approach to the anterior buttress (or "nasofrontal beak") which allows its quick and simple removal.

**Key words:** Endoscopy; Surgery; Frontal sinusitis

### Case report

An 83-year-old lady was referred to the Department of Rhinology at Charing Cross Hospital, complaining of a one-year history of frontal headache and facial pain associated with cachosmia and purulent post-nasal drip. A coronal computed tomography (CT) scan showed features of a bilateral pansinusitis, with extensive expansion of the left frontal sinus consistent with a mucocoele. The mucoele measured 5 × 4 cm and had eroded and expanded the posterior wall of the frontal sinus.

She underwent endoscopic ethmoidectomy and enlargement of the FER bilaterally. Post-operatively she underwent weekly revue and nasal toilet due to a persistent sinus infection that failed to settle despite repeated systemic antibiotics and intranasal steroids. Fifteen months later, revision left endoscopic frontoethmoidectomy was carried out and initially her symptoms were much improved. However, one year later her headaches returned and a CT scan carried out showed a recurrent mucocoele (Figure 1).

At operation, the anterosuperior septal cartilage and perpendicular plate of the ethmoid were approached via a vertical through and through incision of the cartilage, and resection of the cartilage was undertaken with straight cutting forceps (Mackay). A metal probe was placed up into the frontal sinus from below and the FER was enlarged anteriorly via a Kuhn curette. An external horizontal skin incision was made over the root of the nasion in the glabella region and the procerus muscle divided in the vertical plane. The anterior buttress was then drilled away using a cutting burr via the external approach to leave a 1.5 cm opening (Figure 2). This part of the procedure was undertaken with endonasal endoscopic

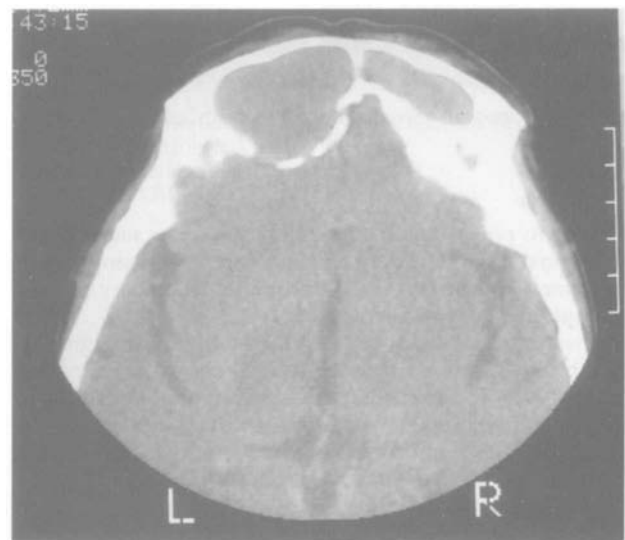


FIG. 1

Axial CT Scan of frontal sinuses, showing left frontal mucocoele and dehiscent posterior wall.

control (Figure 3). The skin was then closed with 6/0 Nylon interrupted sutures, which were removed after one week.

Follow-up at one, two, four, six and eight weeks revealed widely patent frontonasal drainage and a dry, healthy frontal sinus cavity. This was associated with a significant improvement in the patient's chronic symptoms.

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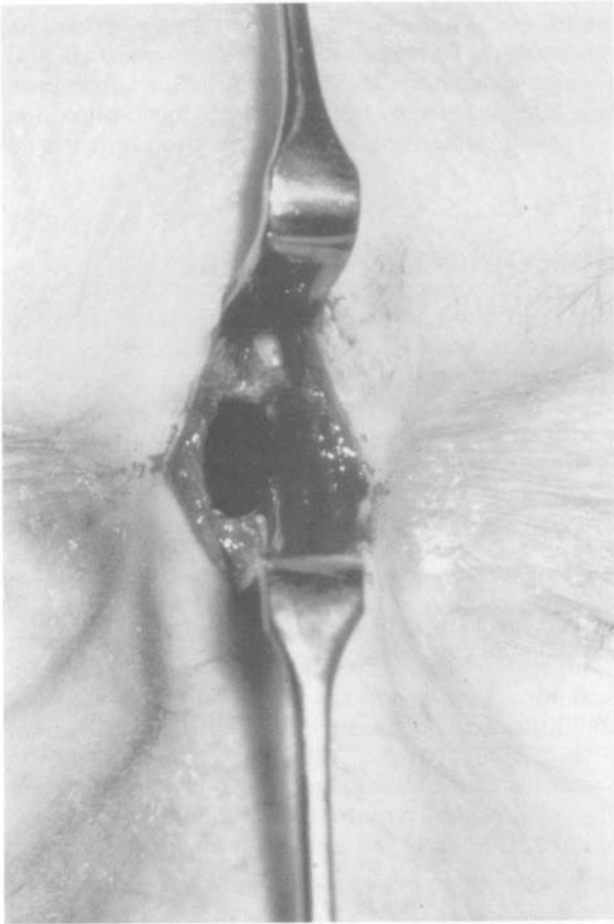


FIG. 2

External approach into frontal sinus with anterior buttress removed.

### Discussion

Prior to popularization of endoscopic sinus surgery, the traditional external approaches to the frontal sinus were the Lynch-Howarth external frontoethmoidectomy and the osteoplastic flap procedures.

These approaches have been shown to have a high rate of morbidity, and recurrence rates of up to 30 per cent (Rice, 1993). In the case of the Lynch-Howarth approach, removal of the bony support of the frontal recess promotes soft tissue collapse and resultant blockage of frontal drainage, as well as poor cosmesis (Gross *et al.*, 1995b). The osteoplastic flap procedure also results in a poor cosmetic result (especially in those with alopecia), and often forehead anaesthesia and/or neuralgia. In addition, obliteration of the sinus with fat makes subsequent radiological sinus evaluation difficult (Kennedy *et al.*, 1989). The endoscopic approach to the FER and frontal sinus has developed with these drawbacks in mind (Draf, 1991; May, 1991; Wigand and Hoseman, 1991; Kuhn, 1996) and in particular it has led to the resurgence of the Lothrop procedure (Lothrop, 1914). As originally described, this combined an intranasal ethmoidectomy and an external Lynch-type approach to remove the superior cartilaginous and bony septum, medial sinus floor and intersinus septum to create a widely patent frontonasal channel, but it fell into disrepute due to difficult intranasal visualization at that time.

Gross *et al.* (1995a) described a modified endoscopic Lothrop procedure. By this technique, the FER and frontal sinus are cannulated with a probe as a guide, mucosa



FIG. 3

Opening the FER via endonasal endoscopic control.

stripped from the perpendicular plate of the ethmoid, anterior frontal sinus floor medial to the nasofrontal isthmus, as well as the anterior buttress (or "nasofrontal beak"), with an endonasal soft tissue shaver (Linvatec, Largo, Fla.) Bone is subsequently removed from the same

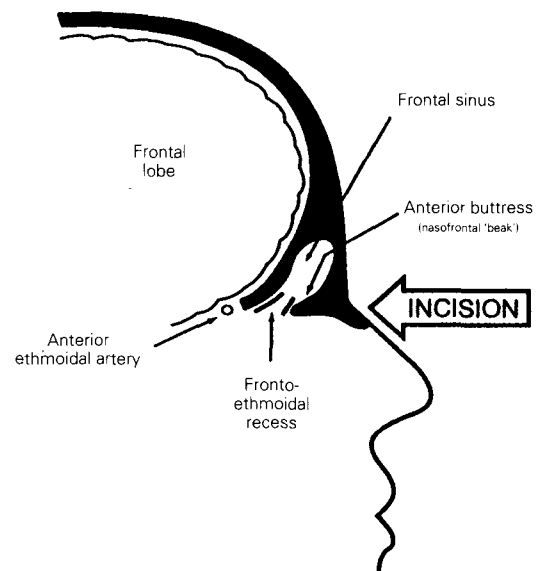


FIG. 4

Sagittal section of skull.



FIG. 5

Healing six weeks post-operatively (right ptosis due to unrelated hemifacial spasm for which the patient received botulinum toxin.)

areas with a 4.5 mm "Linvatec" endonasal bone cutting drill. The anterior buttress forms the anterior wall of the FER and its resection down to a thin shell creates a wider drainage channel (Figure 4).

The additional external modification to this technique makes the drilling of the buttress significantly easier. This is normally a painstaking and time-consuming process which, despite angled endoscopes, is carried out at the anterosuperior limit of the field. A clear view in this area is vital, with the posterior limit of the FER being the anterior skull base. In addition, the frontal sinus mucosa may be directly visualized, and any supraorbital or other discrete sinus cells opened. This task is significantly more difficult via purely endoscopic means from the nose.

In summary, we feel our modification to the endoscopic Lothrop procedure allows quicker, easier and safer, as well as more complete access to the FER and frontal sinus. It is simple to perform and the wound heals with minimal scarring, especially if placed in a natural skin crease (Figure 5). Surgical and anaesthetic time is reduced, and the technique simplifies a procedure which otherwise requires specialist endoscopic equipment and advanced

endoscopic skills. The effect on long-term patency will be ascertained with further follow-up.

#### References

- Draf, W. (1991) Endonasal microendoscopic frontal sinus surgery: The Fulda concept. *Operative Techniques in Otolaryngology-Head and Neck Surgery* **2**: 234-240.
- Gross, C. W., Gross, W. E., Becker, D. G. (1995a) Modified transnasal endoscopic Lothrop procedure: Frontal drillout. *Operative Techniques in Otolaryngology-Head and Neck Surgery* **3**: 193-200.
- Gross, W. E., Gross, C. W., Becker, D. G., Moore, D., Phillips, D. (1995b) Modified transnasal endoscopic Lothrop procedure as an alternative to frontal sinus obliteration. *Otolaryngology-Head and Neck Surgery* **4**: 427-434.
- Kennedy, D. W., Josephson, J. S., Zinreich, S. J., Mattox, D. E., Goldsmith, M. M. (1989) Endoscopic sinus surgery for mucocoeles: a viable alternative. *Laryngoscope* **99**: 885-895.
- Kuhn, F. A. (1996) Chronic frontal sinusitis: The endoscopic frontal recess approach. *Operative Techniques in Otolaryngology-Head and Neck Surgery* **3**: 222-229.
- Lothrop, H. A. (1914) Frontal sinus suppuration. *Annals of Surgery* **59**: 937-957.
- May, M. (1991) Frontal sinus surgery: Endonasal endoscopic osteoplasty rather than external osteoplasty. *Operative Techniques in Otolaryngology-Head and Neck Surgery* **2**: 247-256.
- Rice, D. H. (1993) Chronic frontal sinus disease. *Otolaryngologic Clinics of North America* **26**: 619-622.
- Wigand, M., Hoseman, W. (1991) Endoscopic surgery for frontal sinusitis and its complications. *American Journal of Rhinology* **5**: 85-89.

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