Follow-up of University of Virginia experience with the modified Lothrop procedure

Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
Lothrop procedure for treatment of frontal sinus disease which incorporates removal of the intersinus septum, superior nasal septum, and nasal floor of the frontal sinus to create a large fronto-nasal communication.

Type of intervention
Secondary prevention; treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Patients with persisting chronic frontal sinus disease. The patients were aged 29 to 89, with an average age of 46 years.

Setting
Institution. The study was carried out at the University of Virginia, USA.

Dates to which data relate
Effectiveness and resource data were collected during the period October 1993 to April 1995. No price year was given.

Source of effectiveness data
Effectiveness data were derived from a single study.

Link between effectiveness and cost data
Costing was undertaken alongside the same patient sample as that used in the effectiveness study.

Study sample
20 patients with persistent chronic frontal sinus disease underwent the procedure (13 were performed on an outpatient basis). It was not stated whether power calculation determined the sample size.

Study design
The study design was a single centre cohort study. Follow-up ranged from 1 to 21 months, with a mean of 12 months.

Analysis of effectiveness
The analysis of the study was based on intention to treat. The main outcomes were morbidity, cosmesis, and length of
Effectiveness results
13 out of 20 procedures were performed on an outpatient basis. 2 early patients were admitted overnight for observation. Another patient was admitted overnight for blurry vision, which resolved by postoperative day 1. One patient undergoing inpatient treatment remained for 2 days following the procedure. Of the 20 patients, 2 had a history of significant concurrent disease. Of the remaining 18 patients, 13 had widely patent frontal sinus openings at last follow-up. One had developed significant mucosal edema bilaterally and was treated. All patients expressed significant resolution of their symptoms, although 6 had experienced intermittent frontal pain or occasional purulent drainage during their postoperative follow-up. The modified transnasal Lothrop procedure had a 95% patency rate for the surgically enlarged frontal sinus ostium and was associated with shorter length of stay.

Clinical conclusions
The modified transnasal Lothrop procedure offers advantages as it is effective, less invasive and is associated with shorter or no hospitalization. However, it is technically demanding and will require further long-term follow-up.

Measure of benefits used in the economic analysis
The authors did not develop a summary benefit measure. As such the benefits are assumed to be as shown in the effectiveness results.

Direct costs
The patient cost analysis was based on the total patient charges related to their procedures and any inpatient stays following their surgery. Costs included anesthesia and surgeons’ fees, charges for the operating room (OR) and hospital rooms, medications, and supplies. Charges were included for procedures related to the frontal recess clearing and drill-out procedure.

Statistical analysis of costs
Not carried out.

Currency
US dollars ($).

Sensitivity analysis
Sensitivity analysis was not carried out.

Estimated benefits used in the economic analysis
None of the patients experienced complications. All patients expressed significant resolution of their symptoms. The authors claimed that the Lothrop procedure offered advantages over frontal sinus obliteration including markedly decreased morbidity, improved cosmesis, shorter or no hospitalisation, decreased patient costs, and the improved ability for postoperative endoscopic evaluations for recurrent disease.

Cost results
Patients undergoing the Lothrop procedure had total charges averaging $8,932 as compared to $11,959 for the frontal sinus obliteration patients. The total costs of those patients undergoing frontal sinus drill-outs are $8,828. Surgeons’ fees constituted the majority of all fees for the frontal sinus drill-outs averaging $5,655 versus $4,231 for the obliterations.
**Synthesis of costs and benefits**
Costs and benefits were not combined. The cost analysis performed revealed benefit in terms of decreased patient charges for the transnasal procedures as compared to frontal sinus obliterations. The total patient costs were significantly lower for the drill-out procedure, reflecting a decreased need for inpatient stay. As the effectiveness of the modified Lothrop procedure was shown to be higher than the comparator it may be considered the dominant strategy.

**Authors' conclusions**
After continued follow-up in this series, the modified transnasal Lothrop approach has demonstrated its overall safety, efficacy, and lower patient costs. Although this procedure has produced favourable results, it should be noted that it is technically demanding and will require further long-term follow-up to verify its efficacy and proper role in the spectrum of surgical approaches for the treatment of chronic sinusitis.

**CRD COMMENTARY - Selection of comparators**
The choice of comparator was clear. The comparator used was osteoplastic flap with fat obliterations of the frontal sinus, which has traditionally been the gold standard for treatment of persistent frontal sinus disease.

**Validity of estimate of measure of benefit**
No statistical analysis was carried out to validate the measure of benefit of the study. Benefits were given in narrative, comparative terms and based on a previous study.

**Validity of estimate of costs**
The methodology for the cost analysis was not fully specified. Discount rates were not utilised.

**Other issues**
The authors seem to achieve their goal of presenting a follow-up of the University of Virginia experience in performing the modified Lothrop procedure. However, the patient cost analysis that they carried out has some limitations. They could have carried out a more detailed analysis.

**Implications of the study**
Analysis of the long-term efficacy of this procedure needs to be established before final conclusions can be made regarding this technique which is technically demanding to perform.

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None stated.

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