ABSTRACT

OBJECTIVES: The endoscopic modified Lothrop procedure (EMLP), also known as Draf III or frontal dissection, has recently gained popularity as a minimally invasive alternative to frontal sinus obliteration. This systematic analysis was designed to assess the safety and efficacy of the EMLP.

STUDY DESIGN: Literature review and meta-analysis.

METHODS: We performed a search of all English studies published from 1990 to 2008 that reported results from a minimum of 10 patients undergoing the EMLP. Of the 37 papers reviewed, 18 studies (involving 75-404 patients) contained data from 612 patients meeting inclusion criteria.

RESULTS: The most common indications for EMLP were chronic frontal sinusitis (75.2%) and mucocele (21.3%). Patents had an average age of 47.9 years (range, 14 to 84 years) and were followed for a mean of 28.1 months postoperatively. Only 20.3% of procedures were performed without image-guidance. Stents were rarely used (6%). The rate of major and minor complications was <1% and 4%, respectively. No deaths were reported. Majority of patients were discharged within 24 hours. Postoperative endoscopic follow-up, qualitatively reported in 364 patients, demonstrated frontal sinus patency or partial stenosis in 95.9% at last follow-up. Where specifically reported, subjective outcomes achieved in 82.1% of cases, with 16% reporting no significant change, and 1.2% reporting worsening of symptoms. The overall failure rate (including further surgery) of EMLP was 15.9% (85/541). Eighty percent of failures underwent revision EMLP, while 20% elected to have osteoplastic frontal sinus obliteration.

CONCLUSIONS: When performed by an experienced surgeon, EMLP is a safe and efficacious procedure which is well tolerated.

INTRODUCTION

Despite advances in medical and surgical therapy, chronic frontal sinusitis remains a difficult disease to manage. A graduated approach has been recommended for medically refractory patients.

Frontal sinus obliteration, as popularized by Montgomery in the 1950s, has long been considered the final tier surgery for refractory frontal sinusitis. It is performed through an osteoplastic flap (OF) approach and renders the sinuses permanently non-functional by obliterating them with or from material.

With the recent proliferation of endoscopic surgical techniques, minimally invasive procedures aimed at restoring physiologic ventilation and drainage while avoiding the morbidity of obliteration surgery have been developed.

Draf, Gross, and Close all described an endoscopic, endonasal approach similar conceptually to that described by Lothrop in 1914, in which a combined external and intranasal technique was used to effect the frontal sinus floor and superior. The endoscopic modified endonasal procedure, also known as the Draf III or lateralized frontal dissection procedure, creates a large common drainage pathway for the paired frontal sinuses by resecting the upper nasal septum, the inferonasal frontal sinus plate, and the floor of both sinuses.

The variable anatomy of the frontal outflow tract and close proximity of the orbit and skull base necessitate a detailed understanding of the frontal sinus system. The EMLP offers the advantages of decreased morbidity, shorter hospital admissions with lower costs, improved cosmesis, and better ability to evaluate for disease recurrence post-operatively.

Although generally regarded as an alternative to OF obliteration, the safety and efficacy of this relatively new procedure have not yet been established.

PURPOSE

To systematically evaluate the literature on the EMLP and to examine the safety and efficacy of this procedure.

MATERIALS AND METHODS

STUDY SELECTION AND DATA EXTRACTION

All published studies were reviewed for the purpose of this analysis. The search was conducted from January 1990 to May 2008 and identified 37 unique publications. We included the following criteria: any study that included 10 or more patients undergoing the EMLP, documentation of a frontal sinus CT scan, and reporting of clinical outcomes. The study authors were contacted for more information on some of the published studies.

We included all studies published in the English language that met the above criteria. However, due to the small number of studies, we did not include any Langston's and Studer's studies.

The authors independently performed a thorough review of all publications using the guidelines provided by the MOOSE (Meta-analysis Of Observational Studies in Epidemiology) statement. The studies and the participants were systematically identified using the MEDLINE database.

Exclusion criteria were designated as an anterior cranial base, case reports or less than 10 patients, and reports not in English. Exclusion criteria also included any duplicate publication of data or results from the same institution.

A database was then established which contained data regarding patient population, preoperative work-up, operative technique, and subjective and objective post-operative outcomes.

RESULTS

Eighty studies containing data on 612 patients (Table I) met inclusion criteria and comprised this review and meta-analysis, as illustrated in Figure 1.

Elevated rates of complications are not uncommon following surgical procedures aimed at restoring physiologic ventilation and drainage while avoiding the morbidity of obliteration surgery have been developed.