

## Main Article

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# Effects of nasal lavage with and without mupirocin after endoscopic endonasal skull base surgery: a randomised, controlled study

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## Abstract

**Background.** Nasal lavage with mupirocin has the potential to reduce sinonasal morbidity in endoscopic endonasal approaches for skull base surgery.

**Objective.** To evaluate the effects of nasal lavage with and without mupirocin after endoscopic endonasal skull base surgery.

**Methods.** A pilot randomised, controlled trial was conducted on 20 adult patients who had undergone endoscopic endonasal approaches for skull base lesions. These patients were randomly assigned to cohorts using nasal lavages with mupirocin or without mupirocin. Patients were assessed in the out-patient clinic, one week and one month after surgery, using the 22-item Sino-Nasal Outcome Test questionnaire and nasal endoscopy.

**Results.** Patients in the mupirocin nasal lavage group had lower nasal endoscopy scores post-operatively, and a statistically significant larger difference in nasal endoscopy scores at one month compared to one week. The mupirocin nasal lavage group also showed better Sino-Nasal Outcome Test scores at one month compared to the group without mupirocin.

**Conclusion.** Nasal lavage with mupirocin seems to yield better outcomes regarding patients' symptoms and endoscopic findings.

## Introduction

Endoscopic endonasal approaches for skull base lesions have been extensively developed as part of the evolution towards minimally invasive surgery. Endoscopic endonasal approaches have widened and expanded beyond the treatment of lesions of the sella and parasellar areas, extending sagittally from the cribriform plate up to the clival region. However, endoscopic endonasal approaches for skull base tumours require extensive manipulation of the nasal corridor, especially for those procedures that require multi-layered reconstruction of the skull base defect.

A wide sinonasal corridor is important for adequate exposure of the surgical field and for instrumentation needed to facilitate the safe excision of the tumour. This extensive manipulation results in significant post-operative sinonasal morbidity. Awad *et al.*<sup>1</sup> reported nasal crusting as the most common symptom (50.8 per cent) experienced after an endoscopic endonasal approach, followed by nasal discharge (40.4 per cent), nasal airflow blockage (40.1 per cent) and olfactory disturbances (26.7 per cent). The frequent use of nasal lavages to clean the nasal cavity is an accepted practice, to lessen morbidity.<sup>2</sup>

Nasal lavage is a simple, inexpensive and long-established method for treating a variety of nasal and sinus conditions, such as rhinitis and chronic rhinosinusitis, and for managing post-operative patients. It is easy to perform, and seems to improve nasal symptoms and, subsequently, post-operative quality of life (QoL). Nasal lavage acts by mechanically cleansing crusting and reducing mucociliary transit time; thus, it improves the mucociliary clearance of the sinonasal tract.<sup>3</sup> Crusts and thick secretions, which are common after surgery, become soft and less adherent with nasal irrigations.<sup>4</sup> This helps with the nasal debridement performed in out-patient clinics during follow up.

Mupirocin is produced by *Pseudomonas fluorescens*, and works by inhibiting bacterial protein synthesis via binding reversibly to bacterial isoleucyl-tRNA-synthetase.<sup>5</sup> It has previously been used as a treatment and as a prophylaxis for *Staphylococcus aureus* nasal carriers. Its antibacterial spectrum includes Gram-positive micro-organisms such as *S aureus*, *Staphylococcus epidermidis* and *Streptococcus pneumoniae*. In addition, it shows antibacterial properties against certain Gram-negative organisms, such as *Haemophilus influenzae*, *Moraxella catarrhalis* and neisseria species.<sup>6</sup> Therefore, it covers the common causative micro-organisms responsible for infections of the nasal cavities. Mupirocin can be affected by pH, and it has been suggested that it may be more active in acidic pH. However, a recent pharmaceutical study determined that mupirocin is stable, and does not show any degradation in either acidic or alkaline environments.<sup>7</sup> No study