

Short communication

Oximetry and capnometry monitoring during plastic surgery procedures with bilateral nasopharyngeal airways (BNPA)

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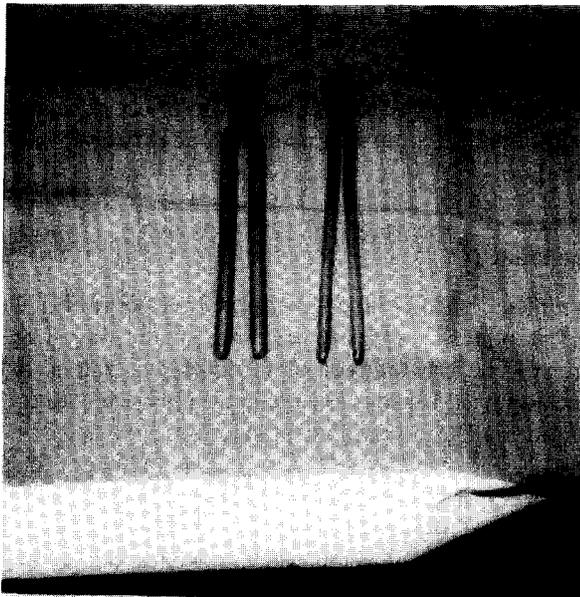


Figure 1. Bilateral nasopharyngeal airways.

The use of bilateral nasopharyngeal airways (BNPA) in anaesthesia was first reported in 1969 (Figure 1). This method is suitable for outpatient anaesthesia where mask would be impractical in facial areas and endotracheal intubation undesirable due to potential sequelae¹.

Patients for blepharoplasty, otoplasty, meloplasty, excision of tumours of the head, face and neck, and cataractectomy have been successfully anaesthetized with BNPA (Figure 2).

Ten patients were monitored with Datascope Accusat

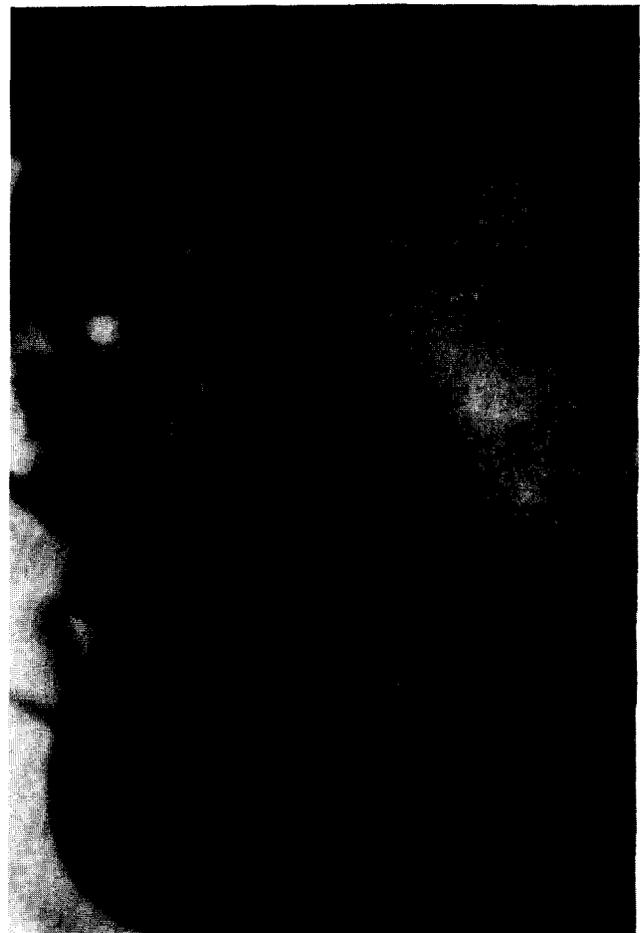


Figure 2. Facial tumour.

pulse oximeter and Ohmeda 5200 CO₂ analyser in the study. General anaesthesia with a semi-open breathing circuit was used with F_iO₂ 90-100%, isoflurane 1-2% and midazolam 2 mg, and fentanyl 100 µg as preoperative medication. After topical anaesthesia with the BNPA in the hypopharynx², oxygen saturation was mea-

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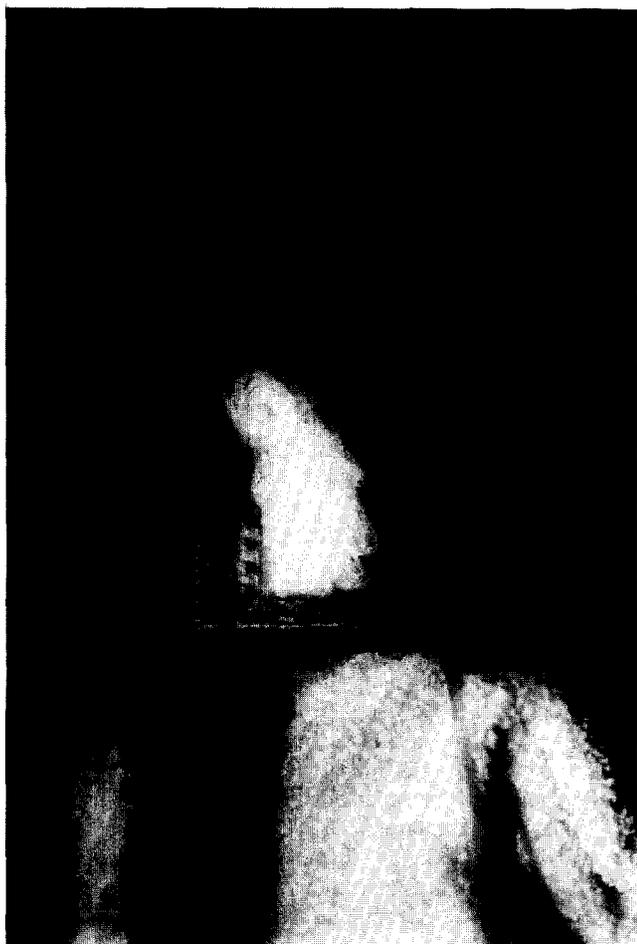


Figure 3. CO₂ adaptor in place; gauze covering mouth.

sured at the fingertip and end tidal CO₂ (ETCO₂) at the BNPA adapter. O₂ saturation ranged between 98 and 100% with ETCO₂ 38 ± 4 mg.

Assessing adequacy of ventilation with BNPA in a semi-open breathing system has been difficult. While pulse oximetry affords information on the adequacy of oxygenation, no means of measuring hypercarbia or hypocarbia, prompt airway obstruction or accidental oesophageal intubation have previously been available prior to capnographic monitoring. Functioning as a 'pop-off' valve, the oropharynx is diluted with the atmospheric air unless the mouth is sealed (Figure 3). Surgery

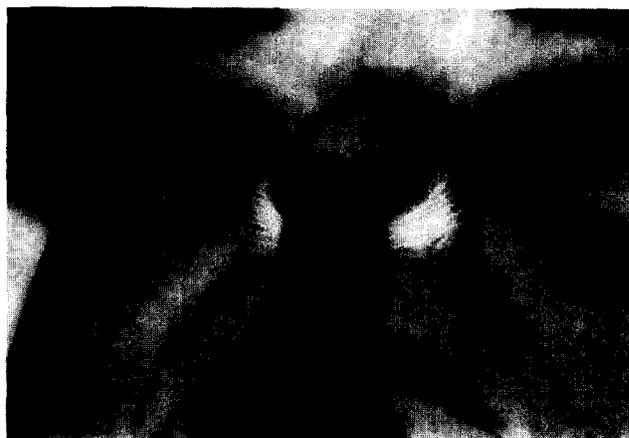


Figure 4. BNPA in place.

of the eyes, face, head, and neck offer a method not requiring endotracheal intubation which can cause orotracheal complications such as tracheitis, cough, and spasm. Outpatient procedures utilizing BNPA in adults and children can be safely performed with modern monitoring techniques including oximetry and capnometry.

Patients undergoing ocular procedures including strabismus correction, vitrectomy, cataractectomy³ and plastic surgeries of the face including meloplasty, blepharoplasty, otoplasty, excision of minor tumours of the face, head and neck can be safely monitored under general anaesthesia (Figure 4).

The method is simple, atraumatic, muscle relaxants are not required, instrumentation with laryngoscope is not needed, and the procedure does not provoke coughing. There is no post-intubation pharyngitis and no tendency toward increased intraocular pressure.

References

- 1 Lanier WL. Improving anesthesia mask fit in edentulous patients. *Anesthesiology* 1987; **66**: 1053
- 2 Kartha RK. Transnasal anesthesia of the pharynx, larynx and trachea. *Anesthesia* 1987; **42**: 320
- 3 Katz H, Richards J. General anesthesia without intubation for cataract surgery. *Anesthesiology Reviews* 1976; November: 29-31.