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Safe Nasogastric Tube Placement in a Patient with a Basal Skull Fracture

To the Editor—Intracranial placement of a nasogastric or an endotracheal tube is a potentially catastrophic complication that has been described in patients with basal skull fractures.1–3 We describe a technique in which the fiberoptic bronchoscope was used for placement of a nasopharyngeal airway through which a nasogastric tube was inserted in a patient with a basal skull fracture.

Report of a Case

A 17-year-old male presented to the emergency room for the treatment of blunt trauma to the face as a result of an assault with a baseball bat. The patient was in moderate distress due to traumatic pain but was alert and oriented to person, place, and time without respiratory distress. Physical examination revealed a fractured mandible and a bloody oriox discharge. The nose and other facial structures appeared intact. Basal skull fracture was confirmed by computed tomography. Cervical spine x-rays showed no fractures or dislocations. No other associated trauma was noted on physical or radiologic examinations.

The patient was brought to the operating room for emergency treatment of a displaced mandibular fracture. Since postoperative mandibular immobilization was necessary, the nasotracheal approach was selected for control of the airway. A nasogastric tube also was considered necessary for postoperative decompression of the stomach.

The trachea was intubated via the nose with the patient awake using a fiberoptic bronchoscope (5F, Model FB19D, Pentax Corporation, New York). Following tracheal intubation and verification of movement of extremities upon command, the patient underwent general anesthesia. After surgical anesthesia was achieved, an 8F nasopharyngeal airway was placed over the flexible bronchoscope using a bacteriostatic surgical lubricant. The bronchoscope was then slowly advanced through the nares into the oropharynx. A clear view of the mucosa was ensured at all times during the bronchoscope advancement. After confirmation of the correct oropharyngeal position, the nasopharyngeal airway was advanced over the bronchoscope. The bronchoscope was then removed and a 16-G nasogastric tube was placed through the nasopharyngeal airway. When the tip of the nasogastric tube emerged in the posterior oropharynx, Magill forceps were used to direct it into the esophagus. The nasopharyngeal was then removed from the nose and cut off. The nasogastric tube functioned well intraoperatively and postoperatively.

We believe that the use of the fiberoptic bronchoscope for nasogastric tube placement is useful in patients with basal skull fractures without mid-face or nasal trauma. A limitation of this technique would be the inability to directly visualize the nasopharynx, which may occur with the presence of blood, secretions, or mechanical obstructions. The insertion of a nasopharyngeal airway over a fiberoptic bronchoscope with continuous observation of the nasal mucosa, followed by a nasogastric tube placement, should be considered for selected patients with basilar skull fractures.

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Epidural Versus Intravenous Fentanyl

To the Editor—Recently Sandler et al.1 reported that equal amounts of fentanyl were required to treat post-thoracotomy pain when fentanyl was given through a lumbar epidural catheter or intravenously. They contrasted their findings with a recent study of ours in which we showed that significantly less fentanyl was required when administered on a patient-controlled analgesia (PCA) basis through a lumbar epidural catheter as compared to PCA fentanyl given intravenously.2

Sandler et al. suggested that one reason for the difference in our respective studies was that their patients did not achieve good an-

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algiesia for at least 4–6 h postoperatively, resulting in “up regulation of spinal cord analgesic pathways” and persistently greater opioid requirements thereafter. We believe that other differences in experimental design also may have been important. First, all patients in our study received fentanyl either through the lumbar epidural route or intravenously on a double-blind, patient-controlled basis, thereby avoiding observer bias in determining when fentanyl boluses were administered. Once our patients were comfortable, we sought to find the lowest infusion rate that maintained good analgesia by lowering infusion rates whenever visual analog pain scores were less than 2 of 10. A similar approach was used by Salomaki et al. in their study of thoracic epidural fentanyl versus intravenous fentanyl for thoracotomy pain. Sandler et al., on the other hand, reduced infusion rates only when their patients became excessively drowsy or developed significant carbon dioxide retention. As a result, fewer than half their patients had any reduction in fentanyl infusion rates once good analgesia was achieved. It is therefore not surprising that drug requirements were similar in their groups.

Second, Sandler et al.’s results concerning the respiratory effects of lumbar epidural fentanyl and intravenous fentanyl are consistent with a direct central nervous system effect of the former. They found that epidural patients had significantly higher rates of episodes of apnea and slow respiratory rates even though there were no differences in plasma fentanyl levels at any measurement time.

We agree with Sandler et al., Salomaki et al., and Welchew and Breen that, to minimize epidural fentanyl requirements, the catheter should be placed at or near the level of the dermatomes involved with postoperative pain. We believe, however, that fentanyl requirements post-thoracotomy are significantly reduced even with lumbar epidural administration as compared to intravenous and suggest that thoracic epidural fentanyl infusion should be reserved for those patients in whom systemic opioid effects must be kept to a minimum.

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In Reply:—Grant et al. have unfortunately misread and misinterpreted some of our findings. 1) We clearly demonstrated, as shown in figure 5 of our paper, that significantly larger quantities of fentanyl were required via the lumbar epidural catheter to produce equianalgesia in the epidural and intravenous groups. 2) Rigid parameters were required to increase fentanyl dosing, which are clearly outlined in the study, therefore minimizing observer bias. Similarly, stepwise decrease of the infusions was controlled by similar criteria at regular intervals when data collection occurred. In a regular clinical setting, we believe that somnolence and carbon dioxide retention are the most useful criteria for decreasing infusions if they are observer-controlled.

Similarly, the results obtained from continuous respiratory monitoring may have been misinterpreted. Although the number of episodes of apnea and slow respiratory rates were significantly higher at a small number of time periods later in the 24-h postoperative observation period, this was related to a very small number of patients with a relatively high incidence of respiratory disturbances in both groups. For example, only four patients in the epidural group and five in the intravenous group had apnea rates greater than 10/h.1 This may represent marginally increased respiratory disturbance in the epidural group but requires cerebrospinal fluid sampling for fentanyl to validate the theory. We do not dispute that a portion of the fentanyl dose given epidurally (or perhaps systematically) may be acting at the spinal level, but we believe that, under the conditions of our study, much of the analgesic effect was produced by systemic reabsorption.

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