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Intracranial placement of a nasogastric tube.

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Abbreviated Reports

Intracranial Placement of a Nasogastric Tube

Inadvertent intracranial placement of a nasogastric tube is a rare potential complication in nasogastric intubation of the severely traumatized patient. We report three cases of inadvertent intracranial placement in patients who had severe craniofacial traumatic injury.

Case Reports

Case 1

A 33-year-old man sustained a severe craniofacial injury in a high-speed automobile accident. Initial evaluation at admission revealed an unresponsive patient with blood draining from the left external auditory canal, racoon eyes, and step-off deformities involving the frontal and parietooccipital regions of the skull on palpation. Anteroposterior and lateral radiographs revealed extensive comminuted fractures of the skull with at least two large depressed fragments (Fig. 1). A nasogastric tube was coiled in the right side of the cranial

cavity. A CT scan of the head confirmed intracranial placement of the tube, with associated pneumocephalus and depressed comminuted skull fractures.

Case 2

A 54-year-old woman was involved in a motor-vehicle accident. On admission, she exhibited decorticate posturing, with one pupil dilated and unresponsive to light. A nasogastric tube was inserted because of persistent vomiting. Anteroposterior and lateral skull radiographs showed intracranial placement of the tube, which entered the skull through the region of the sphenoid sinus.

Case 3

A 27-year-old man suffered closed head injuries in a severe automobile accident. Supportive care administered in the emergency room

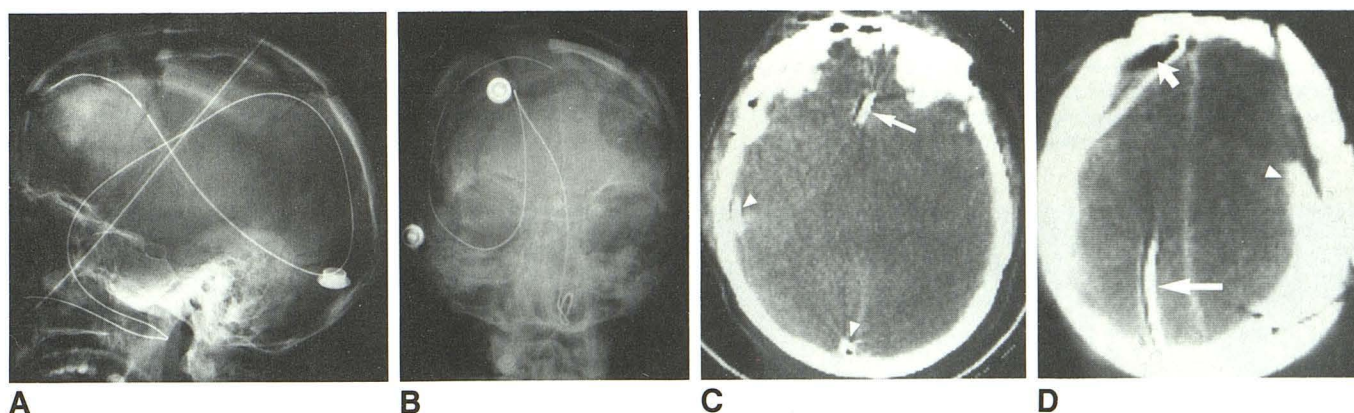


Fig. 1.—A, Lateral radiograph of skull shows extensive comminuted fractures and a large depressed fracture fragment in left parietal region. Fracture lines extend nearly to base of skull with opacification of sphenoid sinus. Nasogastric tube, kinked on itself in nasopharynx, extends through floor of anterior cranial fossa.

B, Anteroposterior radiograph shows nasogastric tube coiled in right side of cranial cavity and large depressed left frontoparietal fracture fragment.

C, Head CT scan shows tube entering cranial cavity through floor of anterior fossa (arrow). Note additional portions of coiled tube in occipital and right parietal regions (arrowheads).

D, CT scan shows tube coiled in right side of cranial cavity (long arrow), pneumocephalus (short arrow), severe comminuted skull fractures, and large depressed fracture fragment in left parietal region (arrowhead).

included nasogastric and endotracheal intubation. Multiple radiographic studies were performed. A lateral radiograph of the skull showed intracranial placement of the nasogastric tube, which entered through the floor of the anterior fossa.

Discussion

Real and potential complications of nasogastric intubation include endotracheal placement; atelectasis; perforation of the lung, pneumothorax, heart, esophagus, and/or stomach; mediastinitis; rupture of the great vessels in the mediastinum; stomatitis; ulceration and/or erosion of the nose and soft palate; gastric or esophageal erosion and ulceration; esophageal stricture; rupture of esophageal or gastric varices; acute laryngeal edema; and erosion of a chronic indwelling nasogastric tube into an aberrant right subclavian artery or other tortuous great vessel [1].

Inadvertent intracranial placement of a nasogastric tube can occur in patients who have sustained severe craniofacial or maxillofacial trauma [2-6]. Simple anteroposterior and lateral radiographs of the skull are the easiest, safest methods to show intracranial placement.

Potential means for introduction of a nasogastric tube into the cranial vault include (1) a comminuted fracture of the base of the skull involving the floor of the anterior cranial fossa, which can provide a port of entry for a malpositioned or misdirected nasogastric tube from the nasopharynx to the cranial cavity (Fig. 1A), and (2) disruption or fracture of the cribriform plate, or a cribriform plate of unusually thin composition. A transversely oriented rigid nasogastric tube can be improperly advanced directly through the cribriform plate in these instances. In such situations, blind passage of a nasogastric tube is contraindicated. Additional relative contraindications include CSF rhi-

norhea in association with acute head or maxillofacial trauma and failure of a nasogastric tube to pass freely and easily. Patients with clinical conditions that may preclude uneventful nasogastric intubation should have the tube placed under fluoroscopic guidance or laryngoscopic visualization. The position of the newly placed or repositioned nasogastric tube should always be confirmed by radiographic examination rather than by aspiration of gastric contents or auscultation of air injected through the tube.

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