Ulceration of the nasal ala and dorsum secondary to improper support of the nasoendotracheal tube

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The authors emphasize the importance of providing adequate support for anesthesia hoses and the nasoendotracheal tube in the intubated patient.

One facet of nasoendotracheal anesthesia which rarely gets sufficient attention is that of providing adequate support for the weight and position of the gas delivery hoses on the intubated patient. This article describes a means of avoiding an iatrogenic lesion resulting from inadequate support of anesthesia hoses and the nasoendotracheal tube.

Ulceration or necrosis of the nasal ala and/or of the skin on the bridge of the nose are occasional sequelae of nasoendotracheal intubation.\textsuperscript{1,2,8,4} Gaisford has encountered five cases of postnasal intubation slough of the skin of the nostril, two of which required plastic repair.\textsuperscript{4} Barkin and Trieger have experienced five cases of postoperative necrosis of the alar integument.\textsuperscript{2} While not among the myriad of dramatic, catastrophic problems sometimes associated with anesthesia (administered by any route), this type of iatrogenic lesion is worth reporting to emphasize its potential seriousness and ease of prevention.

Besides possibly causing lesions of the nasal ala or dorsum, inadequately supported nasal (or oral) endotracheal tubes are subject to kinking. This kinking, at best, may result in the inconvenience of a halt in surgery while the anesthetist dives beneath the drapes to reposition the tube and, at worst, may give rise to the sequelae of airway obstruction. Moreover, the authors have seen a case where a patient, inadvertently extubated in an attempt to unkink the nasoendotracheal tube during a Le Fort I maxillary osteotomy, was almost lost.

The nasoendotracheal tube must always be securely fastened at the nostril to prevent undue superior traction on the naris and possible pressure necrosis. The external attachment must lie flat over the face of the patient to permit sterile surgical draping. The tubes leading to the gas machine should be attached to the head of the patient so that the anesthetist has no need to be near the patient's head. There should be enough freedom of the patient's head and neck to permit rotation any time during the course of the operation.\textsuperscript{1}

Report of Case 1

A 43-year-old female required excision of the left submaxillary gland, because of chronic sialadenitis. Other than for the presenting lesion, her past medical history, physical examination, and preoperative investigative studies were within normal limits.

The patient was intubated nasoendotracheally, atraumatically, in rou-
tine fashion; anesthesia was maintained on a mixture of halothane and nitrous oxide-oxygen.

A piece of $\frac{1}{2}$-inch adhesive tape around the protruding portion of the nasoendotracheal tube secured it to the patient's nose. Several pieces of sterile 4 x 4-inch gauze were positioned on the patient's forehead, over which were placed the corrugated rubber anesthetic gas delivery hoses.

The procedure had to be halted immediately after draping and several times during surgery to permit unkinking of the endotracheal tube and readjustment of the protruding portion of the tube and the anesthetic gas delivery hoses. Three hours later, upon undraping at the end of the case, it was noted that the patient's nose was severely deformed from the traction exerted by the weight of the gas delivery hoses pulling on the nasoendotracheal tube (Figure 1). When the patient was extubated, her left nasal ala bore the stigma of the insult: an ulceration which measured 6 mm in diameter (Figure 2) and which, fortunately, healed uneventfully.

**Report of Case 2**

A 41-year-old female required a four-part maxillary osteotomy because of a low angle prognathic mandible, short maxillary vertical height and severe overbite. Except for obesity, her past medical history, physical examination, and all preoperative laboratory values were within normal limits.

The patient was intubated nasoendotracheally, atraumatically, in the usual fashion. Anesthesia was maintained on a mixture of Ethrane® and nitrous oxide-oxygen.

Two pieces of $\frac{1}{2}$-inch adhesive tape were used to secure the nasoendotracheal tube. A folded towel was positioned on the patient's forehead, over which were placed the corrugated rubber anesthetic gas delivery hoses. A $90^\circ$-angle metal adapter was used. The tube and the gas delivery hoses were secured with 2-inch adhesive tape stretched around the patient's head.

About two hours before the end of the procedure, which lasted a total of six hours, it was noted that the adhesive band around the patient's head and the folded towel were unstable. It was necessary to adjust the position of the endotracheal tube and gas delivery hoses several times during the case. Upon undraping at the end of the procedure, it was seen that the patient's nose had been severely deformed by the more or less constant weight of the gas delivery hoses pulling on the nasoendotracheal tube (Figure 1). When the patient was extubated, her left nasal ala bore the stigma of the insult: an ulceration which measured 6 mm in diameter (Figure 2) and which, fortunately, healed uneventfully.

**Figure 1.**
Typical nasal deformity produced by improperly supported nasoendotracheal tube.

**Figure 2—Case 1.**
Ulceration of ala secondary to traction exerted upon nasoendotracheal tube and naris by improperly supported anesthetic gas delivery hoses. (A different case than that of Figure 1.)
Figure 3—Case 2.
Eleven days post-injury. Ulceration of the skin of the bridge of the nose and the nasal ala.

The resulting ulcerations of the nasal dorsum and ala are illustrated in Figure 3. Note that this photograph was taken 11 days postoperatively. Fortunately, both lesions healed without scarring.

Conclusion
Failure to properly support the weight and position of anesthesia hoses and endotracheal tube can give rise to various undesirable sequelae.

Two cases of iatrogenic ulceration of nasal tissues secondary to improper positioning and inadequate support of the nasoendotracheal tube and anesthesia hoses were presented as examples. In general, the severity of the injury will be directly proportional to the amount of pressure exerted on the nose and the duration of the procedure.

A device for the support of endotracheal tube and anesthesia hoses is illustrated (Figure 4) and is described in detail in another paper.3

REFERENCES
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