

Securing an Endotracheal Tube in the Presence of Facial Burns or Instability

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Temporarily securing the oral endotracheal tube in a patient with a burned or unstable face can be a difficult challenge. Facial fractures with or without a facial burn, loss of teeth with or without facial fractures or burns, or a facial burn requiring debridement periorally all often present problems in terms of securing the oral endotracheal tube.

The traditional approach has been wiring the endotracheal tube to a stable molar or securing the tube to the face using standard or umbilical tape. Wire can cause damage to teeth and tape, either standard or umbilical, is sometimes not optimal from a surgical standpoint nor safe from an anesthetic and patient standpoint. External taping can impede facial debridement and the blood caused by debridement can loosen the tape, making an extubation or mainstem intubation more likely.

Methods

We submit that another useful technique involves placing a heavy braided suture, such as 0 silk, circumferentially around the lingual base of teeth which have a narrower apex than biting surface. Several knots complete the tie around the buccal surface. Approximately two centimeters above the knot which secures the tie around the tooth, another knot is made. The endotracheal tube can then be secured against this knot. This creates a short leash for the endotracheal tube which is anterior to the tooth and facilitates visualization of the tube while effectively preventing significant upward and downward movement.

In the edentulous patient, this method can be adapted with the aid of a Zueler Awl to pass a silk suture or a #28 gauge wire through the maxillary alveolar bone. Potential problems include a maxillary sinus-oral fistula. This is a greater risk in older patients because of the downward progression of the

maxillary sinus with age.

Added stability can be gained by performing the tie around two upper teeth. Because the surgeon may wish to place his gloved finger into the oral cavity to facilitate the debridement, one should not tie around both upper and lower teeth.

The suture can easily be removed when extubation is appropriate by cutting it at the base of the tooth with a scalpel or needle edge. It is obviously necessary to remove all of the suture to avoid a possible subsequent gingivitis from this source.

Discussion

This approach has been used successfully for the past five years in 27 facially burned or traumatized patients at the University of Iowa. Review of these records revealed that there has not been an accidental extubation, mainstem intubation, or dental injury.

The technique was initially used after an accidental extubation during surgery--caused probably by a combination of manipulation of the face and blood diminishing the adhesiveness of standard tape. Umbilical tape had also been frequently used in these situations but it can physically impede the debridement or become loose with blood soaking or impair the viability of injured and ischemic tissue by the pressure it exerts.