

**ENDOTRACHEAL TUBE STABILIZER****BACKGROUND****1. Field of Invention**

This invention relates generally to endotracheal tube holders, particularly holders which stabilize breathing tubes within a patient's trachea.

**2. Description of Prior Art**

Endotracheal tubes (also referred to as breathing tubes) are well known in the medical arts for use in ventilation of patient's during administration of anesthesia, resuscitation, and other critical care intervention. The endotracheal tube passes between the patient's lips and teeth into the mouth, and comes to rest in the patient's trachea. The anatomical landmarks hereinafter referred to as the patient's airway include the mouth, oral pharynx, larynx, and trachea. Ensuring static stability of the endotracheal tube after initial placement is essential to quality patient care.

Problems resulting from endotracheal tubes becoming dislodged after initial placement have been well documented in the art.

Providing a suitable means for stabilizing the endotracheal tube has been the object of several prior art devices, including adhesive tape strips fastened from the tube to the patient's cheeks. Adhesive tape is well known for causing skin irritation and has fallen out of favor with the medical community. The evolution of tube securing devices include head encircling narrow fabric bands which require hand tying or Velcro™ type fasteners. A major draw-back to these band retention devices is the lack of grip necessary to hold the tube in place. Other types of tube holding devices are comprised of a face plate and integral bite block held against the patient's lips with an adjustable head strap. These face plate designs commonly include a tube locking mechanism, that prevents the tube from rotating out of position. Typical of these prior art tube holders are those disclosed in U.S. Pat. Nos. 4,249,529, 4,744,358, and 5,402,776.

The designs embodied in prior art tube holder devices have been cumbersome and complicated. Most tube holders accommodate a narrow range of tube sizes and provide limited access to the patient's mouth. Installation of the harness or attachment system of most tube holders requires multiple steps.

**SUMMARY OF THE INVENTION**

In a first embodiment an endotracheal tube stabilizer includes an elongate frame having a transverse tube channel with an opening sized to receive an endotracheal tube. Straps are provided for securing the frame to the head of a patient with the frame bridging and the tube channel adjacent to the patient's mouth. A clamp having a body and a distal foot is attached by the clamp body to the frame with the distal foot traveling in an arcuate path relative to the frame from an open position remote from the opening of the transverse tube channel to a select operative position blocking the opening of the tube channel, whereby with an endotracheal tube received in the slot the distal foot, in the operative position, clamps the endotracheal tube in a fixed position relative to the frame within the channel. Preferably, an arcuate track is attached to the frame with the clamp body slidably engaging the arcuate track. Serrations are provided on a surface of the arcuate track. A blade extends from the clamp body and is biased to an extended position in operative engagement with the serrations to secure the clamp body against movement along the arcuate track. The blade is retractable to a retracted

position out of engagement with the serrations to enable free movement of the clamp body along the track. Preferably, the serrations are inclined to allow free movement of the clamp body toward the mouth of the tube channel with the blade in the extended position while preventing movement of the clamp body away from the mouth with the blade in the extended position. A lever extends from the frame and is spaced from the arcuate track so that a clinician can engage the lever and the clamp body between a finger and a thumb of one hand and slide the clamp body toward the lever to secure an endotracheal tube within the channel.

In another embodiment an endotracheal tube stabilizer includes an elongate frame having a transverse tube channel with an opening sized to radially receive an endotracheal tube and an elongate track attached to the frame proximate the tube channel. Straps are provided for securing the frame to the head of a patient with the frame bridging and the tube channel adjacent the patient's mouth. A clamp having a body and a distal foot slidably engages the frame track at the clamp body and is freely slidable in a direction from an open position with the foot remote from the opening of the tube channel toward an operative position with the foot blocking the opening of the tube channel. Serrations on a surface of the track and a cooperating blade extending from the clamp body prevent slidable movement of the clamp body in a direction from the operative position toward the open position without manual actuation of the blade to a retracted position.

Yet another embodiment of the endotracheal tube stabilizer is an elongate frame having a transverse tube channel with an opening sized to radially receive an endotracheal tube. A clamp having a body and a distal foot is attached at the body to the frame for movement of the distal foot between an operative position with the foot blocking the opening of the tube channel and an open position with the foot remote from the opening of the tube channel. A ratchet structure between the clamp body and the frame permits free movement of the distal foot toward the operative position and prevents movement of the distal foot in a direction toward the open position without manual actuation.

The endotracheal tube stabilizer of the present invention provides a simple, reliable and rapid apparatus for locking an endotracheal tube securely in a select position relative to a patient's airway. The endotracheal tube stabilizer provides a ratchet clamp actuated by a single hand clasping motion which secures the endotracheal tube where desired. The arcuate motion of the clamp foot enables the tube stabilizer to readily accommodate a wider range of tube sizes than prior art devices. Moreover, the endotracheal tube stabilizer is molded from thermoplastic in a shape conforming to the contours of a person's mouth. This not only enhances the comfort of a user, it provides for simple and inexpensive manufacture of the frame. The clamp can be readily disengaged from the tube stabilizer by the single hand of a clinician facilitating ready readjustment of the position of the endotracheal tube should such readjustment become necessary by patient movement. The endotracheal tube stabilizer further provides an arcuate wall extending lengthwise into a patient's mouth to protect the tube from pinching by a patient's teeth. Finally, the endotracheal tube stabilizer provides apertures on opposite sides of the tube channel which promote clinician access to a patient's mouth.

**BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1 is a pictorial view of a functioning endotracheal tube stabilizer of the present invention which shows how the