Pharyngeal-Enteric Tube Combination Device

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Technology description

Introduction

Patients with a wide variety of illnesses have poor swallowing reflexes and may therefore be unable to manage their oral secretions. This can lead to fluid buildup in the pharynx with fluid aspiration into the lungs, and often visible drooling out of the mouth. These patients do not tolerate oral nutrition, rather they receive liquid nutrition delivered via a long flexible tube (an "enteric tube") that reaches the stomach through the nasal passages. A common complication of enteral nutrition is unnoticed regurgitation of stomach fluid with aspiration of gastric acid, saliva, food and secretions into the airway. Therefore, patients with impaired swallowing are at great risk of developing aspiration-induced compromised breathing function and lung infection leading to increased length of stay and health care costs. Further, patients with this problem are often also in need of supplemental oxygen.

Intermittent oral suctioning to clean out the mouth and pharynx from secretions is currently used to reduce aspiration risks. Other preventative measures include elevating head/body positioning and applying careful feeding protocols. However, these measures are imperfect and require a significant time commitment from caretakers. In addition, intermittent oropharyngeal suctioning evokes gag reflexes and is very unpleasant for the majority of patients.

Technology Description

Dr. Axel Rosengart of the Cedars-Sinai Medical Center has designed a device that combines an enteric feeding tube and a pharyngeal suctioning tube that pumps food into a patient's stomach while independently allowing suctioning of a patient's throat to remove pharyngeal secretions. The device has a "tube-in-tube" design where the tubes are coaxially arranged with the pharyngeal suctioning lumen positioned external to the feeding tube. The pharyngeal tube provides a path for secretions that have been vacuumed into perforations to flow outwards toward an external reservoir for disposal. Optional embodiments include a third tube which provides access to the throat for supplemental oxygen delivery directly to the entrance of the patient's trachea.

The current method of intermittent suctioning of patients with impaired swallowing has many drawbacks, including (a) the need for constant monitoring of the caregiver, (b) uncomfortable arousal each time a catheter is inserted into the throat which elicits strong gag reflexes, and (c) risks for bleeding and laceration of mucous membranes. Additionally, the current solutions for supplemental oxygen administration (e.g., nasal prongs or face masks) are frequently irritating and cumbersome for the patient and unreliable for the caregiver.

Application area

• Enteral feeding
• Pharyngeal suctioning

Advantages

In contrast, Dr. Rosengart’ s device:
• Replaces transoral suctioning and reduces the discomfort and risks associated with it. This also drastically decreases the need for effort and monitoring by the caregiver.
• Reduces the amount, rate, and frequency of aspirations with reduction of aspiration-induced lung injury and infections.
• In optional embodiments, provides a convenient, safe and reliable method to provide supplemental oxygen directly to the patient’ s tracheal entrance which is a safer, more reliable and more effective method of oxygen delivery.

Institution

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