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Communication Strategies in Tracheostomized Patients

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Abstract: ***Tracheostomy is a common surgical procedure performed on critically ill patients. Approximately 10% of cancer patients receive a tracheostomy after major head and neck surgeries to facilitate prolonged airway and ventilatory support. The tracheostomy interferes with air coming into contact with the larynx and decreases the ability of the patient to communicate effectively. The ability to speak provides an important improvement in the quality of life for a patient with a tracheostomy and the inability to communicate can cause frustration and fester anxiety, fear and panic and a feeling of isolation in many patients. Communication facilitates recovery, whereas poor communication can result in psychological problems and hinder recovery. The inability to communicate can also compromise the appropriate medical treatment because patients are unable to effectively describe their condition or problems. Providing the tracheostomized patient with the most effective and efficient means of communication is critical to the rehabilitation and well being of the patient. (1)***

1. Introduction

A tracheostomy tube decreases the ability of the patient to communicate effectively. The ability to speak provides an important improvement in the quality of life for a patient with a long term tracheostomy**.** The inability to communicate can also compromise the appropriate medical treatment because patients are unable to effectively describe their condition or problems. Providing the tracheostomized patient with the most effective and efficient means of communication is critical to their rehabilitation and well being.

A major aspect of nursing care of patients with tracheostomy is communication. In most situations, communication is primarily nurse-initiated and controlled. When patients cannot respond, communication between patients and caregivers is usually limited to short-term information related to physical care in the form of yes/no questions or commands. Various augmentative and alternative communication (AAC) strategies can be employed to assist these patients express themselves better.

Historical aspects of Tracheostomy

There is evidence that surgical incision into the trachea in an attempt to establish an artificial airway was performed by a Roman physician 124 years before the birth of Christ. Three hundred years later, two physicians, Aretaeus and Galen, gave inflammation of the tonsils and larynx as indications for surgical tracheostomy. There are few references to tracheostomy before the 11th century, but one must remember that this was during the Dark Ages. During the 11th century, Albucasis of Cordova successfully sutured the trachea of a servant who had attempted suicide by cutting her throat. The first record of a tracheostomy being performed in Europe was in the 16th century when Antonius Musa Brasavola saved a patient who was suffering from acute edema of the larynx and was in severe respiratory distress. In 1540, Vesalius recorded his success in positive pressure ventilation of an animal through a tracheostomy. As popularity of the operation increased, it was found that although asphyxia was immediately relieved, better long-term results were achieved if the stoma was kept patent for several days. To maintain an open airway, a simple cannula was designed by Fabricius of Aquapendente. This early tracheostomy tube consisted of a short, straight cannula having two wings to prevent it from slipping into the trachea and to secure it around the neck with tapes. The tube was left in place for three or four days. Casserius, a student of Fabricius, suggested using a curved cannula to fit the anatomy of the throat. By the 19th century, successful operations had been reported for trauma, foreign bodies, or inflammation to the airway causing acute obstruction of the upper airway.

During the diphtheria epidemic in France in 1825, tracheostomies gained further recognition. Improvements followed: In 1852 Bourdillat developed a primitive pilot tube; in 1869 Durham introduced the famous lobster-tail tube; and in 1880 the first pediatric tracheostomy tube was introduced by Parker. Tracheostomies were performed for patients with severe burns and scalds of the face and neck and for other operative procedures, but diphtheria remained the most important indication until 1936, when Davidson described this procedure for poliomyelitis.

With early recognition of respiratory failure, improved surgical technique, modern tracheostomy tubes, ventilators, and improved nursing care in state-of-the-art intensive care units, this procedure has become commonplace.

In the mid-1980s, the first significant advancement in the surgical management of the airway in 90 years was introduced. This procedure, the percutaneous tracheostomy, had been described in 1957 by Sheldon, and is now the preferred technique for managing the airway. Percutaneous tracheostomy has all but eliminated the complications associated with conventional surgical tracheostomy. (2)

Methods of Nonverbal Communication

Rapport- The harmonious feeling experienced by two people who hold one another in mutual respect, acceptance, and understanding.

Empathy

- Empathy is that degree of understanding, which allows one person to experience how, another feels in a particular situation.
- Empathy is neither sympathy (feeling sorry for another person) nor compassion (that quality of love or tenderness that causes one person to suffer along with another

Body Language- Remember that actions speak louder than words. A person will generally pay more attention to what you do than what you say. Think about the following nonverbal messages and what they might reveal.

- Facial expressions (smile, frown, blank look, grimace).
- Gestures/mannerisms (fidgeting, toe tapping, clenched fists).
- Eye behaviors (avoiding eye contact, staring, wide eyes).
- Use (and avoidance) of touch or physical contact.
- Posture (erect, slouching, leaning toward/away from someone).
- Walk.

Silence- Silence can be an extremely effective communication tool. It can be used to express a wide range of feelings.

- Silence can be used to communicate the deepest kind of love and devotion, when words are not needed.
- Silence can be a cold and rejecting sort of punishment, the "silent treatment" received for coming home late or forgetting an anniversary.
- Silence can be used in an interview or conversation to encourage the other person to "open up." Conversely, it can be used to intentionally create anxiety and discomfort in the other person.

Listening- As a patient speaks, think about what he must be feeling. Sometimes, as a listener, you must cut through layers of words to get to the real message. You must read between the lines. Pick up the underlying meaning of the message (intent); don't rely entirely upon the obvious or superficial meaning (content).

Aspects of speech in patients with tracheostomy

To attempt speech, patients need to be able to tolerate periods of cuff deflation without respiratory compromise and without the risk of food aspiration.

Primary methods of communication are head nods, gesturing, mouthing words, and writing. Facial expressions (e.g. smile, laugh, cry, grimace) are primarily adjuncts to documentation of other nonverbal communication. Call buzzer, a bell or a rattle/alerting signal, magic slate, eye gaze board like the Eye-Links, phrase or sentence message boards, pick choice message boards, image cards and Vidatak communication boards are all commonly employed and convenient for communication purposes in the ICU.

Communication content is primarily related to pain, symptoms, feelings, and physical needs. Patients also initiate communication about their homes, families, and conditions. Teamwork between the patient and the patient care team (respiratory therapist, speech-language pathologist, nurse, and physician) can result in effective restoration of speech in many patients with a long-term tracheostomy. Organizational acceptance of the team can result in improved communication, more timely referrals and better patient outcomes

The actual and potential barriers to communication between nurses and patients who have tracheostomies needs to be assessed. Patients' needs for communication needs planning, implemention and restructuring of the existing nursing protocols. Augmentative alternative communication using unaided or aided, high and low technology devices like fenestrated tracheostomy tubes like Trach-Talk, one-way tracheostomy speaking valves(Passy-Muir, Montgomery, Olympic, Kistner & Hood), bias closed valves (Passy-Muir, Hood, Olympic, Kistner, Montgomery), Electrolarynx like the transcervical and intra oral tone generators and also keyboard text-to-speech systems in English and regional languages can be explored. (3,4,5,6,7)

Assessment

Patients with tracheostomy may be of following subtypes:-

- Cognitively intact + good motor skills
- Cognitively intact + poor motor skills
- Cognitively impaired + good motor skills
- Cognitively impaired + poor motor skills

Their respiratory reserve needs to be assessed through lung function tests: Vt, FEV1.0, FVC, FEV1.0/FVC Ratio, MMV,Flow Volume loops, PEFR or bedside tests like breath holding time, match test, chest expansion and also by analyzing the arterial blood gases.(8,9,10,11,12)

Aspects of Speech and Voice:

Speech and voice status will dictate the selection of speech devices and therapies. In assessing speech and voice, one needs to consider the following:

- Phonation intensity, articulation within normal limits
- Phonation with decreased intensity, but good articulation
- Phonation poorly coordinated with respiratory compromise
- Aphonic with good mouthing
- Aphonic with mild, moderate, severe dysarthria

The delirious and cognitively impaired patients with poor motor skills cannot be considered for speech restoration.

A proficient lip-reader can determine what a non-vocal patient is mouthing and then verbalize the patient's statement verbatim to healthcare staff members or family.

Effective communication has been identified as being reciprocal in nature and dependent on feedback. In healthcare where complex information replete with medical jargon is often given to patients, feedback is essential to reduce uncertainty. Patients have differing education and language levels that require various levels of clarification.

Gestures have been identified as the primary method of communication used most often among non-vocal patients. These are often inhibited by use of wrist restraints. Communication episodes occur more often when physical restraints were not in use (62.9%) than when physical restraints are applied (37.1%). These gestures, however, can be misinterpreted as anxiety when, in reality, the patient may be simply attempting to convey a message and be understood. Gaining clarification or feedback from a non-vocal individual, however, is difficult because it may not be possible to determine whether the message is received as intended. Despite the documented benefits of open-ended questions over closed-ended questions, it may be more difficult to elicit information from non-vocal patients using open-ended questions because of healthcare providers' difficulty in understanding the patient's response. (13)

Factors identified by acute and critical care nurses as limiting their communication with nonspeaking patients include heavy workload, patient's severity of illness, difficulty in lip reading, patient's inability to write, preoccupation with physical and/or technical aspects of care, personality of the patient, lack of appropriate training in communication skills, and lack of access to augmentative and alternative communication techniques or consultation. Distorted thought processes and diminished problem-solving ability among acutely and critically ill adults compound the difficulty in interpreting nonverbal messages of these patients. Nurses are likely to have more frequent and more positive communications with patients who have greater degrees of responsiveness than with patients who are less responsive. Patient sedation or narcotic medications can interfere with communication.

The influence of family presence on communication interactions with nonspeaking critically ill patients is an understudied and complex socio psychological phenomenon. Although most family members are unprepared for the sudden role of translator in a complex and emotionally charged pantomime during critical illness, they most often become the spokespersons and decision makers for voiceless, critically ill patients. Patients with tracheostomies find communicating with their family members more difficult than communicating with nurses because patients may want to discuss or disclose different, more complex messages to family members. Many patients die in pain without the ability to fully express their needs, wishes about end-of-life care, or final messages to loved ones. A patient's inability to speak at the end of life can be a tremendous loss for the patient's family members.

Non-vocal patients' needs are not always as predictable as they might seem. If nursing communication with patients is to be both effective and therapeutic nurses need to understand the principles of communication and identify the purposes of nurse-patient interactions. Informed consent and autonomy are two main ethical principles that need to be followed to ensure that the non-vocal patient can be involved in his/ her own care. Patients need to be able to give true informed consent and be able to make decisions about their own care and the ability to communicate is an important factor in determining patient autonomy in difficult end-of-life situations. Autonomy is also an essential principle of the weaning process. Miscommunications must be avoided when such issues involving autonomy and informed consent arise. It is imperative that patients' responses be understood with accuracy, and it is helpful if the non-vocal individuals do not have to mouth their decisions repeatedly in order to be comprehensible and fully understood. A mistake in understanding a non-vocal patient when discussing such important matters could have catastrophic results.(14)

Pre requisite before nurse communication:
First ensure that the patient has sensory aids like glasses, hearing aids and dentures.

- Get the patient's attention
- Face & touch the patient BEFORE speaking
- WAIT for the patient to acknowledge what is said
- Make eye contact and LOCK gaze
- Establish a CLEAR and CONSISTENT Yes/No Signal
- IDENTIFY a Yes/No code (eyes "up" for yes and "down" for no)
- POST the signal for all healthcare providers
- TAG Yes/No questions ("yes? or no?")
- Confirm the messages

Eye blinking encoding system:
1-1 I am in pain, 1-2 head, 1-3 my back, 1-4 my neck, 2-1 my stomach, 2-2 my legs, 2-3 I am tired, 2-4 please turn me, 3-1 I am nauseous, 3-2 I am hot, 3-3 I am cold, 3-4 Tell me what is happening, 4-1 Talk to me, 4-2 I need suctioning, 4-3 Leave me alone, 4-4 When is my family coming?

Communication with a patient in an ICU setting
This can cause strain and takes time. It takes even longer when the communicants do not know each other and it takes practice to learn how to speak with a tracheostomy tube in situ. Different situations require different communicative strategies and knowing a person facilitates communication. It is important to simplify, shorten, and repeat information, in order to give a sense of security and establish trust. It is also important not to say too much, and cause more anxiety instead of less. Provision of a call buzzer, a bell or a rattle/alerting signal will aid a tracheostomized patient to summon help. Writing pads, magic slate, eye gaze board like the Eye-Links, phrase or sentence message boards, pick choice message boards and image cards (Vidatak) in English and regional languages, keyboard text-to-speech systems are now available. One way inspiratory valves like Passy Muir, Hood, Montgomery, Shiley, Pitt or Hopkin's ball valve will be acquired for those breathing spontaneously to permit phonation and speech. Trials with battery operated electrolarynx having a vibrating plastic diaphragm that produces a tone duplicating that produced by the vocal cords can be initiated for those with permanent tracheostomies. When placed against the soft tissues of the neck, the user can articulate using his or her tongue, palate, throat and lips to produce a 'robot' quality voice devoid of change in pitch or modulation. (15,16)

Fenestrated tracheostomy tubes:

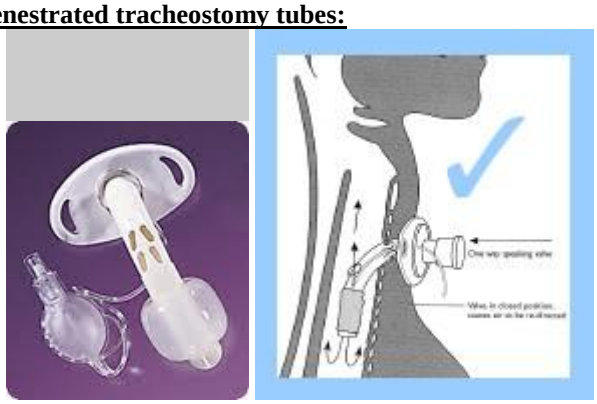

Figure 1: Fenetrated tracheostomy tube

In a spontaneously breathing patient, the simplest method of allowing speech is through cuff deflation, allowing air to pass around the tracheostomy and through the vocal cord apparatus. A fenestrated tube will allow maximal airflow, as described previously. If the tube is too big to allow sufficient air to pass, reducing the size of the tube may be considered or 10 cm PEEP applied.

Replacement of standard tracheostomy tubes with fenestrated ones permits conversation. Fenestrated tubes have an opening in the posterior part of the outer tube. (Fig 1) If the tube is cuffed, the fenestration lies above the cuff. Deflation of the cuff during spontaneous respiration (with the fenestrated inner tube in place) allows air to pass caudally through the tracheostomy lumen and fenestration, as well as around the tracheostomy tube, and up through the larynx. This encourages maximal airflow through the upper airways during speech and also allows assessment of the normal route of air passage during preparation for decannulation. If positive pressure ventilation is required, the unfenestrated inner tube should be inserted, to prevent air leak above the cuff. There are different designs of fenestrations; single and multiple fenestrated tubes are available manufactured by Bivona, Lanz, Jackson, Portex and Shiley.

Advantages/Disadvantages of Fenestrated tubes

a) Not appropriate for those on continuous mechanical ventilation
b) Occlusion allows pt to speak & breathe through upper airway
c) Minimizes the work of breathing around the tube
d) Available on both cuffed and cuffless tubes

Portex trach-talk

The Portex Trach-Talk tracheostomy tube is designed to assist the patient to speak in a low whispered voice. When the cuff is inflated to effect a seal on the tracheal wall, a gas line with a thumb port is connected to an air or oxygen source. The flow of gas is adjusted to 4–6 liters per minute and the thumb port is occluded by the patient or caregiver; gas passes through the larynx, allowing the patient to speak in a soft whisper. The Trach-Talk helps to eliminate the psychological and communication barriers common to all tracheostomy patients.

Communication Tubes: Speaking Trach

1) Used for pts who can't tolerate cuff deflation
2) Provides a separate airflow to upper airway for speech
3) Drawbacks
   - Manual manipulation of gas (air) flow when speech is desired
   - Coordination of speech is difficult due to steady airflow past vocal cords
   - Secretions may collect above cuff and block airflow to upper airway

Speaking Valves

Figure 2: Speaking Valves

A one-way speaking valve can also be used with the tracheostomy tube to maximize speech. (Fig 2) This allows air to be entrained through the tube during inspiration. The valve then closes during expiration such that exhaled air must pass through the natural airway and vocal cords to exit the lungs, thus aiding phonation. A speaking valve may also be employed in some ventilator dependant patients. Studies have shown that speech for these patients' acts as a psychosocial boost, allows patients to communicate, aids consent and may also help in reinstating smell and taste. Before employing this technique, the rate and work of breathing, as well as oxygen and ventilator dependency, must be assessed. In general, FI_{O2} > 0.4, positive end expiratory pressure >5 cm H_2O and high levels of pressure support negate the use of speaking valves and cuff deflation in ventilator dependant patients.

One way inspiratory valves like Passy Muir, Hood, Montgomery, Shiley, Pitt or Hopkin's ball valve can also be used in those breathing spontaneously to permit phonation and speech. Tolerance of cuff deflation, proper size of the tracheostomy tube relative to the tracheal lumen and acceptable baseline of respiratory status must be ensured. Downsizing (decreased diameter) of the tube may be necessary to compensate for increased breathing effort when a speaking valve is placed and it is a positive indicator for enhanced communication and swallowing function.

One-Way Tracheostomy Speaking Valves

a) Allows for inspiration through the trach tube and exhalation through the upper airway to produce speech
b) Requires a deflated cuff
c) May require oxygen through both upper and lower airway
d) Best used with cuffless, fenestrated or tracheal buttons
e) Various types available with specific recommendations for use

One-Way Tracheostomy Speaking Valves: Types of Valves

a) Brands include Passy-Muir, Montgomery, Olympic, Kistner & Hood
b) Most important difference is in the valve bias
c) Bias closed valves are normally closed - open with inspiration and close as inspiratory cycle ends (Passy-Muir, Hood)
d) Bias open valves are open and close with forceful exhalation(Olympic, Kistner, Montgomery)

One-Way Tracheostomy Speaking Valves: General Criteria for Use

a) Normal mental/cognitive status
b) Medical stability
c) Lung compliance
d) Upper airway patency
e) Able to tolerate cuff deflation
f) Showing some receptive and expressive communication attempts

Advantages of One-Way Tracheostomy Speaking Valves

a) Improved vocalization
b) Less potential for infection when compared to finger occlusion
c) Possible improved oxygenation and pulmonary function
d) Possible effects on swallow and secretion management

Contraindications: One-Way Tracheostomy Speaking Valves

a) Upper airway obstruction/tracheal edema or stenosis
b) Medical instability including end-stage pulmonary disease
c) Severe aspiration/copious secretions
d) Anarthria/severe dysarthria/laryngectomy
e) Unconscious/comatose patients
f) Inability to tolerate full cuff deflation
g) Severe anxiety and/or severe cognitive impairment

Esophageal speech

Air is swallowed and burped to produce voice that sounds natural but of low pitched (60-80Hz) and only suited for short sentences.

Electrolarynx:

These are battery operated devices the size of a small electric shaver having a vibrating plastic diaphragm that produces a tone duplicating that produced by the vocal cords. (Fig 3) When placed against the soft tissues of the neck, the user can articulate using his or her tongue, palate, throat and lips to produce voice.

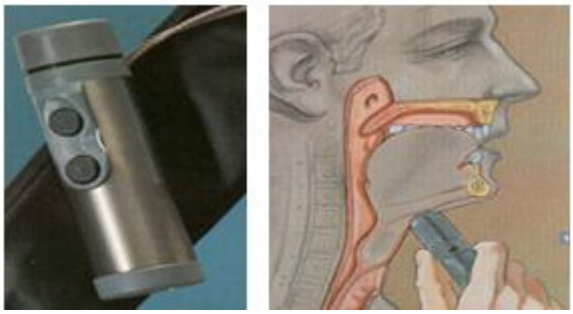

Figure 3: Electrolarynx

Transcervical: The Servox Intra-Oral artificial larynx are solely oral devices. The tube attaches to a small silver cylinder called a Tone Generator which transmits a vibration noise to the throat which the patient can then form into words and sounds using their lips, teeth, and tongue.

Intra Oral: Cooper Rand the Tone Generator introduces the tone via tube into the side of the mouth and into the oral cavity. The patient inserts the tube into the side back of the mouth, about an inch or inch and a half beyond the teeth, with the open part of the tube aimed at the clear area in the roof of the mouth above the tongue, leaving the tip of tongue as free as possible to do its best with proper pronunciation. He then pushes the EL button to start and stop the sound. The tube interferes somewhat with the proper pronunciation of some sounds such as g's, k's, t's and d's that are made by putting the tongue to the back the teeth or the roof of the mouth just behind the teeth. That is probably the main reason that people using intra-oral devices have more trouble being understood.

Speech quality is loud but robot-like without r modulation. It requires the use of one hand and is conspicuous and unsuited for those with severe post radiation fibrosis. User can articulate long sentences

2. Conclusions

Good communication can have huge benefits beyond just the mechanical sharing of information. It can even improve patient outcomes. Learning to communicate is a lifelong journey that never ends in medicine. At the heart of this learning has to be the patient's experience and even the shortest conversation may be remembered for a lifetime. Modern technology can offer different ways to overcome the dilemmas faced in communicating with tracheostomized patients. Health professionals—whether physicians, surgeons, intensivists or nurses—need to focus on and improve, their communication with patients and also learn how to unite the humanistic side of care with the technical side; how to be professionals without losing their humanistic identity.

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