Original Article: Nasal Airway Placement in Surgery at Operation Room

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Citation F Harvardy. **Nasal Airway Placement in Surgery at Operation Room,** *EJCMPR* . 2024; 3(1): 165-177.

https://doi.org/EJCMPR/20240119

Article info:
Received: 03 November 2023
Accepted: 15 January 2024
Available Online:
ID: EJCMPR-2401-1140
Checked for Plagiarism: Yes
Peer Reviewers Approved by:
Dr. Frank Rebout
Editor who Approved Publication:
Dr. Frank Rebout

Keywords:
Medicine, Nasal Airway, Gastric, Blood

ABSTRACT

Indication when upper airway obstruction due to soft tissue or tongue (excluding epiglottis) in a conscious or unconscious patient with a healthy gag reflex and when extensive tissue damage around the mouth and jaw and chin wiring is not possible. It is used in the case of pharyngeal edema or excessive nasal discharge in children to reduce soft tissue damage when nasal tracheal suctioning is frequently required. Nasal airway placement stimulates the patient's nausea reflex. If the tube is too long, it may enter the esophagus and cause the stomach to dilate. Epistaxis may occur and cause blood to be aspirated. The nasal airway should not be used for patients with extensive facial trauma or a fracture of the basilar portion of the cranial base. Choose the nostril that is larger and more open. Examine the passageway for trauma and foreign body wall deviation or polyps. Prepare suction devices for use if necessary. Measure the length of the nasopharyngeal airway from the tip of the nose to the edge of the ear. Nasal bleeding, aspiration, secondary hypoxia with incorrect placement. The endotracheal tube may be inserted through the nose or mouth. The placement method is visible using a laryngoscope and blindly through the nose. The goal is to establish a safe and efficient air route. Protection of trachea and lungs from aspiration of gastric, blood, and fluid contents from airway compartments, airway for mechanical ventilation, direct access to lungs for excretion or suction, discharge of emergency drugs for rapid absorption through bronchial tree.

Introduction

There is no absolute indication control for endotracheal intubation [1-3]. The following precautions should be taken [4-6]: The nausea or gag reflex is healthy [7-11]. Acute cervical spine injury, head trauma, increased intracranial pressure, cranial fracture [12-18], epiglottis infection, and any attempt to intubate intubation will complicate. Because there is potentially laryngeal spasm and complete airway obstruction. Intratracheal intubation of a patient with epiglottitis should be performed in the operating room where there is the highest degree of control [19].

Confirmation of endotracheal tube placement

Direct view of a tube passed through the vocal cords. Chest rise during ventilation, hearing of bilateral breathing sounds [20-25]. The

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presence of unilateral sounds with a decrease in breathing volume (usually on the left) indicates that the tube has gone into the main line (Main Stem) of the bronchus, pull the tube up slightly and check again until the sounds on both sides of the lung Be equal [26-30]. Epigastric sound the presence of a burnt sound above the epigastrium indicates a tube in the esophagus. Immediately remove the tube and hyperventilate the patient before re-intubation [31-35]. Shining light using a light blade from the neck area, if the neck area turns red after intubation of the trachea using light (Stylet) [36-40], indicates the correct placement of the tube inside the trachea. Oximetric pulse to maintain sufficient oxygen saturation can also indicate proper tube placement. Capnographs are used to study carbon dioxide [41].

The presence of stomach contents in the endotracheal tube, such as food in the fallopian tube, may indicate intubation of the esophagus. Touch the cuff of the endotracheal tube to prove proper placement inside the trachea relative to the cornea or bronchus [42-45]. Chest radiography can be a criterion for assessing the correct placement of the tube in the upper hand of the carnaia [46-50]. The endotracheal tube is necessary to prevent accidental exit of the endotracheal tube, the endotracheal tube must be carefully protected [51].

Several techniques and a number of rules are used for this purpose

- ✓ Bite block or airway rough should be used after intubation to prevent the patient from biting the tube and blocking the airway [52].
- ✓ In order to perform suctioning and oral care, it must be completely closed with a bandage or knot or device [53].
- ✓ The method used should prevent the tube from being pulled back and forth as far as possible, and pressure points on the skin should be minimized to prevent long-term complications [54].
- ✓ When a tape or knot is used, it should be looped around the head completely to provide protection [55].

Special age considerations

There are several ways to estimate the proper size of a pipe, usually based on age and weight. Men usually need a number 8 mm and women usually need a number 7 mm. Nasal intubation usually requires a tube that is 0.5 mm smaller than the oral tube. Use the following formula to calculate the proper size of the endotracheal tube for children 2 years and older [56-62]. The size of the tube can also be estimated based on the child's height. For children under 8 years of age, non-cuff endotracheal tubes are used in intubation: +16 years divided by 4 years [63].

Note: The narrowest part of the airway in children is the cricoid cartilage that forms the cuff [64].

Note: The narrowest point of the airway in an adult is the vocal cords. The depth to which the endotracheal tube should be pushed forward varies with age and other patients [65].

Intra-esophageal intubation complications this is a serious complication, as the patient's lungs will not be ventilated and bloating may occur. Stomach dilatation increases due to the risk of vomiting and decreased current volume, and the tube becomes dislodged [66-70]. Re-examination of the tube is often necessary, especially after moving the patient. Damage to the teeth, nasal mucosa, back of the throat and larynx may occur [71].

Patient education

Tell the patient that he is unable to speak as long as he has a tube. Swallowing saliva and swallowing reduces nausea. Do not touch or move the airway tube [72].

Complications during endotracheal intubation

Conscious patients may be terrified of intubation. Therefore, it is better to prepare the patient completely psychologically before performing intubation [73-76]. Usually after intubation, the patient becomes very anxious because he is unable to speak or communicate verbally [77-81]. Explain other ways to communicate and make news alerts available as needed and to the patient whenever necessary. Make sure the experienced and trained staff are on top of him [82-86]. You can effectively reduce patient anxiety. In many cases, sedatives may be needed. Trauma, laryngospasm and bronchospasm, and incomplete observation of the vocal cords when intubating with pressure and violence may lead to the above complications. To prevent this complication, the secretions before suction intubation and laryngoscope batteries should be quite strong and bright [87-90].

Cardiac dysrhythmias

The most important type of dysrhythmia is bradycardia due to vagal nerve stimulation. It can irritate the vagus nerve and bradycardia if the head and endotracheal tubes hit the carna region [91-98]. For this reason, be sure to monitor the heart before intubation [99].

Improper placement of the endotracheal tube in the esophagus To prevent this complication, do not fill the air immediately after intubation, and check the breathing sounds and the sound of the xiphoid area for the absence of air entering the stomach [100].

Excessive insertion of the tube into the chip

In the event of this complication, the tube often goes down and enters the right bronchus. By filling the tube tube, the bronchial trachea closes on the other side and becomes atelectasis due to lack of preparation. Following the patient, the patient shows symptoms of respiratory failure with hypoxia and tissue hypoxia [101-105].

Note: Ideally, the end of the endotracheal tube should be about 2 to 3 cm above the carna. Lung hearing every 2 hours and after each change of position, radiograph of the lung to prevent this complication [106].

Vomiting and possible aspiration during intubation if the swallowing reflex (gag) is stimulated, vomiting and aspiration of gastric contents into the trachea may occur [107-112]. To prevent complications, if time is available, an NG tube should be inserted for the patient before intubation and gastric secretions should be drained to minimize the possibility of aspiration during intubation [113].

Hypoxia due to delay in operation

Before intubation, it is best to oxygenate the patient with 100% oxygen for 1 to 2 minutes. If the patient's intubation lasts more than 30s or the sat 02 decreases significantly [114-120], the heart rhythm changes and cyanosis spreads. In such cases, the patient's discontinued operation should be ventilated by a 100% oxygen ampoule and mask [121-129]. Upper Airway Trauma One of the most common traumas is damage to a patient's teeth. To prevent this complication, care should be taken never to use the patient's upper teeth as a lever to lift the laryngoscope blade during intubation. Bleeding and broken nose are also complications of nasal pressure intubation [130].

Complications of intubation when the tube is in place

Endotracheal occlusion, subluxation of the ventricles, increased ventricular pressure on the ventilator, and severe fear of airway obstruction symptoms [131-138]. Tracheal tube obstruction can be caused by complete curvature of the tube, accumulation of thick and sticky discharge, and biting of the tube by the patient, which causes inadequate oxygenation. Ways to prevent this complication are: Put the patient's head in a normal position, prevent the neck from bending.

Ventilator tubes should also be supported with pillows. Use a bit block with a toothpick or oral air way [139]. Frequent and regular suctioning to prevent accumulation of secretions, check the cuff for filling and emptying before placement, damage to the upper airway if nasotracheal tube is used, possible complications such as bleeding, otitis media, sinusitis and compression necrosis of cartilaginous structures there is a nose [140-142]. While observing the hygiene of the nostrils, be careful of irritating symptoms and necrosis of the nasal fins. From the pressure sore next to the mouth, change the position of the tube inside the mouth at least once every 24 hours. After carefully examining the mouth and throat, one person should empty the tube cuff and the other person, while holding the tube with full care, should carefully move it from one side of the lip to the other. Then fill the cuff of the pipe to a certain extent [143]. The duration of intubation plays an important role in glottis injury. In addition to ulcers, erythema, there is confirmation of the vocal cords where the endotracheal tube is in contact with the vocal cords. Tracheal damage Damage to the chin and cartilage of the trachea often occurs where the trachea is in contact with the artificial airway.

Two factors are primarily responsible for causing these injuries:

- ✓ High pressure of the tracheal tube cuff.
- ✓ Common tracheomalacia damage or dilatation of the trachea occurs on the surface where the cuff is located and stenosis of the trachea resulting from tissue repair at any point where the tube has come into contact with the tracheal mucosa [144].

Cuff pressure to prevent chip damage should not exceed 15-20 mmHg. Tracheal necrosis and tracheopharyngeal fistula are common, especially when a gastric tube is used. Therefore, if gastric drainage is needed, it is better to use smaller tubes. Bleeding is one of the symptoms of airway injury. Bleeding is minimal due to trauma, but when the tube becomes pulsed [145]. The reason for the damage or rupture of the innominate artery by the endotracheal tube is that this complication is rare. In case of bleeding, the cuff should be inflated immediately and the doctor should be informed [146].

Position the tube again or use a narrower, shorter tube. The final solution is surgery. Infection As the upper airway defense mechanisms are removed by the placement of the endotracheal tube, the risk of infection increases. Sinusitis is one of the problems with the nasopharyngeal tube [147].

To prevent infection while using sterile methods, the suction bottle should be replaced after each use. Water collected in the ventilator tubes should be drained immediately. This water should not enter the humidifier tank. Every 24 to 48 hours, the humidifier tank and ventilator fume tubes should be replaced. Mouthwash should be performed for the patient every 8 hours.

The presence of pigmented secretions and a rise in temperature may be a reason for a lung infection. In these conditions, culture and antibiogram of the secretions are necessary to identify the microorganisms. Laryngospasm is one of the complications after extubation of the patient. Hydrocortisone can help relieve laryngeal spasm [148].

Stridor or sound violence

This complication is caused by damage to the posterior glottis of the aratinoid cartilage and its ligaments, and is mostly temporary and resolves soon.

Formation of laryngeal granules and trachea

This complication impairs the function of the vocal cords and destroys the integrity of the lungs and airways. This complication does not cause any problems during intubation, but after extubation, it leads to stenosis and obstruction. One way to prevent suction is to wash the gloves

regularly with sterile solutions before using the gloves if powder gloves are used [149].

Larynx stenosis

Injuries to the surface of the glottis and below the glottis are among the most serious injuries of annotation. Tracheal stenosis occurs one to two weeks after injury due to the healing of swollen and damaged areas at the site of the tube. Acute or paralysis of the vocal cords damages the laryngeal motor nerves and leads to permanent paralysis. In general, chronic cough noise, especially when swallowing fluids and dyspnea after extubation, can lead to laryngeal ulcers, granuloma formation, or motor nerve palsy. The patient should be monitored for swallowing reflexes and possible aspiration [150].

Note: Intubation is the method of choice in emergencies. This method can not be used for more than 3 weeks. Therefore, tracheostomy is performed to reduce the risk of paralysis of the vocal cords.

Tracheostomy

It is a method in which a valve is created in the trachea. This method may be temporary or permanent. Immediately after intubation, its accuracy is checked with breathing sounds and chest symmetry. Aseptic methods should be used in suctioning these patients. Tracheostomy is preferred in patients who require prolonged mechanical ventilation [151].

Advantages of tracheostomy

Patients with tracheostomy can eat more comfort and more efficient clearance of secretions, reduced resistance to breathing and reduced risk of laryngeal injuries. They even talk using tracheostomy tubes. The best time to perform a tracheostomy varies from patient to patient, but the following recommendations are recommended as general guidelines. After 7-5 days of tracheal annotation, the possibility of removing the endotracheal tube should be checked. If it is unlikely, have a tracheostomy. One of the acute complications that should be considered is accidental deconduction. If the tracheostomy tube is moved before the ostomy duct is complete, the duct will close immediately, and placing the tube blind can create a false duct. To minimize the risk of adverse outcomes in this situation, the patient should be intubated immediately before oral re-insertion of the tracheostomy tube. The most dangerous complication of tracheostomy is tracheal stenosis, which is a late complication and occurs in the first 6 months after tracheostomy tube removal. If in some cases a tracheal stenosis occurs in the tracheostomy area, if the tracheostomy tube comes out for any reason, a dilate tractor should immediately hold the tracheostomy hole open and replace the same tube with the matching tube. If the airway obstruction in the area is not above the larynx and it is not possible to place a tracheostomy tube, intubation should be performed immediately and the patient should be ventilated with an ambob. The skin of the tracheostomy area should be cleansed of normal secretions with normal saline and covered with a dry dressing. Routine tracheostomy care includes keeping the tube clean of mucus and any discharge that can cause an obstruction or infection.

Principles of suction

Endotracheal tube suctioning is performed according to the patient's needs and based on pulmonary auscultation. The diameter of the suction catheter should be one-half the inside diameter of the tracheostomy tube. Between suctions for about 3 to 6 minutes, 100% oxygen should be delivered to the patient and there should be a 3 minute interval between suctions. If each suction lasts 15-10 minutes longer (prolonged suction causes hypoxia and arrhythmia), the pressure of the suction device

should not exceed 120 mmHg. For left bronchial suction, the head and shoulders should be rotated to the right, and vice versa, give the patient a high concentration of oxygen before starting suction with an ambobag. With a few deep breaths with an ambobag, dilate or hyperoxygenate the lungs as much as possible into the suction tube into the endotracheal tube to stimulate the cough reflex. After turning on the suction, gently rotate the catheter 360 degrees and remove. Expand and hyperoxygenate the patient's lungs again with several breaths.

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The most dangerous complication of tracheostomy is tracheal stenosis, which is a late complication and occurs in the first 6 months after tracheostomy tube removal. If the tracheostomy tube comes out for any reason, a tracheal dilator should immediately hold the tracheostomy hole open and replace the same tube with the matching tube.

If the airway obstruction in the area above the larynx is not above and it is not possible to place a tracheostomy tube, intubation should be performed immediately and the patient should be ventilated with an ambobag or mask.

The skin of the tracheostomy area should be cleansed of normal secretions with normal saline and covered with a dry dressing. Routine tracheostomy care includes keeping the tube clean of mucus and any discharge that can cause an obstruction or infection. Restrictions after heart surgery usually include not carrying equipment weighing more than 4 kg, as well as pushing, pulling objects and vacuuming.

The patient can start home activities from the lowest level. Like food preparation and sexual activity. This activity can be done when the patient is physically comfortable. Maintaining a proper position is essential to prevent impact and pressure on the operating area. Many patients and companions ask nurses about this and its limitations, and nurses should encourage them to express their problem easily.

Most patients who receive beta-blockers usually have decreased libido and will not realize it until they recover, and they think that their decreased appetite is related to heart failure and surgery. However, many patients find it easier to discuss this issue with a nurse at home than in a hospital or doctor's office. Do not use any ointments or lotions on the wound.

A dry dressing can be applied to areas where there is discharge and changed daily after bathing, and the patient's foot is usually swollen and has interstitial serum, and the patient should be advised to place his foot above the level of the heart to prevent edema. It should be prevented in the wrist area and the use of appropriate size anti-embolic socks should be considered permanently and only during the day, because by reducing the swelling, it also helps the surgical wound to heal faster.

It is essential not to wear closed-toe shoes on the foot where the vein has been removed and to avoid getting the nail from the bottom. These neighborhoods should be inspected at each visit and the patient should be instructed to pay attention. Sutures can usually be operated on within 7-10 days if the wound healing process is appropriate.

If absorbable threads are used, there is no need to pull the stitches, and if the knots are uncomfortable. Only the suture knot is shortened or only the knot is removed when necessary. It is best for the patient to take a shower before the stitches are removed, and if air bubbles or the surgeon's discharge are

present, the symptoms of the wound infection should be explained to the patient.

Nutrition

A) Decreased appetite: Since anorexia is known as a complication for heart surgery patients, it is recommended that they use any food they want, and squeezing half a sour lemon without pressing on the tongue can help.

B) Other considerations: 6 small meals that include fresh fruits and vegetables should be considered. Maintaining adequate calories and protein with the advice of a nutritionist can not only increase strength and ability, but also heal wounds. The ingredients in milk and boiled potatoes can help heal wounds. Of course, the patient will have enough time to control his diet and reduce fat before one month. It is important to involve all family members in the diet process. Learning about food content is a good time.

The patient can be instructed that he can make a better choice by comparing the sheet or the label of the specifications of the purchased goods. Fat and Cholesterol Limits Once the patient's surgical wound has completely healed, it is a good time to start dieting. The American Heart Association has the following recommendations. Total daily cholesterol should be less than 200 mg, saturated fat should be less than 7 calories.

Conclusion

When the patient begins to move, the muscles ache, which is more common in the shoulder and back area, and if the Lima artery is removed, a local pain is felt in the relevant area of the chest. If the patient has swelling and hematoma, it will usually be painful. The appropriate scale should be used to assess pain. To relieve pain and discomfort from surgery, the patient should be encouraged to take prescription analgesics with food. Wearing sternum support will be especially helpful in women. Arm exercises that move the chest muscles. Like walking, it can help reduce muscle soreness. The patient should be told to move to reduce pain and discomfort. It is valuable to use several pillows to create comfort and achieve a comfortable sleep.

A) Sleep: Complaints about sleep disorders such as insomnia and nightmares are common. Learning how to use pillows for the underside of the head and legs can be effective in reducing muscle strain and relieving pain.

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