

Evaluation of Post Tracheostomy Tube Care in the Tertiary Care Centre

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Abstract :Background and objectives : Tracheostomy is making an opening in the anterior wall of trachea and converting it into a stoma on the skin surface. Adequate tracheostomy care is required to prevent complications in the postoperative days. This study was to assess whether all patients of post tracheostomy managed by tertiary care centre meet international guidelines for tube care and also tracheostomy related complications. **Materials and Method:** The study was conducted in the department of otorhinolaryngology, PSGIMS&R, Tamil Nadu, India between March 2015 to May 2015. **Result:** The total number of cases were 23. Average tracheostomized patients age group were 45-70. The number of male patients were 17 and female 6. Prior to the tracheostomy tube care hand washing by nursing and other medical staff done for 100% patients, clean suction catheter used for all patients, in 21.73% (5 patients) proper insertion of suction catheter along natural course of tracheostomy tube was not done, 17.39% (4 patients) patient was not placed perfectly with towel / blanket below shoulders in neck extension during tube change. Regarding complications tracheostomy 8.69% (2 patients) patients had skin infection near the stoma.

Keywords: Tracheostomy, tube care, suction, complications.

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I. INTRODUCTION:

Tracheostomy is making an opening in the anterior wall of trachea and converting it into a stoma on the skin surface. Function of tracheostomy are alternative pathway for breathing, improves alveolar ventilation, protects the airways, permits removal of tracheobronchial secretions, intermittent positive pressure respiration (IPPR) and to administer an anaesthesia sometime. Indications of the tracheostomy are

i. Respiratory obstruction, ii. Retained secretions and iii. Respiratory insufficiency¹.



Figure 1: Tracheostomized patient with tube

Adequate tracheostomy care is critical in the first two to three postoperative days. It is during the formation of the tract of the stoma that the risk of tube displacement is at its highest as the tract closes very quickly making reinsertion difficult. With meticulous and skilled care, most of the complications can be avoided². Immediately after tracheostomy, the change from air that is warmed and humidified by the upper airway to dry cold air leads to a rapid increase in secretions. Suctioning is required as often as is necessary to keep the tube and airway clear. Overzealous suctioning may lead to mucosal trauma in the distal trachea if the catheter is inserted into the lumen itself³. Irrigation of the tracheostomy tube with sterile saline to loosen

secretions prior to suctioning is often advocated but there is little evidence to support this practice and it may increase contamination of the lower airway⁴. Humidification is required initially. There is no standard prescribed interval at which tubes should be changed, but tube should be changed before dried secretions start to reduce the lumen of the tube.

There are some complications related to tracheostomy, which may be immediate, intermediate and late. This includes hemorrhage, apnoea, pneumothorax, aspiration of blood, displacement of tube, blocking of the tube, tracheitis, lung abscess, laryngeal stenosis, and tracheal stenosis etc¹. This study was to assess whether all patients of post tracheostomy managed by tertiary care centre meets international guidelines for tube care and also tracheostomy related complications.

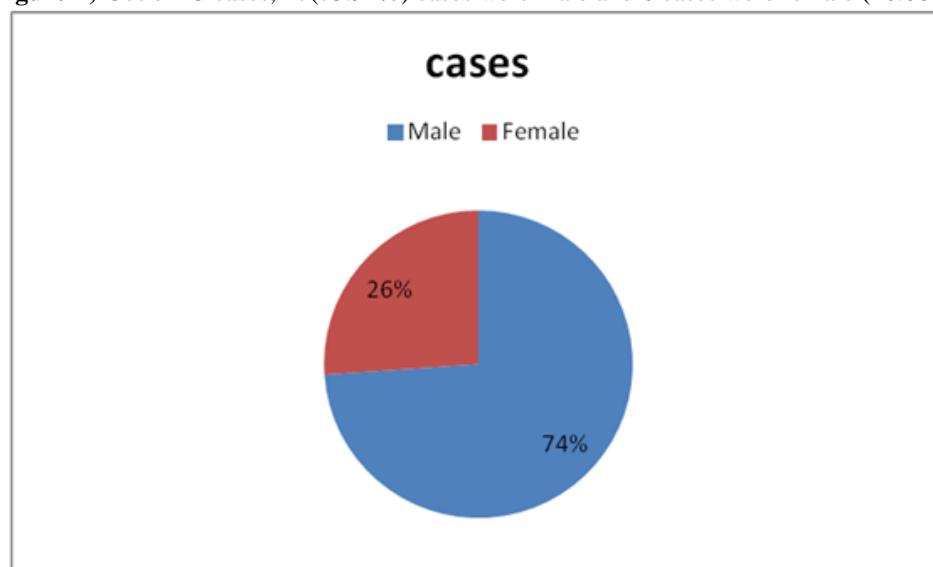
II. Materials and Methods.

The study was conducted in the department otorhinolaryngology, PSGIMS&R, Tamil Nadu, and India between March 2015 to May 2015. All the patients included in this study were admitted in the otorhinolaryngology and other departments .Total cases were 23, out of 23 cases 17 were male and 6 cases were female. . To assess whether all patients of post tracheostomy managed by department of Otorhinolaryngology and other departments meets international guidelines for tube care. In post tracheostomy tube care of patients, following questionnaires were looked⁵. Data were grouped and analyzed by standard statistical method.

1. Wash your hands : Yes /No
2. Use a clean suction catheter when suctioning the patient.. Do not reuse catheters if they become stiff or cracked. Yes / No
3. Lay the patient flat on his/her back with a small towel/blanket rolled under the shoulders. Yes/No
4. Wet the catheter with sterile/distilled water for lubrication and to test the suction machine and circuit. Yes/No
5. Remove the inner cannula from the tracheostomy tube (if applicable). Yes/No
6. Be careful not to accidentally remove the entire tracheostomy tube while removing the inner cannula: Yes /No
7. Carefully insert the catheter into the tracheostomy tube. Allow the catheter to follow the natural curvature of the tracheostomy tube. Yes/No
8. Place your thumb over the suction vent (side of the catheter) intermittently while you remove the catheter. (Do not leave the catheter in the tracheostomy tube for more than 5-10 seconds since the patient will not be able to breathe well with the catheter in place.) Yes/No
9. Allow the patient to recover from the suctioning and to catch his/her breath. Wait for at least 10 seconds. Yes/No
10. Suction a small amount of distilled/sterile water with the suction catheter to clear any residual debris/secretions. Yes/No
11. Turn off suction machine and discard catheter clean inner cannula (if applicable). Yes/No

III. Result and Observations:

(Figure-2) Out of 23 cases, 17(73.91%) cases were male and 6 cases were female (26.08%).



Sl no	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
i	√		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
ii	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
iii	√	√	√	√	×	√	×	√	√	√	√	√	√	×	×	√	√	√	√	√	√	√	√
iv	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
v	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A
vi	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
vii	×	√	×	√	√	√	√	√	√	×	×	√	√	√	√	×	√	√	√	√	√	√	√
Viii	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A	N A
ix	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
x	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
xi	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

- i. Wash Hands
- ii. Use Clean Suction .Dont Reuse Catheters If Stiff Or Cracked
- iii. Lay Patient Flat On His Back With Towel Or Blanket Under Shoulders
- iv. Wet Catheter With Sterile Water For Lubrication And Test Suction Apparatus
- v. Remove Inner Cannula From Tracheostomy Tube
- vi. Be Careful Not To Accidentally Remove T-Tube While Removing Inner Cannula
- vii. Careful Insertion Of Catheter Along Natural Curvature Into Tracheostomy Tube
- viii. Place Thumb Over Side Suction Vent Intermittently While Reoving Catheter
- ix. Not Keeping Catheter Inside Tube More Than 10 Seconds
- x. Suctioning Small Volume Of Distilled Water Or Normal Saline To Clean Residual Secretions
- xi. Turn Off Suction Catheter , Discard Catheter

Figure 3: Showing hand washing by nursing and other medical staff done for 100 % patients, clean suction catheter used for all patients, in 21.73 % (5 patients)patients proper insertion of suction catheter along natural course of tracheostomy tube was not done ,17% (4 patients)patient was not placed perfectly with towel / blanket below shoulders in neck extension during tube change. Tracheostomy patients showing skin infections near the tracheostomy stoma.

IV. Discussion:

The clinical practice guidelines are primarily tools for guiding the delivery of nursing care to adult patients with tracheostomy. The guidelines do not cover the care of children with tracheostomy.

In our study, all primary studies and reviews addressing a particular topic were appraised using assigned checklist appropriate to the study's design. The tracheostomy tube care hand washing by nursing and other medical staff done for 100 % patients, clean suction catheter used for all patients, in 21.73 % (5 patients)patients proper insertion of suction catheter along natural course of tracheostomy tube was not done ,17.39% (4patients)patient was not placed perfectly with towel / blanket below shoulders in neck extension during tube change. Regarding complications tracheostomy 8.69% (2 Patients) patients had skin infection near the stoma.

Raymond in his study shows that Suctioning should be done with the intention to maximize the quantity of secretions removed and minimize the hazards associated with the procedure. Normal Saline does not help to loosen and dislodge secretions, rather it stimulates cough thus dislodging secretion⁶.

Catheter size should be determined appropriately to reduce the risk of total occlusion of tracheostomy tube during suctioning. A large catheter will occlude the tracheostomy tube which may cause hypoxia as shown in a study done by The Royal Free Hampstead NHS Trust⁷.

According to Griggs, A. Multiple-eyed catheter causes less damage to the tracheal mucosa than the single-eyed catheter because it dissipates the focus of suction pressure, making it less likely for the mucosa to be suctioned into the side holes⁸.

Study done by Serra shows that the crust of mucus plug is usually attached to the end of the inner or Outer tube. A strong, vigorous cough may be all that is needed to expel the secretions. Timely and optimal airway management is critical to improve functional and survival outcome of patient⁹

Acute dyspnoea is commonly caused by partial blockage or complete blockage of the tracheostomy tube by a mucous plug^{10,7}.

The presence of a tracheostomy can adversely affect swallowing function in patients; a speech therapist will be able to perform in-depth investigations such as dysphagia screening. This is to reduce the risk of aspiration, which may lead to aspiration pneumonia¹¹.

American Association for Respiratory Care said that excessive leakage of foul smelling secretions, erythema around the stoma site, erosion of stoma site are the sign and symptoms of stoma infection. Early detection of stoma infection will help to maintain integrity of the skin and thus preventing infection¹².

V. Conclusion.

Tracheostomy is required to maintain airway when the ability to do this is temporarily and permanently compromised. Nurses play a vital role in providing effective tracheostomy care. Learning to care for a patient with tracheostomy requires the support and individual attention of the whole health care team. With healthcare advancement, tracheostomy care has become part of the routine care in both the acute and long term care units. Good tracheostomy management has a significant impact on the patient's general well-being and Quality of life¹³.

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