



Review Article

www.ijrap.net

(ISSN Online:2229-3566, ISSN Print:2277-4343)



ADVANCES IN SURGICAL TRACHEOSTOMY AND KANTHGAT VYADHI: A REVIEW

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Received on: 26/04/22 Accepted on: 30/05/22

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DOI: 10.7897/2277-4343.130495

ABSTRACT

The medical field has undergone many new updates according to the needs of patients and disease conditions. Previously Surgical Tracheostomy was done for Airway Obstruction and Prolonged Ventilation needs. Surgical Tracheostomy has some benefits and some complications. So, according to risk Vs benefits, modern science has developed new techniques to approach the procedure. Thus, they started with a new technique - Percutaneous dilatational tracheostomy (PDT). Tracheostomy is the procedure performed when the patient is on a long-duration ventilator or has Airway Obstruction. Also, Tracheostomy is done for Tracheal toileting when the patient has increased secretion in the trachea and lungs. But now, a day's advanced tracheostomy is done in emergency services. Considering the risk of Bleeding in surgical tracheostomy, a new technique of surgical tracheostomy has been developed, which doesn't need cauterization; it has minimum bleeding risk and is a fast procedure with an easy technique. This article overviews Percutaneous Dilatational Tracheostomy and its application in Kanthagat Vyadhi.

Keywords: Surgical Tracheostomy (ST), Percutaneous Dilatational Tracheostomy (PDT), Intensive Care Unit (ICU).

INTRODUCTION

Ayurveda text has references to Kanthagat Vyadhi, where patients can have airway obstruction, and in emergency conditions, we can use Surgical Tracheostomy/ Percutaneous Dilatational Tracheostomy (PDT) as a lifesaving procedure.¹

The first documented Tracheostomy was done by The Italian physician, Antonio Musa Brasavola², who performed a successful tracheostomy on a patient suffering from obstruction of the tonsils in 1546 and described the surgical method he used in a report that became the first successful documented case. The origin of percutaneous tracheostomy was first said by the Italian surgeon Sanctorius who was probably the first to describe the technique in the 16th century. This article overviews advances in surgical tracheostomy and its application.

There are different disease conditions where Percutaneous Dilatational Tracheostomy (PDT) can be used with airway obstruction.

Swaryantra shoph (Acute Laryngitis, Laryngeal Carcinoma, etc.)

Swaryantra shosh (Phthisis Laryngea, Chronic TB of Larynx, Lupus of Larynx)

Sadyovran (Traumatic injury over neck/vocal cord)³

Here we can overcome the classical surgical Tracheostomy by Percutaneous Dilatational Tracheostomy (PDT) as modern medicine has evolved and modified with new techniques.

Acharya Sushruta has explained 17 types of kanthagat rogas in Nidan Sthana, and we can perform Percutaneous Dilatational Tracheostomy (PDT) in these below-mentioned nine disease conditions where we can have airway obstruction.⁴

Rohini- (Laryngeal diphtheria) – According to Ayurveda, there are five types of Rohini. Vitiated tri-dosh with Rakta causes Mansa dushti, which leads to severe pain and obstruction in the throat.

According to modern science, this can be correlated to the spread of the infection in the nasopharynx to the larynx; the airway becomes obstructed and can be restored by inserting a tube in the trachea. Here we can use PDT instead of classical surgical tracheostomy.

Adhijivha valay (Epiglottitis) – This disease vitiates Rakta and Kapha and caused tongue-like inflammation near epiglottis.

Epiglottitis is a swelling of the epiglottis which is from infection or injury. The airway becomes narrow and completely blocked; here is the condition where we need surgical tracheostomy (ST) or Percutaneous Dilatational Tracheostomy (PDT).

Valas – (Tumour in the Larynx or Pharynx) – Valas is throat inflammation caused by vitiating Kapha and Vayu. This causes severe pain and shortness of breath.

Tumour in the Larynx or Pharynx is causing airway obstruction; then, we can perform Surgical Tracheostomy (ST) or Percutaneous Dilatational Tracheostomy (PDT).

Galaugh (Retropharyngeal Abscess) – This is the throat inflammation caused by vitiated Kapha and rakta associated with fever. In this disease, the patient cannot swallow liquids or semi-solid, which causes shortness of breath.

A Retropharyngeal abscess is when bacteria grow in the lymph nodes behind the throat. Retropharyngeal abscess gradually increases in size and causes airway obstruction.

Galavidrdhi (Peri-tonsillar Abscess) – Vitiated tri dosha occupies kanth Pradesh and causes inflammation. There is a sudden onset of swelling, severe pain and pus discharge.

A complication of tonsillitis is when the infection spreads behind the tonsil and causes inflammation that can produce obstruction in the airway.

Swaraghna – (Tuberculosis or cancer of the Larynx or paralysis of the Larynx) – Vitiated Vayu obstructs the throat. This leads to shortness of breath and sore throat.

Laryngeal Tuberculosis is the most common disease of the larynx and has usually been considered to result from pulmonary tuberculosis; it is localised in the larynx as a primary lesion without any pulmonary involvement, but when due to this disease condition whenever patient faces breathing difficulty and tachypnoea ST or Percutaneous Dilatational Tracheostomy (PDT) can be done.

Mansatan – (Cellulitis or Cancer of the throat) – Tridosh gets vitiated and causes localised swelling, which leads to shortness of breath.

A bacterial infection around the throat obstructs the airway and is the condition for emergency Surgical Tracheostomy (ST) or Percutaneous Dilatational Tracheostomy (PDT).

Galvidari – (Gangrenous Stomatitis or Retropharyngeal abscess after bursting) – Galvidari is Severe throat inflammation caused by Pitta and rakta prakopa. There is a pricking sensation in the throat, and occasional discharge may be seen.

Bursting of an abscess, sometimes also due to severe stomatitis causing inflammation and difficulty breathing, is the condition for emergency Surgical Tracheostomy (ST) or Percutaneous Dilatational Tracheostomy (PDT).

Galarbud – (Benign Throat Tumour)⁵ – Pain less swelling at the base of jivha is called galarbud.

Benign throat tumours may be salivary gland adenomas which are non-cancerous and may be life-threatening if they affect throat function, which may cause airway obstruction when they increase in size.

Tracheostomy is the process of creating an opening in the anterior wall of the trachea.

Indication	Contraindication	Complication
Airway protection in tachypneic patients due to obstruction.	Enlarged thyroid gland.	Tracheal ring fracture.
To protect the airway in unconscious patients with risk of aspiration.	Coagulopathy.	Pneumothorax.
Bronchopulmonary dysplasia	Local infection	False tract.

ANATOMY OF TRACHEA

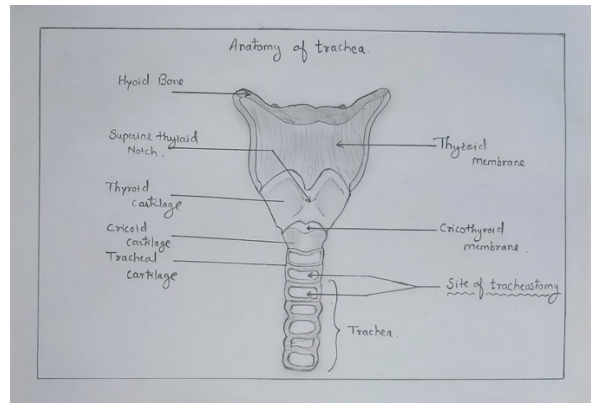


Figure 1

The trachea is a non-collapsible wide tube at the beginning of the respiratory tract. It remains non-collapsible due to its C - Shape of a cartilage ring. The trachea is about 10 to 15 cm long, and its upper half lies in the neck and its lower half in the superior mediastinum. The external diameter measures 2 cm in males and 1.5 cm in females. Given the tracheostomy procedure, we must palpate the hyoid bone below the chin. We can palpate the Tracheal ring below the cricoid cartilage below the hyoid bone. Generally, tracheostomy is performed in the 2nd and 3rd tracheal rings.⁶

Practical Knowledge of Percutaneous Dilatational Tracheostomy

Image of tools used in PDT.



Figure 2

The preoperative planning

- Patient selection after thorough Anatomical/ Physiological/ Clinical examination.
- Written informed consent should be taken.
- Withhold anticoagulation (if any).
- The patient should be nil by mouth for at least 4hrs.
- Monitoring blood pressure and pulse oximetry is done throughout the procedure.
- Percutaneous Dilatational Tracheostomy (PDT) can be performed under local anaesthesia with adequate analgesia, sedation, and muscle relaxants.

- The neck is positioned correctly and adequately extended with a help ring placed under the patient's head.
- The incision point is typically located halfway between the cricoid cartilage and sternal notch.

Surgical Steps of Percutaneous Dilatational Tracheostomy

- Clean and drape the patient.
- Identify the site of insertion.
- Infiltrate the skin with local anaesthetic containing a vasoconstrictor (i.e., Inj. Xylocaine with Adrenalin)
- Insert a 14-gauge sheathed introducer needle into the trachea.
- Tracheal placement of the needle is confirmed by aspirating air bubbles into the saline-filled syringe attached to the needle.
- Withdraw the needle and insert the Seldinger guidewire through the plastic sheath.
- A dilator is then inserted over the guide wire.
- The insertion site is dilated with the help of a dilator.
- After dilatation, the dilator is removed, and the tracheostomy tube is inserted into the trachea over the guide wire.
- A tracheostomy tube is confirmed by checking air entry in the bilateral lung and Chest X-ray.

Post Tracheostomy Care

- Post tracheostomy care is of most importance.
- Stoma wound should be covered with Sterile gauze piece with betadine tincture.
- The tracheostomy tube should be filled with appropriate air pressure.
- Cuff pressure inflation and deflation should be done regularly to avoid mucosal ischemia.
- Tracheal suction should be done regularly with the help of a suction catheter (A soft tip suction catheter is advised to avoid trauma due to repeated suction).⁷⁻⁹

CONCLUSION

Percutaneous Dilatational Tracheostomy (PDT) is a procedure which is better, easy to perform, has less bleeding risk and can be adapted by a medical practitioner quickly within a short period of time and we can adapt this easily to the Ayurveda disease point of view with proper patient selection.

REFERENCES

1. Mehta C, Mehta Y. Percutaneous tracheostomy. *Ann Card Anaesth.* 2017;20(Supplement): S19-S25. DOI:10.4103/0971-9784.197793
2. Yolanda Smith, Tracheotomy History, Last Updated Oct 20, 2021, Available at: <https://www.news-medical.net/health/Tracheotomy-History.aspx> (Accessed: 15/04/2022).
3. Jaikrishnadas Ayurveda series no.17, Illustrated Salakya-Vijnana, By Dr R.C. Choudhury, Chaukhamba Orientalia, A house of oriental and antiquarian books, Varanasi, Nineteenth Edition: 2004. Dwitiya Khanda Chapter 25 Larynx ya Swarayantra, p 300 – 310.
4. Jaikrishnadas Ayurveda series no.17, Illustrated Salakya-Vijnana, By Dr R.C. Choudhury, Chaukhamba Orientalia, A house of oriental and antiquarian books, Varanasi, Nineteenth Edition: 2004. Dwitiya Khanda Chapter 26 Kanthagat rog, p 311 – 323.
5. Jaikrishnadas Ayurveda series no.17, Illustrated Salakya-Vijnana, By Dr R.C. Choudhury, Chaukhamba Orientalia, A house of oriental and antiquarian books, Varanasi, Nineteenth Edition: 2004. Dwitiya Khanda Chapter 27 Galarbud, p 324 – 332.
6. B.D. Chourasia's Human Anatomy, Regional and Applied Dissection and Clinical, Head Neck Brain, Volume 3, Sixth edition:2013, Chapter 9, Prevertebral and Paravertebral Regions, Trachea, p 169 - 170.
7. Logan Turner's Diseases of the Nose Throat and Ear, 10th Edition, Edited by AGD Maran, 2006 Edward Arnold (Publishers)LTD, Chapter 2.20 Tracheostomy, p 191 – 197.
8. Emergencies in ENT by Rupa Vedantam, Published by Byword Books Private Limited, First Published 2010, Chapter 13 Intubation, Tracheostomy and Cricothyrotomy, p 119 – 123.
9. Diseases of Ear, Nose and Throat & Head and Neck Surgery by PL Dhingra, Shruti Dhingra Assisted by Deeksha Dhingra, 6th Edition 2014, Elsevier A division of Reed Elsevier India Private Limited, Section 5, Diseases of Larynx and Trachea, p 316 – 320.

Cite this article as:

Chandrashekhar N. Mule and Swapnil K Chavan. Advances in surgical tracheostomy and kanthagat vyadhi: A review. *Int. J. Res. Ayurveda Pharm.* 2022;13(4):92-94 <http://dx.doi.org/10.7897/2277-4343.130495>

Source of support: Nil, Conflict of interest: None Declared

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