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Aim of NIJ

To publish high-quality original research articles in the field of nursing that are novel and innovative in their findings that make substantial theoretical and practical advances in the nursing profession.

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From the Editorial's desk: "Need for innovations in nursing research approach for holistic health outcomes."

It is with great pleasure to present the current issue of the Nursing Innovators Journal (NIJ), an open-access, double-blinded, peer-reviewed international journal. NIJ brings together a diverse collection of scholarly research work from nursing that reflects the contemporary development, emerging evidence, and evidence-based practices within the fields of community health nursing, mental health nursing, obstetrical gynecological nursing, pediatric nursing, and medical surgical nursing in health sciences.

The present issue of the journal is unified by a central theme on innovations in nursing research, its interventions for holistic health outcomes, emphasizing the critical role of innovative educational strategies, evidence-based interventions, and holistic nursing care in addressing contemporary health challenges across the lifespan. The articles in this issue explore diverse dimensions of nursing practices, ranging from child and adolescent health, maternal and family care, clinical and surgical nursing, to elderly care from various nursing specialities. This issue highlights the impact of structured teaching programs, simulation-based learning, and evidence-based practice in achieving nursing excellence. Overall, these contributions pointed out the importance of preparing a competent, ethical, and empowered nursing workforce capable of responding to evolving healthcare needs at both national and global levels.

Recently, around the world, rapid changes are happening, from rising incidence of non-communicable diseases to unprecedented rises in mental health issues to the increased global life expectancy up to 74.5 years for males and 79.1 years for females in 2050, as projected by the United Nations. And from war-conflict-ridden countries, humanitarian crises, and greying populations to the latest developments in artificial intelligence and research advancements around the world, the scope for the caring science of nursing is huge. Conducting relevant nursing research that addresses such societal changes and issues through innovative research with a strong ethical background is a glaring need. Finding such articles has become an essential step in the dissemination of nursing research in today's academic journal world.

The concern rises when the nursing research is done for the sake of doing it, while innovation and methodological rigor are given a miss. With the threat for plagiarize content, and AI content mixed with it, the originality in research articles needs to be under strict scrutiny nowadays. As a nurse innovator, novelty must stay humane and use digital technology ethically and appropriately. The nursing researchers must be wary and alert to the lure of unethical research conduct in any form. The world is changing, with ever-evolving health care demand. Let's us put-up a discerning bird-eye view, and act to match the evolving researchable gaps beat by beat with humane innovations of caring that are culturally inclusive and sustainable ways. The need for conducting good, honest, need-based, innovative nursing research is a nonnegotiable and palpable fact.

NIJ and its editorial board are committed to providing genuine content for the readers that is based on authentic and original research and academic expertise. We ensure this commitment through our double-blinded peer-reviewed process and stringent SOP editorial process to bring out the issue of high-quality academic research based on methodology rigor and its findings for the profession and public at large.

The views and opinions expressed in the published articles are solely those of the authors and do not necessarily reflect the views of the editor, editorial board, publisher, or affiliated institutions. The journal assumes no responsibility for any consequences arising from the use of the published content. On behalf of the editorial team, I extend our sincere appreciation to all contributors and readers for their continued support.

Warm regards.

Prof. Laishangbam Bijayalakshmi Devi

Editor, Nursing Innovators Journal, MKSSSBTINE, Pune

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"Care of client with tracheal reconstruction- Tracheoplasty: A case study"

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Abstract: *Tracheal stenosis is a rare but potentially life-threatening airway disorder resulting from congenital abnormalities or acquired causes such as prolonged intubation, tracheostomy, trauma, or inflammatory conditions. This case study presents the clinical management of a 27-year-old male who developed subglottic stenosis following a road traffic accident, prolonged intubation, tracheotomy, and subsequent failed attempts at decannulation. On admission, a comprehensive airway evaluation, including flexible laryngoscopy, confirmed high-grade subglottic stenosis. The client underwent tracheoplasty with resection of the 2nd to 5th tracheal rings and end-to-end anastomosis using interrupted Vicryl sutures. Intraoperative airway patency was verified with the Valsalva manoeuvre, and the postoperative course was stable with no evidence of bleeding, airway compromise, or subcutaneous emphysema. Postoperative bronchoscopy confirmed an intact anastomosis and mobile vocal cords. Nursing management focused on airway clearance, infection prevention, communication support, pain management, and careful positioning with neck flexion. Close monitoring for respiratory distress, secretion pattern, wound integrity, and overall hemodynamic stability was maintained. The client demonstrated progressive improvement and readiness for further rehabilitation. This case highlights that timely diagnosis, multidisciplinary perioperative care, and meticulous surgical technique allow successful tracheal reconstruction and restoration of normal airway function.*

Key words: *Tracheal stenosis, Subglottic stenosis, Tracheoplasty, Airway reconstruction, Prolonged intubation, Perioperative nursing care.*

I. Introduction:

Tracheal stenosis is a pathological narrowing of the tracheal lumen (airway) that impairs normal airflow and can lead to dyspnea, stridor, recurrent respiratory infections, and even respiratory failure in severe cases. It is observed across age groups but manifests differently depending on its origin. Classification based on etiology divides tracheal stenosis into congenital and acquired forms, each with distinct causes, presentations, and implications for management.[1]

Congenital tracheal stenosis is present from birth and results from embryological anomalies in tracheal development. In many cases, this is due to abnormal cartilage formation, such as complete tracheal rings, where the normal C-shaped cartilaginous rings are replaced by O-shaped rings that produce a fixed and uniform narrowing of the airway. In contrast, acquired tracheal stenosis develops after birth because of injury, inflammation, or prolonged mechanical insult to the trachea. The most common cause is iatrogenic injury from prolonged endotracheal intubation or tracheostomy, which induces pressure necrosis, mucosal injury, and subsequent fibrosis leading to luminal narrowing. Other less frequent causes include external trauma, infection, autoimmune conditions, and neoplasms. Acquired stenosis may present later in childhood or adulthood with progressive symptoms such as exertional dyspnoea, wheezing, or recurrent airway compromise, and the approach to management depends on the severity, length, and location of the stenotic segment.[2]

II. Etiology

In 1969, it was first discovered that, because of intubation or tracheostomy, tissue ischemia occurs due to ETT cuff pressure. It compromises mucosal blood flow, leading to subglottic scarring and Fibrosis.[3]

Scar Formation for the tip of the breathing tube leads to Wegener's granulomatosis (A condition of blood vessel inflammation), inflammatory diseases, trauma, and burn injuries.[4]

III. Types: Acquired and congenital tracheal stenosis.

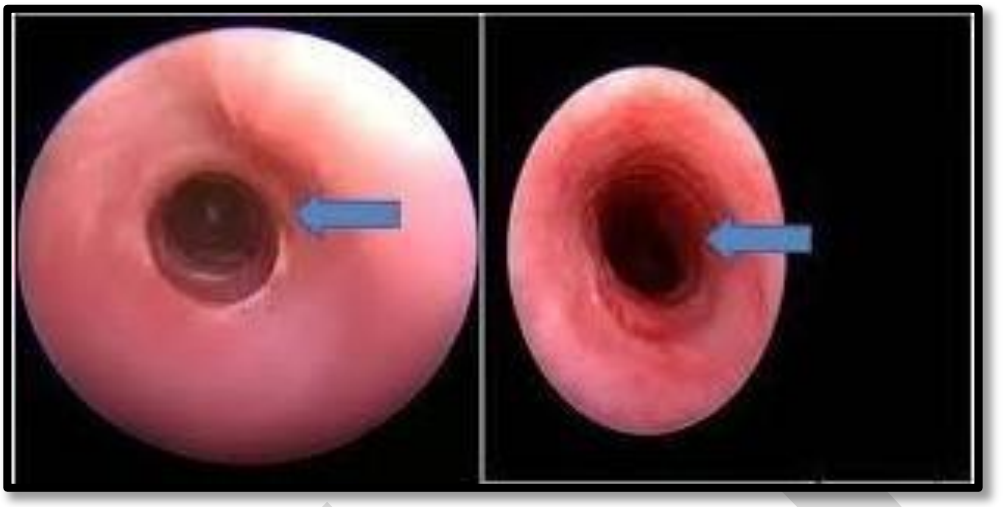

Fig no.1- Congenital tracheal stenosis. Source: Google image

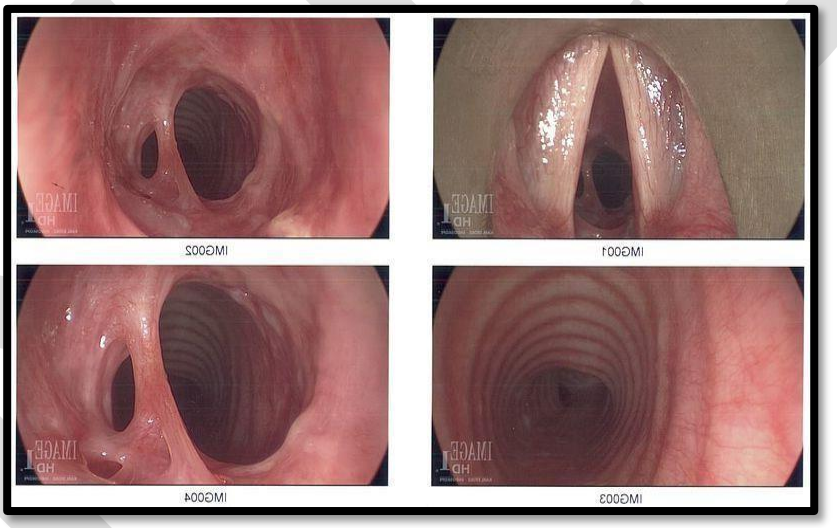

Fig no.2- Post intubation acquired tracheal stenosis. Source: Google image

IV. Signs & symptoms:

Most of the symptoms in adults and children are the same:

- Difficulty in breathing after vigorous activities.
- Wheezing
- Frequent cough
- Persistent cold
- Pneumonia or other viral or bacterial infection
- Persistent asthma that could not be better after treatment
- Apnea
- Shortness of breath

- Chest congestion
- Feeling of phlegm stuck within the airway. [5-6]

Specific to infants and children, signs, and symptoms:

- Infants feel difficulty during breastfeeding and after feeding and fatigue.
- While eating, some children may feel choking, difficulty in breathing.
- Infants and children may experience noisy breathing, cyanosis in the mouth or nose.

V. Diagnostic test: Following are diagnostic test for assessment.

- Tracheo-bronchoscopy
- Laryngoscopy - Trans nasal flexible laryngoscope
- Computed tomography
- MRI- Magnetic Resonance Imaging
- PET - Positron Emission Tomography
- Pulmonary function test
- X-ray of chest and windpipe
- Voice evaluation test

VI. Surgical Treatment:

Surgical management is indicated in clients with moderate to severe tracheal stenosis who are symptomatic or in whom conservative and endoscopic interventions have failed. The primary objective of surgical treatment is to restore and maintain an adequate airway lumen while preserving normal tracheal function. The choice of surgical technique depends on the etiology, length, location, and severity of the stenosis, as well as client-specific factors such as age and comorbidities.

Tracheal resection with primary end-to-end anastomosis is considered the gold standard for short-segment acquired tracheal stenosis, particularly when the diseased segment is well defined and limited in length. In this procedure, the stenotic segment is excised, and the healthy ends of the trachea are re-approximated. Careful attention is given to tension-free anastomosis to prevent postoperative complications such as restenosis or anastomotic dehiscence.

For long-segment tracheal stenosis, especially in congenital cases, slide tracheoplasty is the preferred surgical technique. This method involves longitudinal division of the trachea followed by sliding and reconstruction to widen the airway lumen. Slide tracheoplasty offers the advantages of preserving native tracheal tissue, reducing anastomotic tension, and providing a stable, growth-compatible airway, particularly in pediatric clients.

In selected cases where reconstruction is complex or when clients are poor candidates for definitive surgery, tracheal stenting may be used as a temporary or palliative measure. However, stenting is associated with complications such as granulation tissue formation, migration, and infection, and therefore is not considered a definitive solution.

Postoperative care is critical to surgical success and includes airway monitoring, prevention of infection, management of secretions, and avoidance of excessive neck extension or flexion to protect the anastomosis. Long-term follow-up is essential to assess airway patency and detect complications such as restenosis at an early stage.[7]

VII. COMPLICATIONS:

- Chest infection
- Bleeding
- Granulation tissue formation
- Restenosis of the trachea
- Damage to the major organ while using the bypass machine
- ECMO may be needed to secure heart and lung function after the procedure.
- Wound infection
- Anastomotic separation
- Laryngeal edema
- Glottic dysfunction
- Scar is markedly seen on chest.

VIII. Case report:

A 27-year-old male client presented to the Emergency Department on 23 December 2022 with a history of road traffic accident on 30 June 2022. Following the accident, he sustained a severe head injury and required endotracheal intubation for seven days. Neuroimaging revealed an epidural hematoma with cerebral contusions. In addition, the client suffered multiple facial bone fractures, chest trauma, and bilateral alveolar injury.

Subsequently, the client underwent a tracheotomy. Post-tracheotomy, he was able to maintain adequate oxygen saturation on room air. However, he later developed episodes of respiratory distress, necessitating ventilatory support, and multiple attempts at decannulation were unsuccessful.

For further evaluation and definitive management, the client was referred to a hospital. On examination, video laryngoscopy was performed, which revealed subglottic stenosis. In view of the diagnosis and persistent airway compromise, a surgical tracheoplasty was planned.

All necessary hematological and biochemical investigations were completed. A tracheotomy site swab was sent for microbiological culture and sensitivity, and neurological fitness for surgery was obtained.

Operation notes:

The client was positioned supine. Superior and inferior subplatysmal flaps were elevated up to the hyoid bone and sternal notch, respectively, followed by a midline cervical dissection. The thyroid gland was identified, and the isthmus was divided and retracted laterally to expose the trachea.

The trachea was dissected free from surrounding tissues up to the stenotic segment, which extended from the first to the fifth tracheal rings. Partial division of the thyrohyoid membrane facilitated exposure. The trachea was opened in the midline, and the extent of stenosis was assessed. The second to fifth tracheal rings were resected.

A primary end-to-end tracheal anastomosis was performed using interrupted 4-0 Vicryl sutures for the posterior membranous wall (intraluminal) and interrupted 3-0 Vicryl sutures for the lateral and anterior walls (extraluminal). The superior cornua of the thyroid cartilage were divided to reduce anastomotic tension. The neck was flexed, sutures secured, and tissue adhesive applied over the anastomosis. Anastomotic integrity was confirmed with a Valsalva maneuver at 25 mmHg, with no air leak.

The thyroid isthmus was sutured over the anastomosis, the strap muscles were re-approximated, and a corrugated rubber drain was placed. The wound was closed in two layers with 3-0 Vicryl and skin staples, followed by a sterile dressing.

Postoperatively, the patient was nursed with the neck flexed and extubated once fully awake in a head-elevated position. No postoperative complications such as bleeding, swelling, respiratory distress, or subcutaneous emphysema were noted.

Nursing diagnosis:

1. Ineffective Airway Clearance related to accumulation of thick tracheobronchial secretions as evidenced by abnormal breath sounds, dyspnea, persistent cough, and shortness of breath.

Nursing Intervention

- ✓ Maintain semi fowlers position.
- ✓ Gentle suctioning as per secretion frequency.
- ✓ Nebulize the client as per the physician's order to eliminate secretion.
- ✓ Assess vitals and auscultate breath sounds.
- ✓ Document respiratory secretion, amount, and characteristics of sputum.
- ✓ Check client's SPO_2 level and administer O_2 if required.
- ✓ Perform ABG to monitor client oxygen levels in the blood.
- ✓ Involve a respiratory therapist to perform gentle chest physiotherapy to loosen the secretion.
- ✓ Encourage Fluid intake.

2. Impaired Verbal Communication related to the presence of an artificial airway as evidenced by inability to speak clearly and difficulty in verbal expression.

Nursing intervention

- ✓ Assess the client's communication ability.
- ✓ Assess the effectiveness of nonverbal communication and perform positive gestures to communicate with the client.
- ✓ Display the communication board in front of the client.
- ✓ Provide emotional support to the client.
- ✓ Give the call bell to the client.
- ✓ Use of a paper pen to convey a message.
- ✓ Collaborate with the speech therapist and physician.

3. Risk for Infection related to surgical incision and increased airway secretions secondary to impaired swallowing.

Nursing intervention

- ✓ Monitor client temperature.
- ✓ Assess skin integrity in each shift, assess the Braden scale.
- ✓ Observe operating site for erythema, color, exudates, redness, oozing.
- ✓ Monitor WBC as per physician's order.
- ✓ Follow SOP (standard of precaution) in the unit while giving care in the unit.
- ✓ prophylactic antibiotic as per physician order

4. **Other Nursing intervention:**

- Not to turn client 48 hrs. To 72 hrs. as per physician order.
- To keep neck flexed.
- Keep bronchoscope standby near client bed.
- Check for neck dressing for any oozing.
- Watch for subcutaneous emphysema.
- Watch for distress.
- Maintain strict input output charting.
- Start RT feeding as per the physician's order.
- Do not strain while defecating, use of laxatives as per the physician's order.
- Perform basic care.
- Administer medication as per the physician's order. Majorly avoid analgesic tramadol and steroids.

IX. Conclusion:

The treatment of tracheal stenosis, tracheoplasty, is a decisive and successful surgical procedure, especially in patients with severe airway impairment for whom conservative therapies are insufficient. Surgical method advancements, particularly tension-free anastomosis and sliding tracheoplasty, have significantly increased overall survival, functional results, and postoperative airway patency. To reduce problems, including restenosis, anastomotic failure, and infection, careful preoperative evaluation, careful intraoperative technique, and attentive postoperative care are crucial. To ensure the best possible recovery and long-term airway function, interdisciplinary coordination between surgeons, anaesthesiologists, nurses, and rehabilitation teams is equally crucial. For patients with both congenital and acquired tracheal stenosis, tracheoplasty provides long-lasting symptom relief, enhanced quality of life, and positive long-term outcomes when properly recommended and skilfully executed.

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Conflict of Interest: There is no conflict of interest to declare.

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