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## Case Report

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# Restoring Vocal Cord Function in Thyroid Surgery Complications: A Case of ANSA-RLN Anastomosis in a Global Health Context

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## Abstract

This case study presents a notable instance of a young patient who developed bilateral vocal cord palsy after thyroid surgery and subsequently underwent a distinctive laryngeal reinnervation surgery referred to as ANSA-RLN anastomosis. This is a common intervention and should be used as a solution to reinnervation. The medical procedure was conducted at Sylhet MAG Osmani Medical College in Sylhet, Bangladesh. This report highlights the significance of considering global health factors when assessing complications arising from thyroid surgery, especially in regions with limited healthcare resources. The young patient's main issue and concern was the loss of voice clarity and the resulting hoarseness after nerve interference (iatrogenic recurrent laryngeal nerve injuries) severed while undertaking thyroidectomy and a follow-up surgical intervention to remove remaining thyroid tissue in the right thyroid bed and multiple metastatic lymph nodes at various levels on both sides of the neck. The patient undergoes the laryngeal reinnervation (ANSA-RLN anastomosis) and by the 6th month, has all her vocals functioning normally, underscoring the success of an iatrogenic recurrent laryngeal reinnervation in cases of severed chords [1]. However, her fears and the lack of comprehensive studies on the success rate and prevalence of ANSA-RLN anastomosis calls for fear-allaying widespread research to identify the safety, success, and long-term outcomes of the rare procedure in Bangladesh [2].

## Learning points

- In resource-constrained environments, thyroid surgery complications, including vocal cord palsy, can lead to substantial social and cultural ramifications, highlighting the necessity for holistic healthcare solutions.
- The innovative surgical technique of laryngeal reinnervation, as demonstrated by ANSA-RLN anastomosis, can help with individuals confronting vocal cord paralysis post-thyroid surgery, underscoring the significance of the early surgical methods.
- The case emphasizes the disparities in healthcare access and the impact of cultural and religious factors on a patient's healthcare decisions, underscoring the need for culturally sensitive care and global health interventions.
- Healthcare inequalities in global health settings call for concerted efforts to improve healthcare infrastructure, access to specialized treatments, and equity in healthcare delivery in middle and low-income countries.

**Keywords:** Vocal Cord Palsy; LRN; ANSA-LRN; Thyroid Surgery; Laryngeal Reinnervation; Global Health



## Introduction

Vocal cord paralysis (VCP) is a challenging condition that can result from thyroid surgery, especially when there is unintended damage to the recurrent laryngeal nerve (RLN) during the surgical procedure. Innovative techniques like ANSA-RLN anastomosis have emerged as a promising solution for laryngeal reinnervation, with the aim of restoring connections between motor neurons and laryngeal muscles that have been deprived of nerve input [3]. However, as Martinez et al. [4] and Simó et al. [5] note, managing thyroid disease through invasive or minimally-invasive methods is not always possible, highlighting the limited spread of the much-needed procedure in developing and undeveloped countries such as Bangladesh [6].

This case report underscores the significance of considering global health aspects when addressing thyroid surgery complications, particularly in resource-limited environments where patients' outcomes are inevitably significantly shaped by the availability of specialized treatments and cultural considerations. Further, the research and its focus on global health trends as they affect modern interventions are more pronounced in this case report as the patient fears that the procedure will be unsuccessful, owing to the limited opportunities for ANSA-RLN Anastomosis.

## The Case

**Chief Complaint:** The patient sought medical attention due to the distressing symptoms of voice hoarseness and respiratory difficulties following a total thyroidectomy.

**Pertinent History:** This case involves a 15-year-old Bangladeshi patient who was initially diagnosed with papillary carcinoma of the thyroid, leading to a comprehensive treatment plan involving total thyroidectomy and bilateral neck dissections.

**History of Present Illness:** After the initial surgical intervention, the patient experienced bilateral vocal cord palsy, which was conclusively diagnosed via direct fiber optic laryngoscopy. The severity of this condition necessitated a tracheostomy to alleviate the patient's respiratory distress.

**Physical Exam:** A thorough physical examination confirmed the presence of bilateral vocal cord palsy, and notably, during the surgical procedure, tracheal involvement was also identified.

**Patient's Limitations:** The patient was reluctant to undergo the process due to previously ineffective surgery and the fear that her cords would be further severed. She was also afraid of the implied cost of surgery.

## Intervention with Treatment Plan

Post-thyroid surgery vocal palsy diagnosis through differential diagnosis includes the presence of an injured RLN, infections of the laryngeal region, or any other complications typical of surgery of the thyroids. The present client reported a second correctional surgery that led to a complete thyroidectomy and the physician used a bilateral neck dissection approach with a central neck clearance. In the process, the Bangladeshi girl suffered injury that severed

her voice cords which necessitated a left-sided reinnervation of the laryngeal through ANSA-RLN anastomosis. The treatment took place at the college's medical complex and she was observed for several days before being released, during which days the physician checked for any other complications.

## Outcomes

Although the patient was very afraid, her voice showed significant improvements within 15 days after the procedure. The physician followed with radioactive iodine therapy and recovery monitoring and checks, conforming full recovery after six months. The results highlighted the efficacy of the rare treatment option.

## Discussion

**Pathophysiology:** The case report indicates that the patient had an iatrogenic injury during her first surgery that severed her RLN. This is possible during thyroidectomy given that the operation took place at a time when surgical technology was yet to be well-refined. The RLN nerve, when severed, suffers instability in the voice cords and can lead to loss or distortion of voice, negatively affecting speech. This nerve can be repaired through ANSA-RLN anastomosis [7,8]. These assertions also align with contemporary research on the procedure.

## Relevant Guidelines and the Potential Applicability

The management of recurrent laryngeal nerve (RLN) injury is guided by established recommendations that highlight the paramount significance of preserving the RLN during thyroid surgery. Nevertheless, it is essential to recognize that the implementation of these standards can vary when dealing with resource-constrained environments. This case underscores the importance of adhering to these guidelines, especially in settings with limited resources, where timely adherence to these recommendations can significantly mitigate potential complications.

## Cultural and Personal significance

The case involves significant cultural and personal significance of voice cord injury or impairment due to RLN or associated trauma. Bangladesh is a Muslim society and young children and early adults do a lot of recitation of the Quran and Muslim prayers. As the authors note, the girl was disturbed that her voice was abnormal and hoarse. At the same time, the case occurs at fifteen years, a time when girls are highly sensitive to their physical appearance and how people look at them. The case, therefore, involves a girl worried about her voice and how she sounds among her contemporaries as well as her ability to recite the Quran. Her voice was part of her identity, thus, the discomfort. Given the diversity of human needs and cultural influence on healthcare decisions, it was and is important to always consider the cultural nuances that influence patients. For instance, healthcare providers must administer care that respects and protects client's cultural beliefs, and preferences, and prevents emotional abuse. The understanding of health and disease among the First Nations is intrinsically linked to spiritual or supernatural beliefs [9]. Individuals may interpret illness as a manifestation of displeased deities or as a consequence of ancestral

spirits. In such cases, healthcare providers need to approach patients with an understanding of these beliefs, fostering trust and making treatment more acceptable.

### Global Health Disparities

This case underscores the issue of global health inequalities, particularly in terms of the availability of high-quality healthcare and specialized medical procedures. Patients residing in regions with limited resources often encounter a multitude of difficulties related to healthcare accessibility, financial constraints, and the availability of advanced surgical techniques, leading to multiple corrective surgeries. These disparities in surgical care can result in delayed diagnoses, restricted treatment options, and suboptimal health outcomes as with the young girl.

The case serves as a reminder of the pressing necessity for global health initiatives to redress these discrepancies in healthcare access. Existing literature supports the notion that targeted interventions can act as a bridge to close these gaps. For instance, it may involve the training of local healthcare professionals in advanced surgical techniques or the enhancement of healthcare infrastructure to facilitate the delivery of specialized procedures [10,11]. This underscores the fundamental principle of healthcare equity, which strives to ensure that every individual, regardless of their geographical location or socioeconomic status, enjoys an equitable standard of healthcare [12].

### Conclusion

This case highlights the complex medium in which thyroidectomy and other critical surgical procedures take place. It shows that besides the voice cord denervation by erroneous or invasive surgery causing trauma to the laryngeal, voice carries a personal and cultural significance. The girl's fear of worsening voice cords and concern about her hoarse voice is due to her identity and her need to recite the Quran and speak clearly to her contemporaries. The case also presents compelling evidence that ANSA-RLN anastomosis is effective in repairing defective RLN and voice cords and restoring speech. It emphasizes the need for culture-sensitive healthcare practice.

### Acknowledgement

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### Conflict of Interest

No conflict of interest.

### Reference

1. LeBorgne WD, Donahue EN (2019) Voice therapy as primary treatment of vocal fold pathology. *Otolaryngologic Clinics of North America* 52(4): 649-656.
2. Ryu CH, Lee SJ, Cho JG, Choi IJ, Choi YS, et al. (2022) Care and management of voice change in thyroid surgery: Korean Society of Laryngology, Phoniatrics and Logopedics Clinical Practice Guideline. *Clinical and Experimental Otorhinolaryngology* 15(1): 24-48.
3. Mansor WN, Azman M, Remli R, Yunus MR, Baki MM (2023) Primary nonselective laryngeal reinnervation in iatrogenic acute recurrent laryngeal nerve injury: Case series and literature review. *Ear, Nose & Throat Journal* 102(3): 164-169.
4. Martinez JG, González M, Hernández Q, Rodríguez MA, Torregrosa N, et al. (2022) Goiter surgery recommendations in sub-Saharan Africa in humanitarian cooperation. *Laryngoscope Investigative Otolaryngology* 7(2): 417-424.
5. Simó R, Nixon IJ, Rovira A, Vander Poorten V, Sanabria A, et al. (2021) Immediate intraoperative repair of the recurrent laryngeal nerve in thyroid surgery. *The Laryngoscope* 131(6): 1429-1435.
6. Walton C, Carding P, Flanagan K (2018) Perspectives on voice treatment for unilateral vocal fold paralysis. *Current Opinion in Otolaryngology & Head and Neck Surgery* 26(3): 157-161.
7. Van Lith-Bijl JT, Desuter GR (2020) Laryngeal reinnervation: the history and where we stand now. *Advances in Neurology* 85: 98-111.
8. Jin S, Sugitani I (2021) Narrative review of management of thyroid surgery complications. *Gland Surgery* 10(3): 1135-1146.
9. Salmon M, Doery K, Dance P, Chapman J, Gilbert R, et al. Defining the indefinable: Descriptors of Aboriginal and Torres Strait Islander Peoples' cultures and their links to health and wellbeing.
10. Cleere EF, Davey MG, Young O, Lowery AJ, Kerin MJ (2022) Intra-operative nerve monitoring and recurrent laryngeal nerve injury during thyroid surgery: a network meta-analysis of prospective studies. *Langenbeck's Archives of Surgery* 407(8): 3209-3219.
11. Oscé H, Magamadov K, Van Den Heede K, Brusselsaers N, Vermeersch H, et al. (2021) Intra-operative recovery of preoperative vocal cord paralysis during hemithyroidectomy for benign thyroid disease: case report and review of the literature. *Acta Chirurgica Belgica* 121(3): 215-218.
12. Kim J, Graves CE, Jin C, Duh QY, Gosnell JE, et al. (2021) Intraoperative nerve monitoring is associated with a lower risk of recurrent laryngeal nerve injury: a national analysis of 17,610 patients. *The American Journal of Surgery* 221(2): 472-427.