

Tracheal Resection and Anastomosis for Post-intubation Tracheal Stenosis: A Case Report

Anup Acharya,^{a,d} Madan Mohan Singh,^{b,d} Yeshwant Gajanan Tambay^c

ABSTRACT:

Introduction: Tracheal stenosis is one of the dreaded complication of tracheal intubation. Tracheal resection and anastomosis is an established definitive treatment for stenosis more than one cm. Here, we present a case of post-intubation tracheal stenosis managed by resection and anastomosis, first of its kind in our centre. **Case Report:** We present a case of 26-year female who underwent tracheal intubation during her treatment of tubercular meningitis. Two weeks later, she returned with respiratory difficulty. A diagnosis of post-intubation tracheal stenosis was made. Tracheal resection and anastomosis was done. Recovery was uneventful and she was discharged on 14th post-operative day. **Conclusion:** Post-intubation tracheal stenosis is still a dreaded complication even after the introduction of high volume low pressure cuff. They can be successfully managed. Care personnel in intensive care unit (ICU) should perform to prevent this complication.

Keywords: anastomosis • postintubation • resection • tracheal stenosis

INTRODUCTION:

Tracheal stenosis is defined as the narrowing of trachea. It has several grades. Incidence of tracheal stenosis following intubation has been reported up to 21%.¹ However, only a few (1-2%) of these patients present with the symptoms. Tracheal resection and anastomosis has been established as the definitive treatment of benign tracheal stenosis more than one cm in length.²

The current study aims to present a case of benign tracheal stenosis managed by resection and anastomosis, first of its kind at our institution.

CASE REPORT:

A 26 years old lady was brought to casualty

department with severe difficulty in breathing since one week. Examination revealed a young lady in severe distress of breathing. She was dyspneic, had tachycardia and air hunger. History revealed that she had been treated at our institution for Tubercular Meningitis for about a month ago, during which she was on ventilatory support for six days and was extubated two weeks later. The patient was on Anti Tubercular therapy. A clinical diagnosis of tracheal stenosis was made following intubation.

X-ray of soft tissue neck, lateral-view

a - Assistant Professor

b - Associate Professor and Head

c - Professor and Head, Department of Surgery
Lumbini Medical College

d - Department of ENT Head and Neck Surgery,
Lumbini Medical College

Corresponding Author:

Dr. Anup Acharya

e-mail: anupent@gmail.com

How to cite this article:

Acharya A, Singh MM, Tambay YG. Tracheal resection and anastomosis for post-intubation tracheal stenosis: A Case Report. Journal of Lumbini Medical College. 2014;2(2):48-50. doi: 10.22502/jlmc.v2i2.58.



Fig 1: X-ray of soft tissue neck, lateral-view showing tracheal stenosis at C6-C7

showed cervical tracheal stenosis (Fig 1). Emergency tracheostomy was done as endotracheal intubation was impossible. During operation, trachea was found to be severely stenosed and hence tracheostomy was not only difficult but had to be done distally at a distance.

Investigations including CT scan (Fig 2) and rigid tracheoscopy confirmed diagnosis of Tracheal Stenosis. There was grade III (90%) stenosis over the third tracheal ring with narrowing extending proximally up to second ring. CT scan showed a stenotic segment of 2.5 cm. The patient and her relatives were explained about the current problem and the options available. They later agreed for a reconstructive surgery and a tracheal resection and anastomosis was planned.

During surgery the stenotic portion of the trachea was resected and end to end anastomosis with 3/0 prolene with knots outside was performed between 1st and 5th tracheal rings (Fig 3,4). A mento-sternal suture with neck in flexion to restrict neck movement was placed with 1/0 prolene (Fig 5).

Patient made uneventful recovery and was discharged on 14th postoperative day. At five weeks follow up, patient was asymptomatic with normal breathing. Since then she had moved to India with

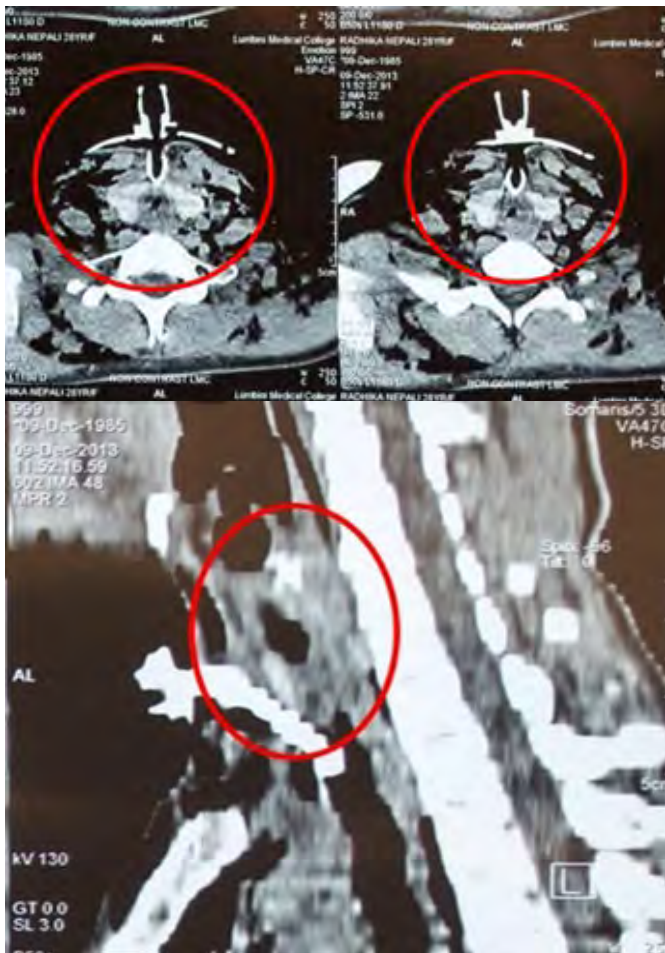


Fig 2: CT Neck, axial cuts (upper two) and reconstructed sagittal (lower) shows tracheal stenosis just above tracheostomy tube.

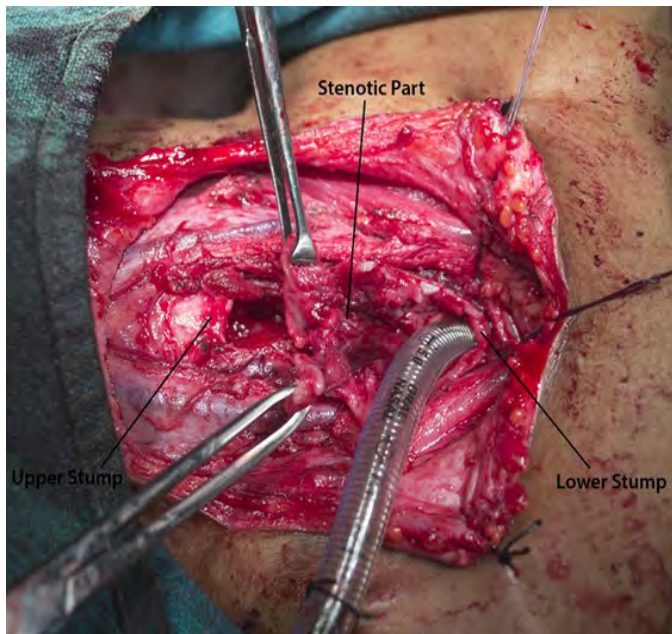


Fig 3: Upper and lower tracheal stump and the stenotic portion

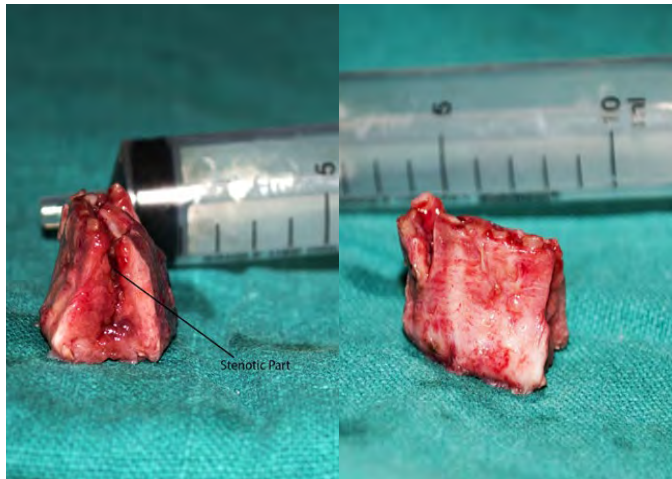


Fig 4: Resected stenotic portion of trachea



Fig 5: Mento - Sternal suture

her husband and lost the follow up.

DISCUSSION:

Among many other etiological factors, endotracheal intubation is a well-known cause of benign tracheal stenosis. The other important cause being complication of tracheostomy and external trauma.³ Nowadays, anesthetists use a high volume and low pressure cuffed tube to prevent this complication, despite which it still remains an important cause of stenosis. Stenosis is a result of ischemic injury to the tracheal mucosa by the cuff of the tube.

In our case, intubation for ventilatory support needed during treatment of TB meningitis is the most likely cause of tracheal stenosis. Usually stenosis is slow in progress and may take few months to develop and reach the severe state. However, in our case neither the duration of intubation was too long (six days), and also the time taken to reach the present severity was also too short (less than four weeks after extubation). This prompted us to share our experience with others through this short case report.

Development of tracheal stenosis following intubation has been reported to occur even with two days of intubation.⁴ A period up to two weeks in adults

and even longer in children is generally considered safe. The factors that are related to development of stenosis with shorter duration of intubations are large size of the tube, high pressure in cuff, not deflating cuff periodically, struggling or restless patient, traumatic intubation, multiple intubation, infection around the cuff site.³⁻⁵ All these factors might have played a role in development of stenosis in our case.

Most patients who develop stenosis remain asymptomatic till late. Those who are involved in active physical activities, they may present at an earlier stage.⁶

CONCLUSION:

Endotracheal intubation is lifesaving when there is a need for artificial ventilation, but it isn't without risk. Development of tracheal stenosis, that too of higher grade, is one of the most dreaded complications. Intensive care personnel should be aware of this fact and do their best to obviate such complications. However, such conditions can be managed with a high degree of success.

Conflict of interest:

The principal author was not involved in the editorial decision making.

REFERENCES:

1. Grillo HC, Donahue DM, Mathisen DJ, Wain JC, Wright CD. Postintubation tracheal stenosis. Treatment and results. *J Thorac Cardiovasc Surg.* 1995 Mar;109(3):486-92.
2. Anand VK, Alemar G, Warren ET. Surgical considerations in tracheal stenosis. *Laryngoscope.* 1992 Mar;102(3):237-43.
3. Cinnamon MJ. Stridor. In: Kerr AG, Groves J, Evans JG (editors). *Scott-Brown's Otolaryngology* (5th ed.). London: Butterworths & Co Ltd;1987.p.420-7.
4. Zias N, Chroniou A, Tappa MK, Gonzalez AV, Gray AW, Lamb CR, et al. Post tracheostomy and post intubation tracheal stenosis: report of 31 cases and review of the literature. *BMC Pulm Med.* 2008 Sep;8:18. doi: 10.1186/1471-2466-8-18.
5. Keshava K, Weingarten JA, Grosu HB. "Benign" tracheal stenosis in an 18-year-old man. *Ann Am Thorac Soc.* 2013 Dec;10(6):701-3. doi: 10.1513/AnnalsATS.201306-199OT.
6. Pookamala S, Kumar R, Thakar A, Karthikeyan CV, Bhalla AS, Deka RC. Laryngotracheal Stenosis: Clinical Profile, Surgical Management and Outcome. *Indian J Otolaryngol Head Neck Surg.* 2014 Jan;66(Suppl 1):198-202. doi: 10.1007/s12070-011-0424-2.