TRACHEAL STENOSIS

(A Case Report)

Lt Col A RAVI KUMAR^{*}, Surg Capt JM BORCAR[#],
Dr SIVAKUMAR H⁺

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Introduction

Acquired tracheal stenosis commonly follows prolonged endotracheal intubation or tracheostomy. The condition is difficult to treat and results are not satisfactory. Use of sophisticated equipment such as laser may be needed for adequate management. Here we present a report of a patient with acquired tracheal stenosis successfully managed by conventional method without the use of laser.

Case report

A 28-year-old lady, a known epileptic, developed status epilepticus. She was managed in a peripheral hospital and was on ventilatory support for a period of 19 days, during which time a cuffed endotracheal tube was used. Attempts to wean her off the respirator were unsuccessful. After weaning off, she developed stridor for which an emergency tracheostomy was done. Fibreoptic examination to ascertain the cause of stridor revealed a stenotic segment 2 cm long about 1 cm below the level of vocal cords. Tracheoplasty was done wherein the stenosed segment was resected and an end to end anastomosis was done. The suture material used for anastomosis was Vicryl. Following this the patient was decanulated. After a symptom-free interval of about two weeks, she again developed stridor and an emergency tracheostomy was performed to relieve stridor. Fibreoptic examination showed exuberant granulation tissue at the anastomotic site completely occluding the lumen.

Patient was well with the tracheostomy but could not be decanulated. At this stage ENT opinion was sought, i.e. four months after the tracheoplasty. Fibreoptic laryngoscopy and tracheoscopy showed complete occlusion of lumen of upper trachea about 1 cm below the vocal cords. A CT scan revealed the presence of a stenotic segment for a length of about 2 cm with a tracheal lumen of less than 3 mm (Fig 1).

Endoscopic removal of granulation tissue and dilatation of stenosed segment was done in four sittings at weekly intervals. During each sitting, oesophageal bougies of increasing sizes were used for dilatation till a 39 FG oesophageal bougie could be passed in the 4th sitting. Decanulation was done as a staged

procedure. Initially partial occlusion of the tracheostomy tube was done and the patient was allowed to breathe through a smaller 3 mm opening created at the superior aspect of tracheostomy tube. Complete decanulation was done after placing a stent in the stenotic segment of the trachea. A Portex endotracheal tube size 7 cut to a length of 7.5 cm, was kept in the

Fig. 1 : CT scan showing stenotic segment at tracheostomy site and below.

Fig. 2 : Showing prolene anchoring sutures in the neck.

^{*}Reader, [†]PG Student, Department of ENT, Armed Forces Medical College, Pune 411040; [‡]Senior Adviser, Cardio Thoracic Surgery, Military Hospital (CTC), Pune 411040.

Fig. 3 : Lateral radiograph of neck showing stent in situ.

tracheal lumen (stenotic segment) and anchored to the skin with prolene sutures. Tracheostome margins were freshened and sutured (Fig 2 and 3).

Tracheostome healed well and she was asymptomatic. She was sent home with the stent in situ. On review at 3 months patient was asymptomatic with improvement in quality of voice. Endoscopic removal of stent was done after cutting the anchoring sutures. The stenotic area showed no granulation tissue. A CT scan done after removal of stent, revealed no evidence of any stenosis (Fig 4).

During review in Sep 95 (9 months post-op) she continued to be asymptomatic with no airway or aspiration problems. However her voice was slightly husky. Indirect laryngoscopy showed mild impairment of mobility of left vocal cord probably as a result of adhesions in the subglottic region. She has been advised voice therapy and is expected to benefit with it. Further follow up at six months has been planned.

Discussion

Endotracheal injuries are most commonly due to traumatic intubation, use of improper tube and non-deflation of cuff of endotracheal tube periodically. Injuries are mostly circumferential and most often due to inflated cuff which initiates a chain of events. The stage of vascular occlusion leads to reactionary oedema and necrosis. Mucosal necrosis and ulceration progresses to necrosis of cartilage followed by fibrosis and cicatrization

Fig. 4 : Post-treatment CT scan showing normal tracheal lumen.

causing stenosis. The commonest sites are subglottis and upper trachea [1,2].

High volume low pressure cuffs have been developed to overcome this problem. Double cuffed tubes for alternate inflation, deflation, however have not been successful. Recent introduction of tubes with self-adjusting cuff pressures and tubes with foam cuffs can be used in patients requiring prolonged ventilation. Cuff pressure monitors are also available. However, prevention is preferable as treatment of this condition is prolonged and the results are unsatisfactory [1,2].

Laser treatment and excision of granulation tissue is preferred as results are found to be better than conservative procedures [3,4]. Because of the non-availability of CO₂ laser we have resorted to the conventional method and a successful result has been achieved. The conventional method consists of repeated endoscopies, removal of granulation tissue followed by dilatation of the stenotic segment using gum elastic bougies. This method is tedious and the success rate is variable because of formation of new granulation tissue followed by fibrosis [5,6]. This case has been managed successfully using a simple but tedious technique with the available resources.

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