

Funnel Neck - Deformity of the Neck: an unusual Sequel after Total Laryngectomy

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Introduction

The case report of a 75 years old male who developed carcinoma of the larynx and underwent total laryngectomy is presented. Soon after laryngeal ablation the tracheostome descended downwards into an unusual position behind the sternum. Concurrently the front of the neck hollowed, creating a funnel neck deformity. The factors causing the deformity and the associated complications are discussed.

Case Report

A 75 year old male was referred to the speech and language therapy unit in the Civil Hospital, Karachi with the intention of learning oesophageal speech. He was operated for total laryngectomy about a month ago. It was the 14th day of post-operative radiotherapy when he developed a sudden difficulty in breathing through the tracheostome. He was unable to retain the metallic tracheostomy tube due to the gradually descending and narrowing tracheostome. He reported to the ENT ward Civil Hospital Karachi. An uncuffed endotracheal tube of 6.5 mm size was passed and kept in situ to maintain the patency of the tracheostome.

During the following weeks the tracheostome adopted a horizontal position with respect to the neck and continually descended downwards behind the manubrium, carrying with it the attached skin and subcutaneous tissue. Simultaneously the front of the neck caved inwards deeply due to the prominence of sternomastoid muscles bilaterally. The radiotherapy had to be discontinued and the endotracheal tube was removed after six weeks. By then the tracheostome was able to retain its patency without any support.

His past medical record revealed that he was a heavy smoker for the past 25 years, which he curtailed down when his voice became hoarse. A superadded respiratory distress prompted a consultation. He had a moderated differentiated squamous cell carcinoma of the larynx with

T4NoMo status. Total laryngectomy was performed and post-operative radiotherapy started.

Clinical examination showed a deep-seated concavity in the front of the neck that tapers to end in a tracheostome placed horizontally behind the sternum (Figure). It was about 3.5cm below the upper level of the manubrium sterni. Carina could be seen 2.5 cms below, through the tracheostome that was rounded with a maximum diameter of 1.4 cms. The entire picture of the neck had resemblance to a funnel. In the depth of the hollowed neck there was a prominence created by the pharynx, which became more obvious with the swallowing movements. There was nothing significant in the rest of the clinical examination. Chest X-rays were normal.

This patient was subjected to oesophageal speech training. In spite of the regular and vigorous efforts for 18 months he failed even to produce the basic voice. In everyday life he faces a perpetual danger of inhaling anything due to the precariously placed tracheostome. He had to acquire a bend down position every time he takes a shower. He had to keep a fairly long beard, for shaving proved to be a life threatening work out for him. Nevertheless, the patient has learned to execute his daily responsibilities independently and blissfully.

Discussion

There are several issues that need to be addressed with respect to this patient. Why the tracheostome descended into such an unusual position? Can we presume it to be the outcome of a low tracheal cut that might have been made at the time of laryngeal resection? Tumour spill over into the trachea could have warranted this step for achieving oncologically safe anatomy. However, the available operation note did not mention about the level of the tracheal cut.

Trachea is a very elastic tube. It is pulled downward by the lungs with each respiratory effort while the larynx with its supportive extrinsic muscular attachments tends to keep it in the normal position. The trachea collapses like a concertina whenever one of the balancing forces is

disturbed. However, the downward pull of the lungs has the overriding influence. After laryngectomy the only counter-acting force that remains is the skin of the neck to which the trachea is anastomosed while the tracheostome is fashioned. A strong possibility exists that the low tracheal cut when anastomosed to the redundant and sagging skin due to advanced age might have synergistically contributed to the downward migration of the tracheostome into such a precarious position.

The other matter of concern is the inability of the patient to acquire oesophageal speech. The fundamental step in learning oesophageal speech is to swallow air in order to develop a reservoir in the oesophagus and stomach. A vibrant pharyngo-oesophageal (PE) segment develops in the upper oesophagus.¹ The basic voice is generated when the swallowed air comes in physical contact with the PE segment during the act of eructation. The PE segment is visible on videofluoroscopy or oesophagogram.² The vibrating segment has been found to be absent in poor or unsuccessful speakers who are classified as hypotonic, hypersonic, spastic and strictured.³ Failure of development of PE segment in this patient could be instrumental here. Laxity or hypotonicity due to this defect is yet another tangible reason which has eclipsed the possibility of learning speech in this patient. Advanced age⁴ and post-operative radiotherapy⁵ are established factors that can retard the potential of learning oesophageal speech besides the equally important drive and motivation. This patient has a constant risk of accidental inhalation. The funnel neck deformity and the horizontally placed tracheostome together facilitate easy access of any material to be aspirated into the vital areas of the respiratory tract. In these circumstances it is difficult, if not impossible to undertake any surgical procedure like neoglottis reconstruction or creation of a tracheo-oesophageal fistula in order to devise any way for restoration of speech. In these circumstances, the patient has learnt to live with his defects.

References

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