Decannulation problem following tracheostomy
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Abstract
Almost all emergency and elective tracheostomy wounds are required to be closed either by strapping or gradual reduction in size of the tracheostomy tube. But in some special situations, this procedure may not be applicable to decannulate where some surgical intervention can be taken into account.

Key words
Decannulation, strapping, trimming, inversion, tracheomalacia, scarring, extubation.

Introduction
Decannulation is the process of taking out the tracheostomy tube permanently and closure of the wound after the patient has settled down for the disease for which tracheostomy was performed. Decannulation problem is the difficulty during or after taking out the tube permanently for which tracheostomy was done. Problems encountered are tube dependency, tracheomalacia, scarring of tracheostomy wound, inversion or in folding of the wound margin and skin, tracheal stenosis and also migration of granulation tissue inside the trachea through the tracheostomy wound.

Method of decannulation
To decannulate the patient, tracheostomy tube needs to be plugged partially and then completely for a period of 1 hour, 2 hours, 4 hours, 6 hours and a period of 12 hours and finally 24 hours with close observation to see whether the patient can tolerate and passed over night with sound sleep and then the tube can be removed. The wound is getting closed either by strapping or by putting in a smaller tracheostomy tube (Downsizing) or stitching (Surgical decannulation).

Case report
The boy Md. Yousuf, age 17 years, son of Kamal Uddin of Abdullahpur, Uttara, Sector 9 was admitted in the ENT Department of Moulana Bhasani Medical College Hospital on 16 May 2006 with the following complaints:
- A tracheostomy wound with tracheostomy tube in situ for the last 5 years
- Occasional discomfort in the throat
- Occasional cough and slight blood stained discharge from the surrounding of the tube

According to the patient's statement, he developed breathlessness about 5 years back (The cause of which was unknown as the patient lost all papers of his treatment). Then he was admitted in DMCH where tracheostomy was done to relieve his respiratory distress. At first metallic tube was used then it was replaced by PVC (Poly vinyl chloride) tube. During discharge from the hospital, he was advised to remove the tube within one month. But due to his negligence and financial constraint, the removal of tube and closure of tracheostomy wound was not done at proper time. Then he took admission in this hospital for removal of tube and closure of wound.

On physical examination, locally there was a vertical wound with scar, pus around the wound and tube and there was some granulation tissue around the wound. Air flow through the tube was adequate and the patient could speak after closure of tube by finger.
All investigations were normal. The patient was treated conservatively by periodic antiseptic dressing to make the wound clean and healthy under antibiotic coverage.

When the wound became healthy, the tube was removed and strapping was done. On the first day, the procedure was maintained for one hour under close observation, after plugging of the tube lumen. On the successive day the procedure was maintained for 3 hours, 6 hours and upto 12 hours. When the patient can maintain his normal breath after strapping of wound upto 24 hours without any respiratory problem and passed over night with sound sleep for few days and when the wound was not apposed together, then the wound was closed totally.

The infolded skin was removed, and the skin margin was made free well from underlying structure. Due to scarring the margin of the wound could not appose together, then closure of wound was done by 2/0 silk. The procedure was done under local anaesthesia.

Case discussion
Trachea (Wind Pipe) is a fibro cartilaginous hollow tube extends from lower part of the neck upto upper part of chest where it divides and connects with the right and left lung respectively by relatively narrow fibro cartilaginous hollow tube. It carries air during respiration. Above it connects with the Larynx. If for any reason (such as obstruction in the upper airway) one can not take breath, then it will be an emergency condition to establish alternative pathway to maintain airway by making an opening in the anterior wall of the trachea lies at the lower part of the neck called tracheostomy.

The patient with tracheostomy has to lead life for a while with utmost care of wound & tube and after a certain period most of the cases this alternate pathway required to be closed and reestablished the normal airway and this process of closure of the wound is called decannulation. Most of the decannulation can be done normally by simple strapping of the wound from side to side, prior to that it is to be seen whether the patient can pass overnight with sound sleep either corking or sealing of the lumen of the tracheostomy tube. But in some cases this ordinary (Medical decannulation) process can not possible and need some surgical measure. Where even after extubation the wound margins are not apposed together due to some reasons such as scarring of the wound, inversion of the wound margin inside the lumen of the trachea, change of pattern of epithelial lining around the lumen of the tracheal opening, even formation of granulation tissue around the tracheal opening and consequently loss of elasticity of the surrounding skin in long standing case of tracheostomy wound other than repeated lower respiratory tract infection.

This poor male patient aged 17 years has come to the ENT department of Moulana Bhasani Medical College Hospital with a history of more than five years tracheostomy wound with tube in situ with unhealthy skin around the tracheostomy tube with some granulation tissue. His tracheostomy tube was tried to extubate after subsidence of infection following repeated cleaning and dressing for about two weeks under antibiotic coverage. When the patient can pass over night with sound sleep after closing of the lumen of the tube then his wound was decided to closed. There was an elliptical stoma and the margin of the wound was partly inverted inside the lumen and change of pattern of the
surrounding skin of the stoma with poor elasticity and could not bring the margin together from side to side by strapping for few days.

After that the surgical interference was done such as eversion of the margin of the skin & removal of granulation tissue, trimming of the margin of the skin and separation of the skin from the underlying subcutaneous tissue to some extent then apposition of the skin margin vertically together by 2/0 silk from above downwards with interrupted stitches and dressed aseptically with pressure bandage which changed after 48 hours. The stitches removed after 7 days. And the patient was discharged with advice to attend ENT out patient department after 2-3 weeks or if any difficulty arises at any time for follow up.

**Conclusion**
During decannulation, one has to see whether the purpose of tracheostomy has served or not and also need to assess the way how to close the wound for reestablishment of normal airway for respiration without any disturbance of breathing.

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