

## Electrodissection tracheotomy

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### Abstract

The acquired immune deficiency syndrome (AIDS) epidemic and other potentially fatal blood-borne infectious diseases have produced a heightened awareness for preventing accidental inoculation of surgeons and operating theatre staff. It is incumbent upon the head and neck surgeon to use safe and effective surgical technique in these patients to prevent such an event. We are seeing an increasing number of patients with AIDS and hepatitis undergoing tracheotomy. We present a sharps-free technique for tracheotomy which is safe for the hospital staff and the patient.

**Key words:** Tracheotomy; Electrocoagulation

### Introduction

An increasing number of patients with life-threatening infectious diseases such as AIDS and hepatitis B are being sustained on mechanical ventilation. Otolaryngologists are often involved in the care of these individuals since tracheotomy is indicated in patients with prolonged endotracheal tube intubation. It is of paramount importance that the surgeon practise universal precautions in all patients to prevent accidental blood and fluid contamination. We present a safe and quick tracheotomy technique that allows this.

### Technique

The intubated patient is brought to the operating theatre and placed under general anaesthesia. A towel roll is placed under the shoulders to allow neck extension and the neck is prepped and draped sterilely.

The laryngeal landmarks are palpated and marked with ink. No vasoconstrictor agents are injected into the skin. The electrocautery is set in cutting mode at 20 watts. A 4 to 5 cm midline, vertical incision is made with the electrocautery below the area of the cricoid cartilage. After the skin incision, the electrocautery is set in coagulation mode at 20 watts. Electrodissection is then performed in a vertical fashion using a haemostat and electrocautery. The subcutaneous tissues and strap muscles are incised in the midline and retracted laterally. The lower border of the thyroid isthmus is gently retracted superiorly exposing the trachea.

The trachea is then cleaned of its overlying fascia and fat using a gauze. The second tracheal ring is identified and a 'tracheal window' is marked with electrocautery. The anaesthetist is requested to either cease or decrease the oxygen concentration through the endotracheal tube to below 50 per cent depending on the patient's respiratory tolerance. Using electrocautery, the trachea is entered and the window is excised with blunt Metzenbaum scissors (Figure 1). The endotracheal tube is slowly retracted superiorly by the anaesthetist, and a cuffed tracheotomy

tube is inserted into the trachea and is connected to the ventilator. Correct placement of the tracheotomy tube is confirmed and the cuff is inflated. Both sides of the

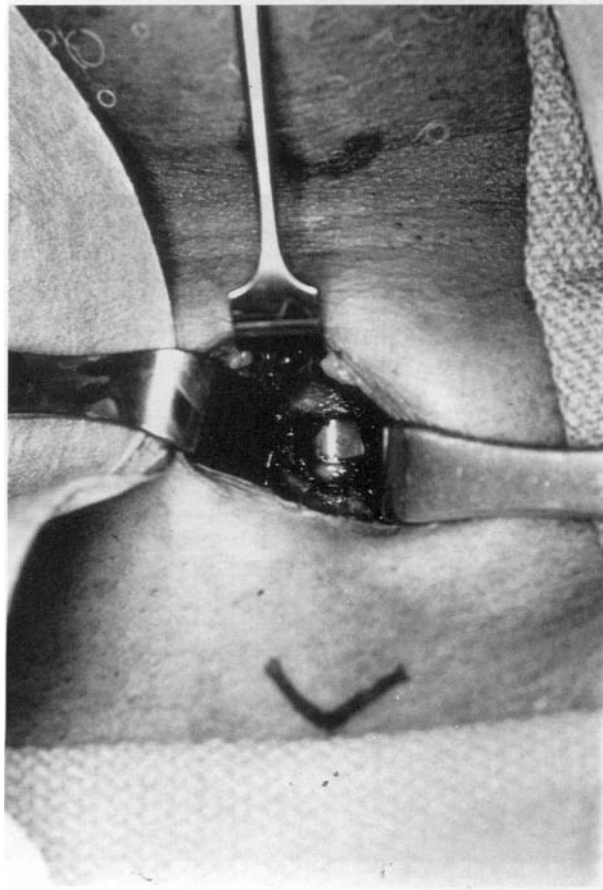


FIG. 1

The tracheal window is excised with electrocautery. The endotracheal tube is in view.

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Accepted for publication: 28 May 1996.

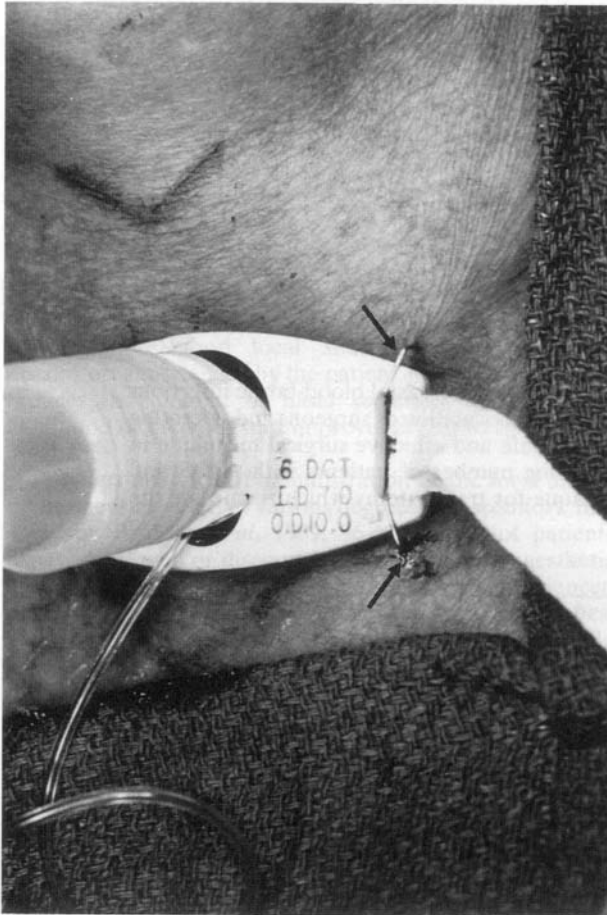


FIG. 2

The tracheostomy plate is stapled to the skin (arrows).

tracheostomy plate are stapled to the skin, and gauze ties are secured around the neck (Figure 2).

### Discussion

Previous studies have focused on avoiding intra-operative and post-operative complications of

tracheotomy (Kirchner, 1986). However, there is increasing concern about the risk of transmission of blood-borne infectious diseases such as AIDS and hepatitis B from patients to health care workers (Mitchell *et al.*, 1995). This has led us to develop a tracheotomy technique which is free of sharp instruments and is safe for the surgeon, the operating theatre staff and the patient. The anaesthetist must be told to decrease or stop the flow of oxygen during the use of electrocautery around the trachea so that the risk of combustion is minimised. Upon entering the trachea, blunt scissors are used to remove the tracheal window. This avoids the risk of electrocautery combustion should any retained oxygen be present. Using this technique, we have found blood loss and blood exposure to be minimal.

As suggested in other studies (Schroder *et al.*, 1989), we believe the use of electrocautery on skin produces equal scarring to that of a scalpel. A vertical tracheotomy incision produces a cosmetically acceptable scar and optimal exposure to the cervical trachea. The vertical incision is particularly preferred to a horizontal one in those patients who are critically ill, or obese or with short necks. The thyroid isthmus can be easily mobilised superiorly for better exposure of the trachea. In patients with large goitres, the isthmus can be incised in the midline by electrocautery, or clamped and tied with suture.

Given the heightened awareness of blood-borne pathogens and their potentially devastating infections, we feel this technique is safe for the patient and considerably reduces the chance for accidental inoculation of the surgeon and operating theatre staff.

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