SHORT COMMUNICATION

A Technique of Tracheostomy

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ABSTRACT

The Björk technique of performing tracheostomy is outlined. This consists of suturing an inverted U-shaped flap of trachea to the skin edge. Some of its advantages, particularly in infants, are outlined.

SOMMAIRE

L'auteur décrit la technique de Björk pour procéder à une trachéostomie. Elle consiste à suturer à la peau un lambeau de trachée fait en forme de "U" renversé. L'article signale certains de ses avantages, surtout chez le nourrisson.

THE use of tracheostomy is becoming more widespread than in former years. This procedure is currently employed, for example, in the management of respiratory insufficiency, chest injuries and certain postoperative problems. The general aspects of tracheostomy have been reviewed recently by Watts[1] and the complications of the procedure have been discussed by various authors.[2-4]

This report describes a technique of tracheostomy that has been found suitable in most clinical situations, particularly in infants. The method was probably originated by Björk and Engström.[5]

TECHNIQUE

General anesthesia is usually employed. In any event, the use of an endotracheal tube or a bronchoscope greatly facilitates the operation.

A transverse incision is made through the skin and platysma, as low as possible in the neck (Fig. 1). The deep fascia is opened vertically, and the strap muscles are retracted laterally (Fig. 2). The thyroid isthmus is then clamped, divided and suture ligated (Fig. 3). Before these clamps are removed, they can be rotated externally to aid in exposing the front and sides of the trachea. Division of the thyroid isthmus may not be considered necessary in every case but it does provide better tracheal exposure and probably allows the tube to lie in a more natural position in the trachea.

The tracheal incision (Fig. 4), the most important detail of the operation, consists of an inverted U-shaped flap, about one-half to two-thirds the width of the trachea, as seen from in front. First, the transverse portion of the incision is made in the intercartilaginous tissue between the first and second tracheal cartilages. This is most easily done with a scalpel (No. 15 blade). The downward vertical extensions from the transverse incision are then made, preferably with scissors. These vertical limbs go through the second and third tracheal rings, so that the flap is hinged on soft tissue between the third and fourth rings. The first tracheal cartilage is always avoided for fear of subsequent subglottic stenosis.

The flap thus created is then turned downwards and sewn to the lower skin margin with two or three sutures (Fig. 5). The best material for these

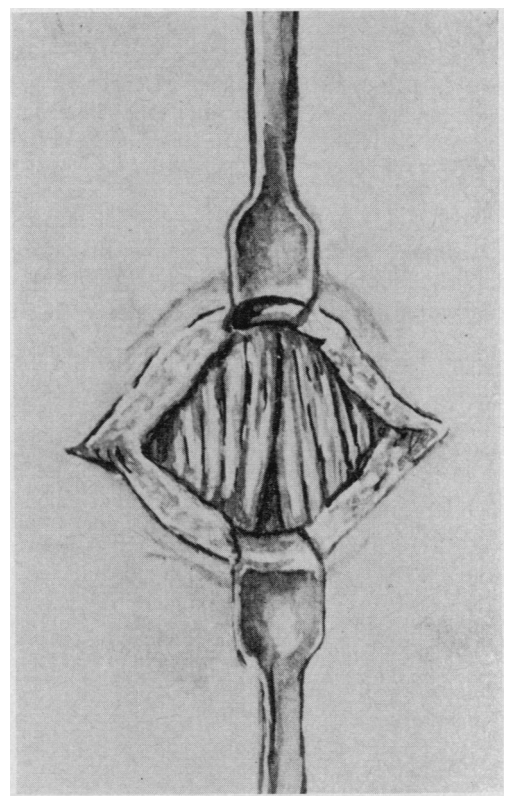

Fig. 1.—Low transverse incision through skin and platysma.

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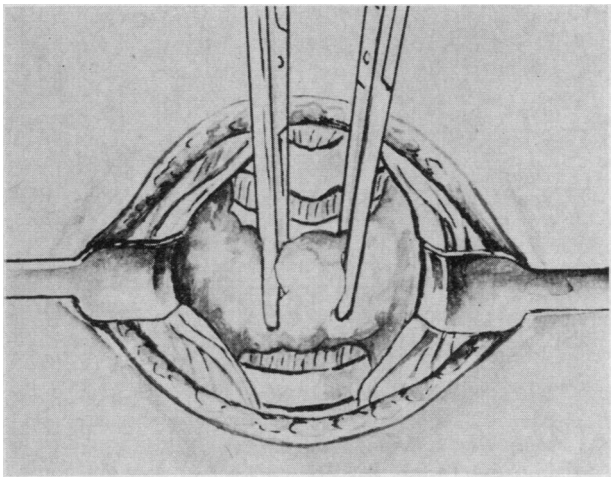

Fig. 2.—Strap muscle retracted laterally; thyroid isthmus clamped.

sutures is silk, swedged on non-cutting needles. They are placed in the skin from the outside, pulled completely through and passed through the

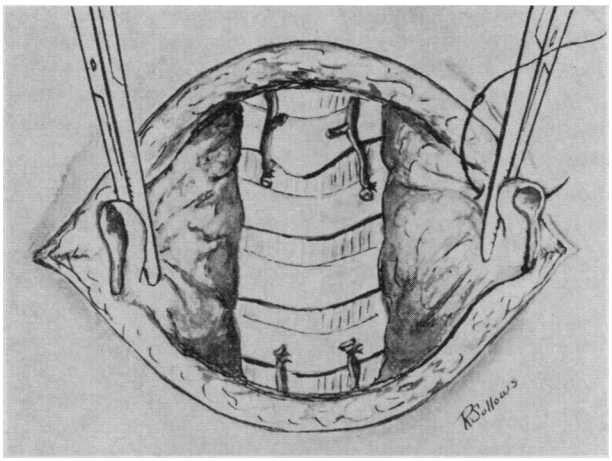

Fig. 3.—Thyroid lobes rotated externally, then ligated with sutures.

tracheal flap separately, in the same direction. The needles pierce the tracheal flap through the soft tissue between its two pieces of cartilage. If cutting

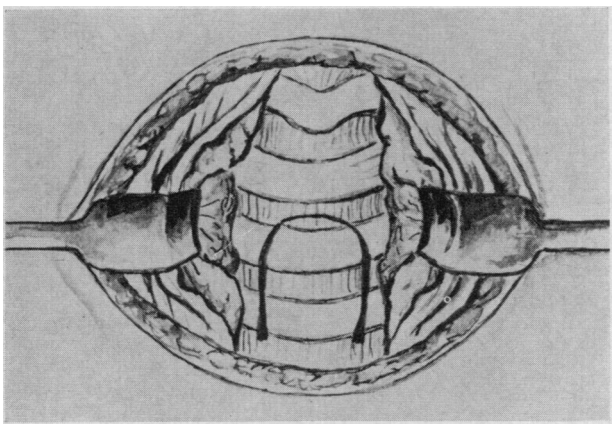

Fig. 4.—Outline of tracheal incision.

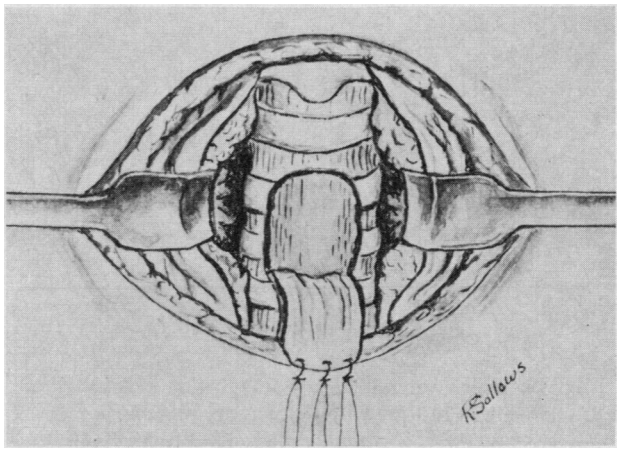

Fig. 5.—Tracheal flap sutured to lower skin margin.

needles are used, the flap may be damaged. All sutures are placed before any of them is tied. The suture ends are left long and are taped to the skin over the manubrium to simplify later removal. The tracheostomy tube is then inserted as the endotracheal tube is removed.

The sutures holding the tracheal flap to the skin may be removed after five or six days. Thereafter, the tracheostomy will close as usual when the tube is permanently removed. If the fistula is to be allowed to close as soon as the sutures are removed, gentle finger traction on the skin adjacent to the tracheo-cutaneous junction will separate the skin slightly from the tracheal flap. This permits the deeper tissues to fall together and thus probably allows more rapid closure.

One would expect a slightly higher incidence of fistula with healing (although this has not been the case in my own experience), but this is perhaps a small price for the safety and ease of management of the tracheostomy.

DISCUSSION

Most of the hazards of tracheostomy lie in the postoperative management. The care of the patient during this period is usually the responsibility of nursing and junior medical staff, and anything which simplifies it is worth while. Difficulties arising in the care of patients with excessive or dry secretions are commonly encountered. Tubes become plugged easily and must be changed, but early and frequent tube changes are not always easy with most tracheostomies.

The chief advantage of the Björk technique is the ease and certainty with which the tracheostomy tube may be removed and replaced. The tube can be changed as often as necessary by nursing staff as soon as the operation is completed. This is especially desirable in infants, in whom minimal crusting of the tube may have a serious consequence on airway size. In such cases the inner tube need not be used, as the outer tube may be changed whenever necessary. When a respirator is required, a cuffed tube is inserted.

If the tube falls out of the trachea, it will not lie in the subcutaneous tissue (and remain unrecognized) as may occur with conventional tracheostomies. Similarly, when the tube is introduced, it is very unlikely to enter any space except the tracheal lumen. Decannulation does not present any unusual problems. The fistula may close more slowly than with conventional tracheostomies, but this is sometimes desirable in young patients. The ultimate scar is comparable to that following similar procedures.

SUMMARY

The Björk technique of performing tracheostomy is described and some of its advantages over conventional tracheostomy procedures are outlined.

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CASE REPORT

Pancytopenia and Disseminated Aspergillosis

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FUNGUS infections have, in the last decade or so, assumed greater importance as secondary complications during the treatment of a variety of diseases. The use of antibiotics, steroids and alkylating agents has been reported as a predisposing factor, particularly in cases of leukemia or lymphoma.[1-7] The purpose of this paper is to report a case of pancytopenia in which disseminated aspergillosis was found at autopsy.

An 80-year-old man was admitted to the Montreal General Hospital on September 10, 1962. He had been perfectly well until six weeks before admission, when general malaise, myalgia and a low-grade fever developed. He recovered slowly but found that ordinary activity caused undue fatigue. At that point he consulted his physician, who found that he was anemic and his admission to hospital was arranged.

His sole complaint on admission was marked fatigue. He had, however, noted over the past year a tendency to bruise easily. There had been no known exposure to bone marrow depressants or to drugs of any kind. Functional enquiry was otherwise non-contributory.

Physical examination revealed a pale but well-developed, well-nourished man in no distress and looking younger than his stated age. The vital signs were within normal limits; his blood pressure was 120/60 mm. Hg, heart rate 68 per minute and regular, and temperature 98° F. There was no lymphadenopathy and the skin was clear. Examination of the head and neck revealed no abnormalities. The chest was clear. There was no jugular venous distension or ankle edema. No cardiac murmurs were heard and the peripheral pulses were palpable. The abdomen was soft and no masses or organs were palpable. The musculoskeletal and central nervous systems were normal.

Laboratory examinations.—Urine analysis was normal. His hemoglobin was 6.9 g. %; reticulocyte count, 1%; erythrocyte sedimentation rate, 13 mm. in one hour (Wintrobe); platelet count, 58,000 per c.mm.; white blood count, 1000 per c.mm. (neutrophils 28%, lymphocytes 68%, eosinophils 4%). The red cells were normochromic and normocytic. Prothrombin, clotting and bleeding times were normal. A tourniquet test was negative. There was a trace of occult blood in the stool.

His serum bilirubin was 0.8 mg. %, fasting blood sugar 69 mg. %, blood urea nitrogen 21 mg. %, V.D.R.L. negative and Coombs test negative. The serum albumin was 2.5 g. % and serum globulin 2.9 g. %. Serum protein electrophoresis was normal. The chest radiograph was clear.

A sternal marrow aspiration was performed. The marrow appeared somewhat hypocellular, erythropoiesis was normoblastic, granulopoiesis was depressed and approximately 30% of the nucleated cells were promyelocytes or blast cells. The myeloid:erythroid (M:E) ratio was 1:1. A normal number of megakaryocytes was noted and hemosiderin was present. The examination was considered to be compatible with a maturation arrest of the myelocytic series, but the possibility of aleukemic leukemia could not be excluded.

Course in hospital.—Transfusions of packed cells (7 units) raised the hemoglobin to 11.7 g. %. Prednisone in doses of 40 mg. a day was started on September 21. On September 27 the hemoglobin was 10.7 g. %, platelets 50,000 per c.mm., and the white blood cell count 1200 per c.mm. (neutrophils 16%, lymphocytes 84%). The patient was discharged on October 5 on prednisone, 20 mg. a day, with a diagnosis of pancytopenia of unknown etiology, possibly aleukemic leukemia.

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