

OFFICE-BASED SURGERY IN OTOLARYNGOLOGY



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Closure of Tracheocutaneous Fistula

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Arnold Komisar, M.D., D.D.S. and Mouwafak Al-Rawi, M.D.

Tracheocutaneous fistula (TCF) can be a vexing problem for both the patient and the otolaryngologist. Most commonly it is seen after a period of prolonged cannulation, when the tract epithelizes. It can also be seen when there is exuberant granulation tissue in the tract, which inhibits closure of the tracheostomy site. Kulber and Passy¹ found a high correlation between TCF and decannulation delay greater than 4 months. Jacobs² believed that prolonged cannulation along with concurrent chemotherapy and/or radiotherapy also contributed to the formation of a tracheocutaneous fistula. Patients with TCF can present with poor cough reflex, breathy voice, and dysphagia. No doubt much of this is due to the air escape that the fistulous tract causes. Large fistulas can lead to aspiration and skin breakdown with significant functional and cosmetic deformity.³

Patients with poor medical status, prior history of radiation, and significant debilitation may require hospitalization and major procedures, including large flap transfers, to close a TCF. The presence of borderline pulmonary function or the anticipation of recannulation in the near future are contraindications to closing a TCF in these patients. However, a significant number of patients with TCF will present with none of the above. Medical status is good, and the pathology that required the tracheostomy no longer is a threat to the patient's health.⁴ TCF in these patients can be closed in an outpatient setting, with minimal morbidity.

Patients amenable to this technique should have mature TCF 1 cm or less in size (Fig. 61.1A). The technique to be described uses existing neck skin in a turn in flap and simple advancement flaps. The surgeon may wish also to employ rotation or Z-plasty techniques as well; however, they are not described here.⁵

TECHNIQUE

A "turn-in" flap following the outline of the fistula is drawn with methylene blue (Fig. 61.1B). This should be about 5 to 8 mm from the mucocutaneous junction. A horizontal incision is outlined as well through the midportion of the fistula. The skin is infiltrated with xylocaine 1% with 1:100,000 epinephrine after suitable preparation. The prep should be fairly dry so that no skin prep solution enters the trachea. Xylocaine 4% in an atomizer should also be gently sprayed into the trachea to temporarily suppress the cough reflex.

A turn-in flap is incised with a No. 15 blade and undermined with a blunt scissors. There should be fat in the skin that is turned, in or its blood supply will be compromised. Hemostasis should be performed judiciously so as not to devascularize the turn-in flap. Care should be taken not to button-hole the turn-in flap. The turn-in flap should be mobilized sufficiently so that the skin of the neck can be turned in closing the tracheal opening under no tension. Three to four 4-0

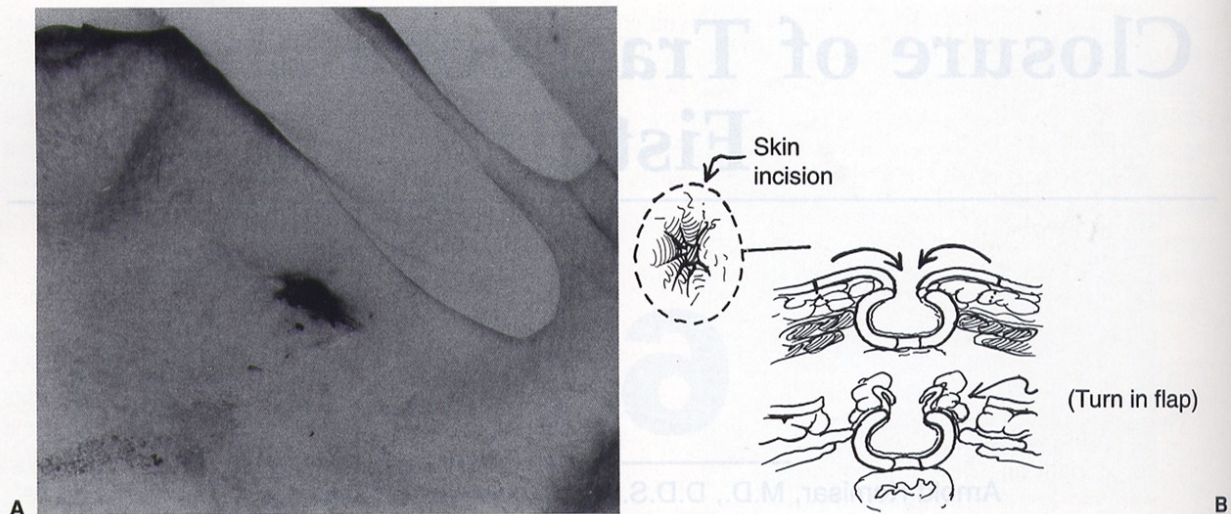


FIG. 61.1. (A). Patient with tracheocutaneous fistula amenable to office outpatient closure. Note size 1 cm or less. **(B).** Turn in flap outlined.

chromic sutures are placed in an inverting fashion to close the trachea (Figs. 61.2A and B).

The previously placed horizontal incision, usually 3 to 4 cm in length, is now incised with a No. 15 blade. A sharp scissors is used to undermine the neck skin above and below the turn-in flap so that the neck skin can be advanced from below and above to cover the turn-in flap without tension. The skin is closed in two layers after hemostasis is achieved. The deeper layer is closed with

4-0 chromic and the skin with interrupted nylon sutures (Fig. 61.3). A light pressure dressing is applied to the wound.

The patient is placed on antibiotics for 7 days and encouraged to put pressure on the wound when coughing. The patient should be seen in 24 hours to rule out subcutaneous emphysema of significance. If there is a small dehiscence in the wound, it usually closes by secondary intention. The surgeon should try to have

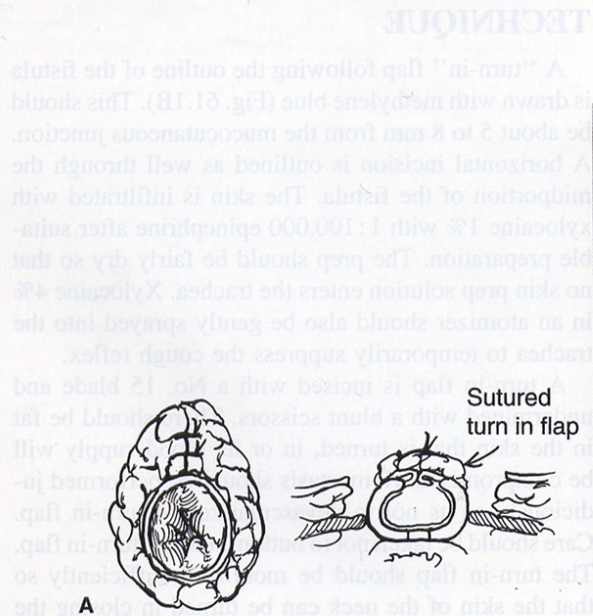


FIG. 61.2. (A,B). Turn in flap completed and sutured under no tension.

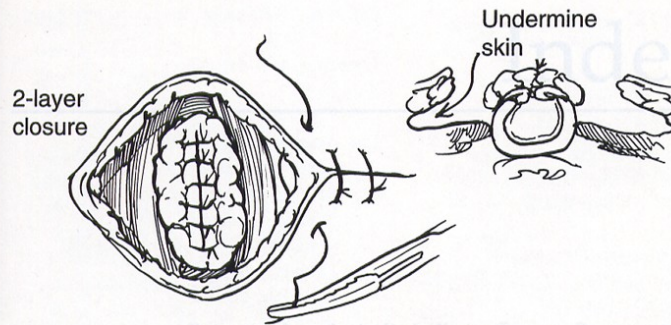


FIG. 61.3. Wound closed by undermining and suturing skin at right angles to turn in flap suture line.

both suture lines, that is, the turn-in flap and the skin incision, at right angles to each other. This helps to minimize the chance of continued fistula.

Some patients will achieve closure of their fistulas with this technique but may be left with a residual cosmetic deformity that is seen when swallowing. This is due to scarring of the neck skin to the turn-in flap with dimpling of the skin when swallowing. These patients may require a revision in the operating room with re-approximation of the strap muscles in the midline.

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