CLINICAL RECORDS

TRACHEO-OESOPHAGEAL-SKIN FISTULA

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Principles of Closure of Fistulae

THE general principles of repair of fistulae between two hollow organs are:

1. Complete separation of the organs from each other.
2. Repair of each organ separately.
3. Interposition of tissue between the repaired organs to keep them apart.

The technical application of these principles may be difficult when dealing with hollow abdominal viscera, but the tissues themselves generally permit the necessary manipulations. In particular, the repair of the viscus in layers usually presents no special problem owing to the elasticity of the walls of the gut or bladder (or vagina) and the natural sealing powers of the peritoneum. Stenosis of even a narrow portion of the gut can be avoided by various well-known techniques of suturing.

Fistulae between the trachea and oesophagus are less easily closed, because of the relatively inelastic walls of these organs and the more difficult exposure if the lesion is intrathoracic, but nevertheless the same principles can usually be applied using perhaps patching methods for the tracheal repair.

When the tracheo-oesophageal fistula is in the neck and opens through the skin, the repair is slightly more complicated. The reconstitution of the oesophagus is effected by a combination of skin and tracheal mucosal flaps, the trachea can be closed by direct suturing if the opening is small or by fascial patching. The raw area which results is covered by the rotation of flaps of neighbouring skin if sound or the transposition of a previously prepared rotation or pedicle flap. This also serves to separate the tracheostome, if one is present, from the repaired oesophagus. The oesophagus usually has a sufficiently good blood supply to nourish the flaps based on it, especially if delay procedures have been employed, and the reconstitution should be viable.

A special problem arises if the oesophagus consists of a Thiersch graft replacement after excision. The skin tube has so little blood supply that flaps based on it have almost no chance of survival.

The problem was solved by a method to which the author has found no previous reference in the literature.

Case Report

Miss A.B., aged 52, presented with a large growth in the hypopharynx and upper cervical oesophagus and no palpable cervical nodes. For various reasons

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surgical excision was advised and carried out through a mid-line incision. The larynx, including the hyoid bone and the upper two rings of the trachea, the thyroid gland and a length of hypopharynx and cervical oesophagus 10 cm. long were removed and the repair effected by a Thiersch graft skin tube taken from the thigh and applied with a Negus prosthesis. Unfortunately the lower end of the incision was not curved away to the right (Ellis, 1963). A small fistula developed in the lower portion of the Thiersch graft (Fig. 1) and came to the



FIG. 1.

Barium swallow showing the small fistula in the cervical oesophagus and some barium spilling into the trachea.

skin surface in the track of the incision which at that point had been used for the tracheostome (Fig. 2). Had the incision been curved away it is possible that the fistula would have come to the surface away from the tracheostome. As it was, the problem of closing a tracheo-oesophageal-skin fistula now presented.

At the first operation for the repair, after dissecting the oesophagus free from the trachea, the small hole in the former was found to be in the skin graft tube about 4 cm. above its junction with the oesophagus. Flaps were raised from the tracheal mucosa and from the skin, based on the oesophageal tube, and sutured together to reconstitute it. About 10 days later a piece of skin was

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extruded from the wound, and gradually the tracheo-oesophageal fistula became re-established. Two further attempts utilizing differently-shaped flaps, but both of necessity based on the oesophageal tube, were equally unsuccessful.

It was clear that the skin tube oesophagus could not be repaired by flaps based upon it. Reconsidering the problem afresh, the hole in the skin tube was not a gap in a true viscus but in a fibrous tube and could perhaps be closed by fibrous material if this were sufficiently elastic to move up and down with the

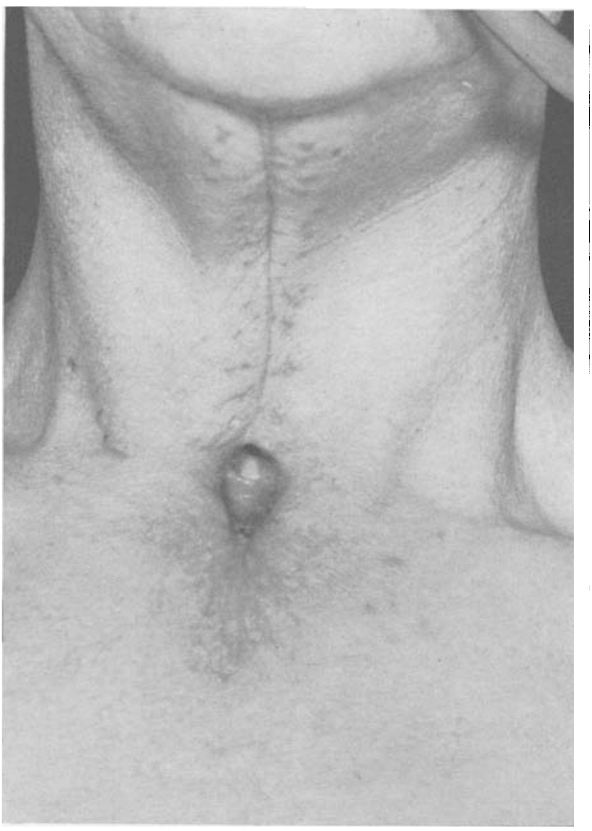


FIG. 2.
Showing the oesophageal-skin fistula communicating with the trachea.

swallowing movements inevitably made by the patient when swallowing her saliva. The final repair was then effected by again dissecting the oesophagus and trachea free from one another. A large flap of muscle was then turned down from the right sternomastoid muscle. It was based inferiorly near the insertion of the sternal and clavicular heads, extended upwards for about 10 cm. and including half the thickness of the muscle. It was tucked comfortably between the oesophagus and trachea, overlying and occluding the opening into the former. The tracheostome was then re-formed and a large naso-gastric feeding tube left in place. This procedure healed by first intention (Fig. 3), and a

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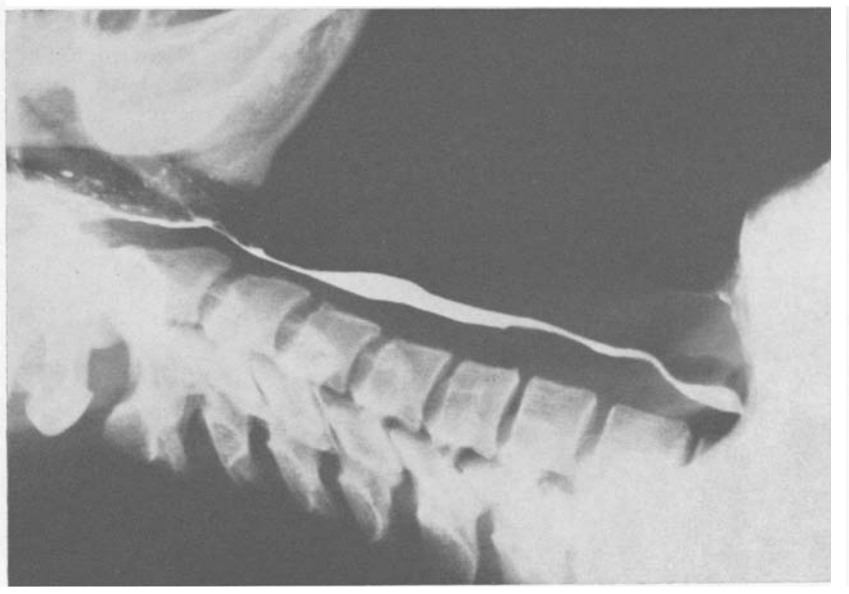


FIG. 4.
Barium swallow showing no sign of any oesophageal leak.

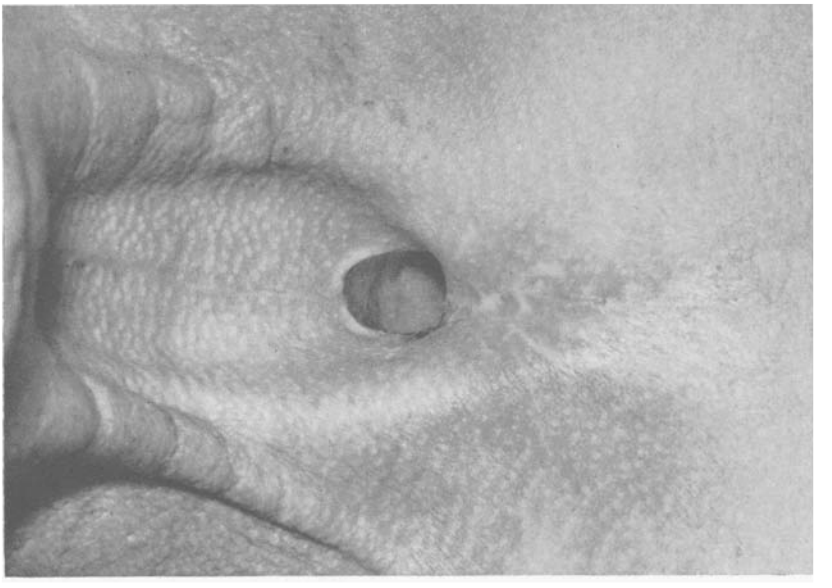


FIG. 3.
Showing the condition after repair.

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subsequent barium swallow revealed no sign of any abnormality in the lumen at the site of the repair (Fig. 4).

Comment

It might prove useful to revise our notions about the need of carefully designed skin flaps to close certain types of pharyngeal or oesophageal fistulae. Where the blood supply associated with the alimentary tube is deficient, occlusion by fibrous tissue may be considered, and can readily be effected by a suitable muscle graft which carries its own blood supply.

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