

The treatment of recurrent tracheo-oesophageal fistula with biosynthetic mesh

To the Editor: One of the most serious and frustrating complications after successful primary repair of a tracheoesophageal fistula is a recurrent fistula,^{1,2} the incidence of which is reported as 5 - 15%. Secondary recurrences following fistula re-closure are also not uncommon.³ Traditional therapy for a recurrent tracheo-oesophageal fistula (RTF) involves a repeat thoracotomy, with its associated risks and significant morbidity. An endoscopic procedure provides an attractive alternative.

Use of a bronchoscopic technique was first reported in 1975 by Gdanietz and Krause,⁴ who used histo-acryl adhesive to close an RTF. Since then, a variety of other endoscopic techniques have been reported. The strategies employed in these techniques include plugging the fistula with fibrin glue or tissue adhesives,³ plugging it after de-epithelisation of the fistula,^{5,6} or obliteration of the fistula using cauterisation or laser therapy.⁷ More than one treatment session was needed in most of the cases reported in which these techniques were used.

Recently Keckler *et al.*⁸ reported successful obliteration of an RTF with two successive applications of Surgisis biological mesh (Cooke Inc., Bloomington, Ind.). Encouraged by their results, we used Permacol (TissueScience, Hampshire, UK), a porcine dermal biological mesh, on a 6-month-old baby with an RTF. Only a single application of Permacol was necessary.

In this patient, rigid bronchoscopy revealed a recurrent fistula a few millimetres proximal to the carina. To create a raw surface, de-epithelisation of the fistula tract was performed with an endoscopic brush. Using an endoscopic grasper, a 3 mm × 3 mm piece of Permacol was introduced and pushed into the fistula until it was seen through a gastroscop to be close to the opening in the oesophagus. Four more similar pieces of Permacol were introduced. DuraSeal (Confluent Surgical Inc., Waltham, Mass.) was then injected into the fistula tract with an extended tip applicator. The DuraSeal was used to seal off the Permacol and keep it in position.

The patient was extubated and kept on nasogastric feeds for 48 hours, after which oral feeds were started. Postoperative recovery was uneventful. A postoperative oesophagram on day 4 was normal. The patient continued to recover and remained asymptomatic 24 months after this procedure.

Permacol provides a long-lasting and stable collagen lattice that allows the incorporation of fibroblasts and capillaries to form a

growing scar. Experimental evidence suggests that the biosynthetic scaffold degrades over time, but that the tissue remodelling that replaces it is stronger than the native tissue. The use of biosynthetic mesh has gained wide acceptance. It has been used with encouraging results in the repair of diaphragmatic hernias, abdominal and thoracic wall defects and para-oesophageal hernias.⁹⁻¹¹

The bronchoscopic placement of biosynthetic mesh is an added modality in the treatment of the difficult problem of RTF, and holds great promise. This bronchoscopic procedure is easy to perform and is repeatable if necessary. It is a much less invasive and less risky procedure than the alternative, repeat thoracotomy, and should be considered as a good treatment option for patients with an RTF.

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