Use of TissuePatch™ sealant film in the management of chyle leak in major neck surgery

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Abstract

Chylous fistula is rare, and operation is often required for high output fistulas after serious operations on the neck. TissuePatch™ sealant film (Tissuemed Ltd., Leeds, UK) is a useful adjunct to ensure that potential sources of leakage are sealed effectively.

Keywords: Neck surgery; Chyle leak; Surgical sealant

Introduction

Lymphatic injury that leads to a leakage of chyle is a well-recognised and serious complication following major operations on the neck. Various medical treatments have been advocated to reduce chylous flow for low volume leaks (less than 1 L/24 h), but in cases of high volume leaks (more than 1 L/24 h), surgical exploration is often required after medical treatment has failed.1 In their review of the management of chyle leaks, Brennan et al. emphasised that re-exploration of the wound and repair of the thin wall, combined with the delicate and branching damaged thoracic ductal system, can be extremely difficult. As a result, adjuvant methods to occlude the thoracic duct should be considered in addition to oversewing,2 and traditionally, local muscle flaps such as omohyoid or sternocleidomastoid have been used. Video-assisted thoracoscopic surgery3 and radiologically guided embolisation of the duct4 have been reported for high output leaks. With advancing technology, the use of fibrin glue or cyanoacrylate tissue glue has been advocated to seal the small, thin-walled ductal system directly.5 We describe 2 cases of chyle leak which were managed using local soft tissue and adjunctive treatment with a self-adhesive sealant film (TissuePatch™, Tissuemed Ltd., Leeds, UK), which sealed the leaks completely.

Case 1

A 40-year-old African woman presented to the Mercy Ships with a large supraclavicular teratoma that had been diagnosed with ultrasound, fine needle aspiration cytology (FNAC), and computed tomography (CT) (Fig. 1). She had it excised with preservation of the brachial plexus and accessory nerve, and there was no chyle leak during operation. Postoperatively she developed a slowly enlarging swelling in the lower neck. Surgical exploration found a collection of over 1 L of blood-stained chyle. Leaks were identified from 3 sources; 2 were from the inferior, and one was from the mid cervical region. The areas were ligated and oversewn with surrounding soft tissue, and TissuePatch™ was applied over the repairs at the 2 inferior sites (Fig. 2). It provided an effective watertight seal and there was no chyle leak on the Valsalva manoeuvre.
Fig. 1. Large supraclavicular teratoma.

vre intraoperatively. Subsequently, the firm supraclavicular swelling recurred and re-exploration of the neck showed leakage of chyle from a dilated mid cervical lymphatic channel. A sternomastoid muscle flap, TissuePatch™, and tetracycline powder were used to repair the leak with good results. The 2 previous leaks at the base of the supraclavicular cavity had remained sealed.

Case 2

A 52-year-old white man with a 6-month history of extensive swelling in the left side of the neck was diagnosed with metastatic carcinoma of unknown origin by ultrasound-guided FNAC, magnetic resonance imaging (MRI), and positron emission tomography (PET/CT). Panendoscopy, bilateral tonsillectomy, and multiple biopsy examinations identified left tonsillar carcinoma. A left total neck dissection was done and there was no evidence of a chyle leak during the procedure. On the fourth postoperative day, chylous fluid was collected in the vacuum suction drain at a rate of more than 300 ml/day. After a failed course of medical treatment, surgical exploration showed an extensive collection of chyle, which was evacuated. The site of the leak was identified and oversewn, and TissuePatch™ was applied over the repair (Fig. 3). No further leak was identified with the Valsalva manoeuvre. The patient recovered with no further problems and was given postoperative chemoradiotherapy without delay.

Discussion

Many of the commercially available surgical sealants and adhesives are a combination of powders and solutions that need to be hydrated and rely on mixing for activation by a variety of mechanisms. Typically, mixing results in the formation of a chemical crosslink, and they form a gel or clot which has moderate cohesive strength. TissuePatch™ is a synthetic, self-adhesive, absorbable surgical sealant and barrier which is used to seal and reinforce wounds against the leakage of air, blood, and fluid in neurosurgery, and spinal, thoracic and soft tissue surgery. It is a preformed patch that has intrinsic cohesive strength. It also incorporates a bioadhesive polymer, Tissuebond™, which forms strong covalent bonds with protein-rich tissue surfaces. The bond is achieved when the preformed film is applied to the tissue bed using moderate pressure for 60 s, which allows contact adhesion and eliminates potential tissue space.

We found that TissuePatch™ sealant film adhered well to the irregular surfaces of the soft tissue bed and effectively sealed haematological and chylous leaks. It is available in various sizes and biodegrades without the long-term presence of any foreign body.

Conflict of interest

No conflict of interest.
References