the Alexis® wound retractor (Applied Medical, California, USA; Fig 1), which provides 360° retraction without soft tissue trauma.

TECHNIQUE

Use a 12mm scalpel blade to make a skin incision (3cm in length) continuing to the subplatysmal space, using bipolar forceps to ensure haemostasis (Fig 2). Hold the superior subplatysmal flap away from the wound using cat's paw retractors, and extend superiorly and laterally, using sharp and blunt dissection, or a combined haemostatic and dissecting tool. Repeat inferiorly, leaving a clear subplatysmal

space at least 2cm in all directions from the incision. Insert the green ring of the Alexis® wound retractor (product code C8322, size extra-small) into the wound, superficial to the investing layer of the cervical fascia. With an assistant, hold the white ring of the Alexis® wound retractor above the wound so that the polymer membrane is under tension. Roll this ring inwards towards the wound, until it sits above the skin. At the end of surgery, pull out the green ring to remove the retractor.

DISCUSSION

Using the Alexis® wound retractor is simple, atraumatic and provides a clear surgical field during parathyroid surgery.

Figure 2 A video showing the key technical steps of how to use the Alexis® wound retractor during minimally invasive parathyroid surgery

The 'Philadelphia Technique' for abdominal closure

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doi 10.1308/rcsann.2020.0142

BACKGROUND

The permissive open abdomen (POA), now standard practice after an intra-abdominal catastrophe, is clinically challenging, especially when closure is not achieved by day five to seven, after which it may be declared 'unclosable' as the fascial domain retracts laterally around the cocooned viscera.¹

Figure 1 Illustration of the edge of open abdomen elevated and a generous skin flap raised above the external abdominal sheath (ie undermining the skin edges) to reduce the tension on skin for closer approximation. Diathermy cautery may be used to prevent haemorrhage.

Figure 2 A rubber loop is folded in half and the u-bend stapled to the skin (approximately 1-2cm back from the wound edge to prevent skin fraying). This is then pulled and stretched across the open wound to the contralateral wound edge to create a dynamic load on the skin, and repeated in a criss-cross fashion to create a Roman-sandal configuration along the wound. Note that this is done over the vacuum sponge, which has been cut-to-fit and placed *in situ*.

Figure 3 Stepwise depiction of the Philadelphia Technique. Once appropriate drains are placed, a negative pressure vacuum sponge dressing is placed within the wound. Rubber vascular loops are then intermittently stapled to the skin (1-2cm back from the skin edge), alternating from side to side in a Roman-sandal style as a dynamic force for skin-stretch. If the most extreme ends of the wound (cephalad & caudal ends) are capable of tension-free approximation, then these may be sutured closed, thereby reducing the area required for the technique.

TECHNIQUE

The supine abdomen is prepared as standard and the abdominal cavity irrigated gently, taking care not to disrupt any of the viscera. Appropriate skin flaps are raised, exposing the anterior fascial sheath for 3-4cm laterally. Once mobilised, the upper and lower limits of the wound skin are closed tension-free over several centimetres. Vacuum foam is cut-to-fit within the remaining POA. Standard rubber loops are applied as 'skin-stretch', criss-crossing the open wound to generate dynamic skin tension.

Continue this over and back in an alternating fashion (Roman-sandal configuration), then place a standard vacuum seal (100-125mmHg) over the entire complex. Return the patient to the operating room every three to four days for a repeat procedure, but with serial tension-free closure of the POA skin each time until complete closure is achieved. This should take three to four 'take backs' over about seven to ten days.

DISCUSSION

This 'skin-only' closure combines two separate techniques: dynamic skin-stretch and vacuum therapy. Although it can be a long-term solution, patients typically opt for a formal abdominal wall reconstruction later.^{2,3} Other more permanent reconstructions (eg component separation) are 'one-shot' techniques, best avoided during the acute phase of recovery when failure rates are high.² Although similar techniques on fascia are described, failure rates are high with concerns for future recovery of the sheath.⁴ Our technique utilises dynamic load cycling with mechanical skin creep across the open wound with displacement of redundant interstitial fluid, promoting wound angiogenesis and endothelial proliferation.⁵ This achieves closure at a time fundamental to recovery by 'switching off' the driver behind the systemic inflammatory response syndrome that the open abdomen generates, while avoiding the complications associated with other techniques.

Figure 5 Video of the Philadelphia Technique

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Figure 4 Complete closure of abdomen, possible from a combination of the skin-stretch Roman-sandal configuration with negative pressure vacuum abdominal dressing (the Philadelphia Technique)

Open exploration converted to laparoscopic: a useful technique in emergency hernia surgery

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doi 10.1308/rcsann.2020.0156

BACKGROUND

Sometimes, unintended reduction of a strangulated hernia can occur intraoperatively, while manipulating the sac, leading to uncertainty about the viability of its contents.¹ We describe a technique that helps to identify any possible ischaemic tissue after an accidental reduction of strangulated hernia.

TECHNIQUE

Following accidental reduction of the sac contents of a strangulated hernia (Fig 1) into the abdominal cavity, a 10mm port is placed