deployed as a pre-close technique.¹ If complete haemostasis is not achieved, then the following adjunct procedure/s is/are employed.

Pledget reinforcement:

A square (7.9mm) Teflon pledget is needled in two places (one at a time) with an 18g needle, and each pair of sutures is passed through the pledget (Fig 1a). The needle is withdrawn as shown in the figure and the pledget is pushed through the skin puncture site using surgical forceps. The knot pusher is then used to push the pledget

close to the puncture site. A second knot is tied over the pledget (Fig 1b), and it is secured over the arterial puncture site by six throws.

Bidirectional compression:

A small gauze swab is wound around the closure device sutures (Fig 2a), which are used to guide the swab through the soft tissue to the puncture site. An artery forceps is used to clip the sutures by pulling them up on to the swab to compress the puncture site for a period that would mirror the application of manual compression (Fig 2b).

DISCUSSION

This Teflon pledget technique helps to seal the puncture site on top of ProGlide® sutures. The bidirectional compression described here allows focal application of pressure to the puncture site without restricting the arterial lumen or compromising neighbouring structures.

Reference

1. Perclose ProGlide® Suture-Mediated Closure (SMC) System. Abbott Vascular. <http://eifu.abbottvascular.com/content/dam/av/eifu-us/EL2105174%20Artwork.pdf> (cited April 2020).

Use of Alexis® wound retractor in minimally invasive parathyroid surgery

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BACKGROUND

As imaging modalities for localising parathyroid adenomas have improved, this has allowed for 'minimally invasive' parathyroid surgery. This creates a new challenge of maintaining good access during surgery. Traditional techniques of retraction for this surgery are with a self-retaining retractor. We have successfully been using

Figure 2 a) A gauze swab is wrapped around the threads of the closure device. b) Bidirectional compression: the thread is pulled upwards and the gauze swab is pushed downwards compressing the tissues and the swab against the puncture site.

Figure 1 Photographs of the extra-small Alexis® wound retractor: a) the retractor before use; b) the retractor in use during minimally invasive parathyroid surgery

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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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.