Stapled mesh stoma reinforcement technique (SMART) – a procedure to prevent parastomal herniation

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BACKGROUND

Three trials showed that mesh reinforcement of the stoma trephine significantly reduced the parastomal hernia rate.[1–3] The techniques were time consuming, difficult to perform laparoscopically and relied on manual stretching of the rectus muscle, a potent cause of herniation. SMART obviates these problems.

TECHNIQUE

A cylinder of skin and subcutaneous tissue is excised. The anterior rectus sheath is opened, the muscle split and gently retracted. At open surgery, the posterior sheath/peritoneum is pierced with the tips of an artery forceps that grasp the anvil shaft of a Compact™ (Chex™ CS Compact, Frankenman International Ltd, Hong Kong) Circular Stapling gun (28 mm) placed within the abdominal cavity (Fig. 1). The anvil shaft is withdrawn through the posterior rectus sheath and exteriorised. The fully extended trocar of the gun, pre-loaded with a circular configured mesh (Permacol™, Covidien plc, 20 Lower Hatch St, Dublin 2, Ireland), 5 cm in diameter is mated with the exteriorised anvil shaft (Fig. 2). The gun is closed, fired and removed, encompassing a disc of mesh, posterior rectus sheath and peritoneum and leaving a precise reinforced stapled trephine (Fig. 3). The outer mesh circumference is sutured to the anterior rectus sheath so it lines the trephine. The stoma is fashioned in the usual way (Fig. 4).

When performed laparoscopically, an incision is made in the posterior rectus sheath/ peritoneum and a purse string suture placed in its edge. The anvil head is inserted through the incision, the purse string tied, pneumoperitoneum is re-established and the anvil shaft is mated with the spike of the gun.

DISCUSSION

SMART is a simple means of precisely creating a reinforced stoma trephine at both open and laparoscopic surgery. It should reduce the parastomal herniation rate but trials will determine its worth.

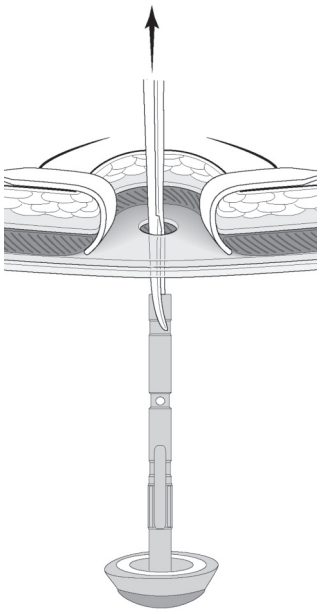

Figure 1 The shaft of the anvil is delivered through the posterior rectus sheath and mated with the trocar of the circular stapling device preloaded with mesh.

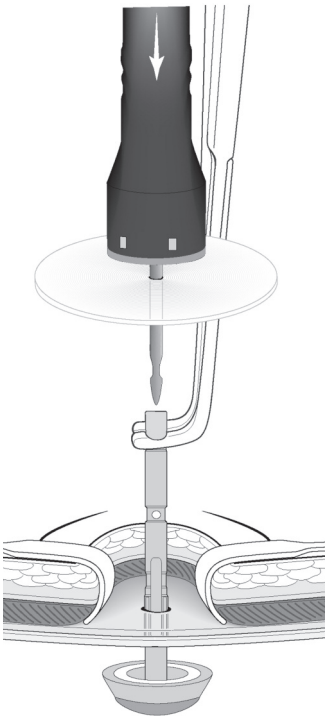

Figure 2 The circular stapling device is closed and fired.

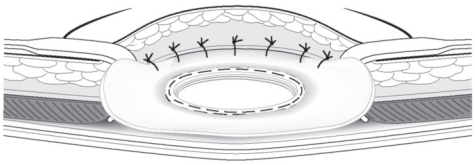

Figure 3 Once the circular stapling device has been removed, a mesh reinforced trephine is left behind. The edges of the mesh are then sutured to the anterior rectus sheath.

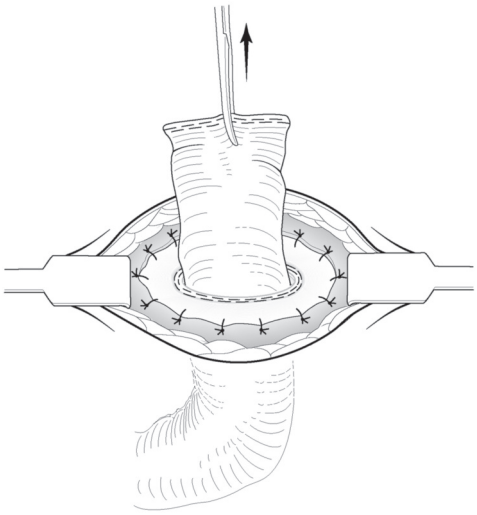

Figure 4 A purse string suture is placed in the posterior rectus sheath to enable recreation of pneumoperitoneum when performing the procedure laparoscopically.

References

1. Janes A, Cengiz Y, Israelsson LA. Preventing parastomal hernia with a prosthetic mesh. *Br J Surg* 2004; **91**: 280–2.
2. Hammond TM, Huang A, Prosser K, Frye JN, Williams NS. Parastomal hernia prevention using a novel collagen implant: a randomised controlled phase 1 study. *Hernia* 2008; **12**: 475–81.
3. Serra-Aracil X, Bombardo-Junca J, Moreno-Matias J, Darnell A, Mora-Lopez L, Alcantara-Moral M *et al*. Randomised, controlled, prospective trial of the use of a mesh to prevent parastomal hernia. *Ann Surg* 2009; **249**: 583–7.