CASE REPORT

The use of Gore Bio-A in the management of the open abdomen

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SUMMARY

Non-permanent, non-woven options for the closure of an open abdomen have previously been limited to biologics such as Permacol or Strattice. Gore Bio-A is constructed from biocompatible synthetic fibres, the use of which has only been described in the repair of inguinal hernia, hiatal hernia and fistula-in-ano. A 60-year-old male underwent emergency laparotomy, partial gastrectomy and formation of a feeding jejunostomy for a strangulated and perforated intrathoracic hiatus hernia. His abdominal wall subsequently dehiscence for which he underwent laparostomy and subsequent early closure with a Gore Bio-A mesh, secured in an onlay manner with 2/0 vicryl. Functional and cosmetic outcomes were satisfactory and the patient was discharged home. The use of Gore Bio-A is a safe, feasible and cost effective alternative to traditional biologics for the closure of a laparostomy, deployment of which is safe within a contaminated field. Further prospective data is needed to clarify its role.

BACKGROUND

Non-permanent, non-woven options for the closure of an open abdomen have previously been limited to costly biologics such as Permacol or Strattice. Gore Bio-A is constructed from biocompatible synthetic fibres. Successful use of Gore Bio-A in this context has not previously been reported in the literature.

CASE PRESENTATION

A 60-year-old gentleman with a history of obesity and diverticular disease underwent emergency laparotomy, partial gastrectomy and formation of a feeding jejunostomy for a strangulated and perforated intrathoracic hiatus hernia. He returned to the intensive therapy unit (ITU) where he was managed for ongoing sepsis with intravenous Meropenem and vancomycin and feeding via the jejunostomy was started. His stay on the intensive therapy unit was complicated by persistent sepsis, dysrhythmia and acute kidney injury. CT scan of his abdomen at 10 days postoperative was initially inconclusive; however, he developed wound dehiscence and returned to theatre. At this time, pockets of pus were noted around the abdomen; however, no obvious cause for this was found. The feeding jejunostomy was taken down, intestinal continuity restored and laparostomy fashioned. He returned to ITU for ongoing management of his sepsis.

INVESTIGATIONS

CT scan of the abdomen in this case was unhelpful, demonstrating only a small amount of free fluid in the abdomen. It was clear, however, that the wound dehiscence was secondary to persisting intra-abdominal sepsis, mandating re-exploration.

The management of sepsis was particularly important in this gentleman who had grown *Escherichia coli* and *Bacteroides fragilis* in both his wound and drain cultures. Antibiotic therapy was tailored to the reported sensitivity.

DIFFERENTIAL DIAGNOSIS

Sepsis in a patient who has undergone emergency laparotomy should always be first considered as intra-abdominal. Other common sites of infection include urinary tract, chest and wounds.

TREATMENT

Sepsis was treated with a combination of intravenous antibiotics and a return to theatre for re-laparotomy and washout. After significant clinical improvement the patient was taken back to theatre for early closure of his laparostomy.

Closure was achieved using a Gore Bio-A mesh, secured in an onlay manner with 2/0 vicryl (figure 1). Closure of the skin was achieved using 3/0 monocryl (figure 2). A small suction drain was placed anteriorly to the mesh which was removed several days following the procedure upon cessation of output.

Figure 1 Laparostomy closure demonstrating Gore Bio-A in situ.

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Figure 2 Laparostomy closure demonstrating skin closure with 3/0 monocryl.

OUTCOME AND FOLLOW-UP

Functional and cosmetic outcomes were satisfactory (figure 3) and the patient was discharged home following a period of convalescence. At routine 4-month follow-up the patient was performing well with no further wound complications and a persistently good cosmetic result.

DISCUSSION

Until recently, the only non-woven, non-permanent options for tissue reinforcement were biologics; meshes normally fashioned from human or animal dermis or from porcine small bowel. These appeal to surgeons given their suitability for use within a contaminated field, as was this case with this patient, but the cost of its use and therefore availability is prohibitive.

Gore Bio-A is designed on a web of biocompatible synthetic polymers that are gradually absorbed by the body. Its three-dimensional structure of interconnecting pores allows tissue healing, and its design has been optimised for uniformity and consistency. The tissue scaffold is ultimately replaced with type I

collagen, and subsequently dissolves over 6 months thus minimising tissue reaction and the potential for ongoing discomfort. As it is a synthetic material it is considerably less expensive than its biological counterparts.

The use of Gore Bio-A has previously been reported in inguinal hernia repair. Efthimiou showed satisfactory outcomes for pain and recurrence in 10 patients at 1 year,¹ with Negro demonstrating its effectiveness in 15 patients at 18 months.² Burgess has also reported its use in a case of an Amyand hernia.³ Of less relevance is its reported use in hiatal hernia⁴ and fistula-in-ano.^{5 6} To our knowledge, no further reports about the use of Gore Bio-A exist in medical literature.

The use of Gore Bio-A is a safe, feasible and cost effective alternative to traditional biologics for the closure of a laparostomy, deployment of which is safe within a contaminated field. Further prospective data are needed to clarify its role.

Learning points

- ▶ In cases of persistent sepsis following an emergency laparotomy, an intra-abdominal source should always be considered even in the presence of negative or inconclusive radiology.
- ▶ Gore Bio-A is constructed from biocompatible synthetic fibres, and is a more cost-effective option than biologics such as Permacol or Strattice.
- ▶ Gore Bio-A can be safely used for laparostomy closure in selected patients.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Efthimiou M, Symeonidis D, Koukoulis G, *et al*. Open inguinal hernia repair with the use of a polyglycolic acid-trimethylene carbonate absorbable mesh: a pilot study. *Hernia* 2011;15:181–4.
- 2 Negro P, Gossetti F, Dassatti MR, *et al*. Bioabsorbable Gore BIO-A plug and patch hernia repair in young adults. *Hernia* 2012;16:121–2.
- 3 Burgess PL, Brockmeyer JR, Johnson EK. Amyand hernia repaired with Bio-A: a case report and review. *J Surg Educ* 2011;68:62–6.
- 4 Massullo JM, Singh TP, Dunnican WJ, *et al*. Preliminary study of hiatal hernia repair using polyglycolic acid: trimethylene carbonate mesh. *JSLs* 2012;16:55–9.
- 5 Buchberg B, Masoomi H, Choi J, *et al*. A tale of two (anal fistula) plugs: is there a difference in short-term outcomes? *Am Surg* 2010;76:1150–3.
- 6 Ratto C, Litta F, Parelo A, *et al*. Gore Bio-A Fistula Plug: a new sphincter-sparing procedure for complex anal fistula. *Colorectal Dis* 2012;14:e264–9.

Figure 3 Cosmetic result on discharge following laparostomy closure.

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