CASE REPORT

Rare case of adhesive large bowel obstruction in acute burn patient: management of open abdomen with ABTHERA ADVANCE® Open Abdomen Dressing†

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Abstract

Large bowel obstructions (LBO) are rarely caused by adhesions. Surgical management of this condition may require an open approach but closure may not always be possible. There are many temporizing measures in clinical use; however, the ABTHERA ADVANCE® Open Abdomen Dressing has demonstrated significantly improved outcomes compared to other negative pressure wound therapy dressings. There are few cases in the literature documenting adhesive LBO and none in an acutely unwell burn patient whose abdomen subsequently required the ABTHERA ADVANCE® Open Abdomen Dressing. We emphasize the importance of considering adhesive LBO as a differential in bowel obstruction and highlight a novel but effective way of managing it in our unique case.

INTRODUCTION

Large bowel obstructions (LBO) are often due to neoplasms or caecal and sigmoid volvuli [1–3]. Other causes include diverticular disease, inflammatory bowel disease, faecal impaction or herniation [1]. Though adhesions and hernias alone contribute to 42.3% of bowel obstructions, adhesions are almost universally associated with small bowel obstructions [3]. There are few reported cases of adhesive LBO and only a single case secondary to previous appendicectomy [2]. Management may include laparotomy.

Laparotomy closure can be complicated by bowel oedema or abdominal wall tension, which risks wound dehiscence or abdominal compartment syndrome especially in patients with severe burns [4, 5]. Additionally, abdomens may be left open with intention for planned ‘re-look’ to ensure bowel viability [5]. Open abdomens are associated with increased risk for enterocutaneous fistulas, abdominal wall retraction, ventral defects and herniation and bacterial colonization [4]. As such, temporizing closure is utilized which include skin-only closure, loose packing of open fascial defects, silos or more recently, negative pressure wound therapy (NPWT) [5]. One such new NPWT is the ABTHERA ADVANCE® Open Abdomen Dressing.

CASE REPORT

An intubated 53-year-old man was transferred to a tertiary burn centre with 24% total body surface area (TBSA) burns to the head, back, arms, legs and inhalation injury secondary to a caravan explosion. Medical history included chronic alcoholism, active smoker and a previous open appendicectomy. Despite
Relook 24 h later, demonstrated viable bowel and abdomen closure was achieved. Total parental nutrition was subsequently weaned over the week. Extubation and discharge to the ward occurred 2 weeks after presentation. His recovery was complicated by a hospital-acquired pneumonia and large pleural effusion, which was managed with antibiotics and a chest drain. He was discharged to rehabilitation 7 weeks from presentation.

**DISCUSSION**

Only a handful of studies describe adhesive LBO and of these; one case was secondary to appendectomy adhesions [2]. There are no cases of adhesive LBO occurring in the critically unwell intubated burn patient, requiring a temporizing open abdomen dressing.

The most common cause of LBO in adults is neoplasms [6]. Adhesive LBO is a rare phenomenon and when present is often secondary to congenital bands, epiploic appendages, post-operative adhesions, primarily gynaecological or abdominal inflammatory causes [2, 6]. It is suggested that the involved segment of colon is usually redundant thus acting similarly to small bowel [1].

There are no systematic literature reviews on the outcomes or management of adhesive LBO. Individual studies have managed these cases with laparotomy, division of adhesive bands and resection of any ischaemic bowel [1, 2, 6]. A similar approach was utilized in this case. However, due to dilated loops of small bowel, risk of raised intraabdominal pressure, and difficulty in closure, the ABTHERA ADVANCE™ Open Abdomen Dressing was placed as a temporary dressing. Though a laparoscopic approach may have avoided this, there is a 10% associated increased incidence of bowel intervention required, with conversion to open occurring in a third of cases [7]. Improved morbidity was observed if the surgery was performed open or had an early conversion to open [7].

Abdominal compartment syndrome may be an indication for laparotomy in burn patients. Raised abdominal pressure can be present in up to 70% of major burn patients and is thought to be largely related to large volume fluid resuscitation [4]. Risk factors include a >60% TBSA burns, concurrent inhalation injury or abdominal injury—carrying a 75% mortality rate [4]. These abdomens almost always require temporizing dressings as definitive closure is generally unfeasible due to the high rate of fascial dehiscence even in instances of purported ‘tension-free’ closure [5]. This was only successful in 26% of cases despite NPWT [5].

ABTHERA ADVANCE™ Open Abdomen Dressing was utilized in our case as a temporizing measure pending return to theatre allowing relook and tension-free closure. Compared to traditional vacuum dressings, this novel dressing significantly improves wound fluid evacuation, wound contracture without a significant reduction of blood flow and reduces fascial retraction [8]. Additionally, this dressing can be placed directly over sensitive structures, such as intestines, vascular grafts, flaps and exposed pericardium [9]. As such, this demonstrates the versatility and effectiveness of the new ABTHERA ADVANCE™ Open Abdomen Dressing.

In conclusion, adhesive LBO is rare but potential cause for the obstructed patient. Though its management and post-operative care in an acutely unwell burn patient may be challenging, the ABTHERA ADVANCE™ Open Abdomen Dressing provides a safe and effective means of temporizing the abdomen pending relook and definitive closure with excellent outcomes.

**CONFLICT OF INTEREST**

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