Case Report

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Huge Abdominal Wall Reconstruction in a Complicated Inguinal Hernia

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ABSTRACT

Inguinal hernia repair is a common surgery that can result in incarceration in some cases. Catastrophic events may be encountered in specialized circumstances, such as Fournier's gangrene, which is an emergent condition. Treatment of debrided skin of the abdominal wall is always challenging, particularly in large defects.

A 69-year-old man suffered from complications following inguinal hernia repair, which included laparoscopic mesh repair, subsequent right hemicolectomy with anastomosis, leading to ileostomy, Fournier's gangrene, and eventually a large skin defect in the lower abdomen and perineal area. After multiple sessions of wound therapy, he underwent abdominal wall reconstruction with two large pedicled anterolateral thigh flaps.

Anterolateral thigh flaps, with their robust blood supply, can easily reach the lower abdomen and cover extensive abdominal skin defects when transferred bilaterally.

Level of Evidence: Level V, therapeutic study

Introduction

Inguinal hernia, being one of the most common operations performed by general surgeons, should ideally be repaired electively. However, patients often choose to tolerate the condition, potentially leading to complications such as incarceration [1]. Numerous treatments exist for incarcerated inguinal hernias, but most rely on surgical repair—either with mesh or non-mesh techniques. As Marcoline et al. (2023) evaluated in a meta-analysis, the treatment of incarcerated inguinal hernias concluded that mesh repair, especially in clean cases, is preferred and does not increase the complication rate [2].

Fournier's gangrene (FG), a rare and fatal form of necrotizing fasciitis, should never be overlooked due to its high mortality rate, which can reach up to 80%. It can rapidly spread and destroy vital organs as well [3]. There are numerous causes that can lead to such scenarios, with colorectal problems and its

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polymicrobial nature being significant considerations

Here, we present our approach to treating a complicated inguinal hernia repair, which resulted in a cascade of complications, including Fournier's gangrene with a large abdominal wall defect, ultimately reconstructed using two large anterolateral thigh flaps.

Case presentation

A 69-year-old man was admitted with right inguinal pain. He had previously undergone herniorrhaphy, and it appeared to be a recurrence. He underwent laparoscopic herniorrhaphy with mesh insertion following the release of an incarcerated ileocecal segment.

Four weeks later, he was readmitted with fever, abdominal pain—especially around the surgical site and the hypogastric region—and erythema over the surgery site. Exploratory surgery for acute abdomen revealed a healthy and clear intra-abdominal cavity, but there were necrotic tissues and secretions around the hernia repair site. The ileocecal segment was necrotic. A decision was made to perform right hemicolectomy with primary anastomosis, removal of the mesh, and excision of unhealthy necrotic skin over the hernia site, including necrotic scrotal skin. Debridements were repeated to ensure secure, healthy, and viable tissue.

Five days after the colectomy, signs of an anastomotic leak appeared, necessitating another laparotomy. An ileostomy was created over healthy skin. Due to ongoing skin necrosis and infection, the wound was managed with dressing changes for 45 days. Finally, he was prepared for reconstructive closure (Figure 1).

Two large anterolateral thigh flaps were designed bilaterally to cover the extensive skin defect (Figure 2). These flaps were marked according to the standard route of the branches of the lateral circumflex femoral artery bilaterally. They were harvested, partially including the vastus lateralis muscle. Both donor sites were successfully closed with primary closure.

The remaining defect in the scrotal and perineal areas was reconstructed using a split-thickness skin graft (STSG). Wound care was provided until all wounds healed, and the patient successfully recovered from previous complications (Figure 3).

Discussion

Full-thickness abdominal wall defects are challenging, as their functional deficits, alongside aesthetic aspects, have tremendous effects on patients' daily lives and careers. Long-term interactions may emotionally and physiologically diminish patients, who seek ways to overcome their hardships. When the defect is large, the solution becomes more challenging, as more tissues are needed for replacement.

There are solutions to provide such tissues, such as free or pedicled tissue transfers from regional or remote areas [4]. A free latissimus dorsi flap is one of the choices to be considered. It offers sufficient

Fig. 1. Abdominal wall defect after several debridement and long-term dressings.

Fig. 2. Reconstruction of abdominal wall by two ALT flap.

Fig. 3. Healed wounds with stable abdominal wall reconstruction

muscle and even skin to substitute the abdominal defect, and donor-site morbidity is not significant. However, as with other microvascular procedures, it requires expert surgeons, and finding a healthy recipient pedicle in an inflamed abdominal wall is not easy.

In some cases, prolonged infection prevents primary skin closure, and planned ventral hernia reconstruction is chosen. This refers to a management strategy where the abdominal fascial layer is left unclosed, and the viscera are covered with original or grafted skin. In such instances, chronic wound healing is selected to address superimposed infection [5].

Viswanathan et al. (2019) presented their modification of the TFL flap in a case involving abdominal infected mesh removal, which resulted in a 20 × 12 cm defect of the lower abdomen. They used a free left tensor fascia lata graft over the exposed bowels and simultaneously transferred a right-side pedicled tensor fascia lata flap over the graft. Their patient remained healthy with normal abdominal function during long-term evaluation [6]. Their success was attributed to a well-nourished flap that preserved the fresh free fascia graft over the inflamed bowels.

Our case had a similar history, and we had to remove the infected mesh. However, since the bowels were not exposed, we did not require a free graft to cover the viscera. Instead, due to extensive skin defects, we used two ALT flaps.

Component separation, in cases where muscles

remain, is a reliable approach to bring the edges of the defect closer together and provide suitable conditions for secondary or tertiary skin closure [7,8]. Unfortunately, we did not have enough muscle or fascia to reduce the defect size as much as possible. Thus, we had to transfer regional muscles (vastus lateralis bilaterally) to address the structural defects.

Every abdominal wall defect can compromise patients' capabilities, particularly in cases of large defects. An anterolateral flap can be designed as extensively as possible to fill acquired soft tissue defects. It can reach areas near the umbilicus and significantly help preserve patients' activities.

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Ethical Considerations

Compliance with ethical guidelines

There were no ethical considerations to be considered in this article.

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Conflict of Interests

The authors have no conflict of interest to declare.

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