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Case Report

CASE REPORT

Metachronous carcinoma of rectum with reconstruction of a full-thickness abdominal wall defect using a pedicled anterolateral thigh flap

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Abstract

Reconstruction of large, complex defects of the abdominal wall after resection of malignant tumors can be challenging. The transfer of an anterolateral thigh (ALT) flap is a feasible and effective option. However, no report has been published on the use of ALT flap after metachronous colonic tumor resection so far. We present an original case of resection of metachronous carcinoma of rectum with reconstruction of the abdominal wall defect using an ALT flap harvested with its aponeurosis. The postoperative course was uncomplicated. Functional and esthetic results were satisfactory. There was no postoperative incisional hernia or tumor recurrence. We conclude that abdominal wall defects of large sizes can be successfully reconstructed using an appropriately designed ALT flap; a simple, single-stage effective reconstruction.

INTRODUCTION

Large full-thickness abdominal wall defects as a result of tumor resection are unusual; they present a reconstructive challenge to the surgeon. Apart from obtaining skin coverage, the surgeon must reconstruct the abdominal wall with sufficient strength to prevent incisional hernia, while avoiding early and late intraperitoneal complications. The surgeon must also strive for satisfactory esthetic results.

The anterolateral thigh (ALT) flap, based on the lateral circumflex femoral system, was first described by Song in a paper in 1984. It has become a workhorse flap for reconstruction of various defects. It has been used extensively in the reconstruction of head and neck [1], trunk and abdomen [2], extremities [2, 3] and groin regions [2]. As a pedicled local flap, it has been used to cover defects in the groin, perineal and inguinal regions [4]. The flap can be based proximally, with the most pivot point located just distal to the origin of the lateral circumflex femoral artery (LCFA) off the profunda femoris artery. The length of the vascular pedicle ranges from 16 to 19 cm [5]. We described here a case report of a pedicled ALT perforator flap to abdominal wall.

CASE REPORT

The patient is a 69-year-old man with history of carcinoma rectum with abdominoperineal resection done 30 years ago. No adjuvant therapy was given postoperation. He had no follow-up afterwards. He presented to us for metachronous tumor over descending colon complicated with large peristomal abscess (Fig. 1). Contrast CT found mural thickening ~7 cm in span just proximal to stoma exit with adjacent 3.7-cm thick-walled rim-enhancing lesions around the stoma site. Another 3-cm thin wall fluid collection was noted at the anterior abdominal wall just inferior to the stoma site. Features were

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Figure 1: Peristomal abscess.

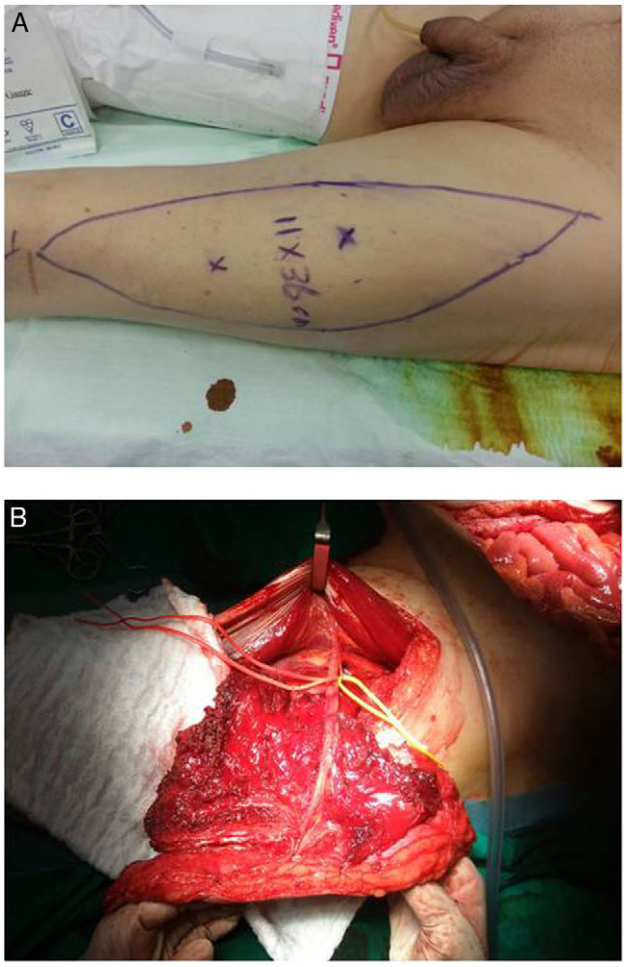

Figure 2: (**A**) Preoperative flap size estimation; (**B**) perforator originating from descending branch of LCFA.

suggestive of inflammatory collection. There was an 1-cm left groin lymph node as well. There was no liver or peritoneal metastasis.

Colonoscopy was done via the colostomy showing circumferential stenotic ulcerative growth 3 cm proximal to stoma end and scope failed to negotiate through. Biopsy confirmed to be adenocarcinoma. Incision and drainage of abscess were performed. Intra-operation found 5-cm abscess cavity at 6 o'clock of colostomy extending close to stoma with surrounding cellulitis. There was a circumferential tumor mass 3 cm proximal to stoma end. Tissue for histology confirmed adenocarcinoma. Excisional biopsy of the 1-cm left groin lymph node confirmed no malignancy. The wound was clean with granulation tissue after daily dressing for 2 weeks. The patient underwent wide resection, resiting of stoma and reconstruction of abdominal wall defect with a pedicled ALT flap in a joint-team approach.

Procedure: The initial stage was preparation of the flap. ALT flap was designed along a line drawn between the anterior superior iliac spine and the superior lateral border of the patella, with the line midpoint located at the proximal portion of the flap to obtain more pedicle length. The surgeon localized the large caliber perforating vessels of the LCFA with Doppler ultrasound, and then mapped out the proposed flap on the skin of the ALT based on the anticipated size of the defect (36 × 11 cm) (Fig. 2A and B).

Laparotomy found metachronous tumor at descending colon, 5 cm proximal to the end colostomy. The tumor had local invasion to the surrounding subcutaneous tissue, skin and fascia. Two adjacent segments of ileum were adhered to the tumor. Resection of the tumor, end colostomy, the two segments of ileum and the surrounding peristomal skin was performed. End colostomy resited over right abdomen. Of note, 12 cm (vertical) × 14 cm (horizontal) left para-umbilical full-thickness abdominal wall defect after en bloc resection of tumor was resulted. The ALT flap was raised in the normal fashion with a large musculocutaneous perforator originating from the descending branch of the LCFA identified. A part of the vastus lateralis muscle was harvested within flap. Dissection proceeded proximally along the descending branch of the LCFA up to the level of the origin off the profunda femoris. Branches of the lateral femoral cutaneous nerve to the skin were preserved. The flap and pedicle were tunneled deep to the rectus femoris and then subcutaneously to the abdominal wall defect without tension. Proximal and distal end of the flap was trimmed round to match the defect. The vastus lateralis was sutured to the posterior rectus sheath and abdominal wall muscle with 2/0 prolene. The fascia lata was sutured to the anterior rectus sheath with 2/0 prolene. A drain was inserted subcutaneously. The donor site was closed with 2/0 vicryl and staplers (Fig. 3).

The postoperative course was uncomplicated. Patient rested in bed for 3 days with sustained hip flexion and deep venous thrombosis prophylaxis. The patient then mobilized with drain removed when its output was less than 30 ml per day. The wound healed promptly with no complications of the donor sites or recipient sites occurred. Functional and esthetic

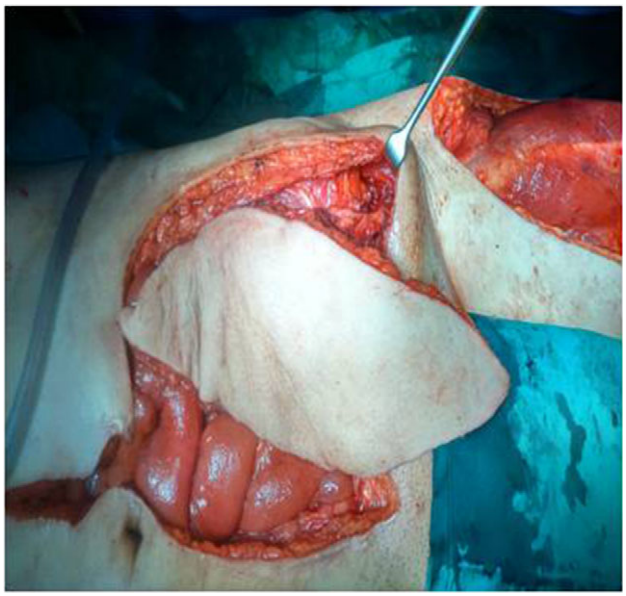

Figure 3: Intraoperative view shows an extensive defect over left side of the abdomen after tumor was resected.

results were satisfactory. There was no tumor recurrence or postoperative incisional hernia. Pathology confirmed moderately differentiated adenocarcinoma T4N0 (TNM AJCC 7th ed), Dukes stage B, resection margin was clear (Fig. 4).

DISCUSSION

There are limited options in reconstructing such a large skin and musculofascial defect in the abdomen. The ALT flap was chosen as it would provide both structural support to the anterior abdominal wall and excellent skin coverage. The proximally pedicled ALT flap is versatile in tissue components with a large potential size. Its long consistent pedicle allows a wide arc of rotation. It is septocutaneous in ~13–20% of patients and musculocutaneous in 80–87% of cases [6]. The majority of the perforators arise from the descending branch of the LCFA, with the remaining arising from the transverse branch, and less than 3% from the medial descending and ascending branch [7]. It has been used to reconstruct defects in different sites, such as lower abdomen, trochanteric region, thigh, groin and perineal region [8, 9]. The ALT flap is associated with a high success rate of over 93–100% [1, 2]. It has low donor site morbidity with wounds being able to be closed directly or with a skin graft. No long-term functional deficit is identified even when a cuff of vastus lateralis muscle is used [7]. In order to maintain the volume of the fasciomyocutaneous flap and alleviate the extent of muscle atrophy, the nerve which accompanies the descending branch of the LCFA is taken to the recipient site together. The advantages of the use of pedicled flap in this case are the avoidance of microsurgical anastomosis with their inherent potential vascular complications and reduction in operating time [10].

There are some technical tips to improve the maximal distal reach of the proximally based pedicled ALP flap. The additional length of the pedicle can be achieved by dissection of pedicles to its origin and tunneling the flap in submuscular planes. The vascular branches of the rectus femoris and tensor fascia lata muscle can be ligated and resected so as to free the pedicle further. Care should be taken not to compromise the vascularization of these muscles [10].

Figure 4: Postoperative view of patient at 3 months.

To the best of our knowledge, no report published on the use of ALT flap after metachronous colonic tumor resection so far. This report concludes that abdominal wall defects of large sizes after resection of metachronous colonic tumor can be successfully reconstructed using an appropriately designed ALT flap; a simple, single-stage effective reconstruction.

CONFLICT OF INTEREST STATEMENT

None declared.

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