Case report

Perineal reconstruction using an inferior gluteal artery perforator flap after abdominoperineal resection

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SUMMARY

The abdominoperineal resection is a surgical procedure which implies the removal of rectum, anal canal and the creation of a terminal colostomy. The most frequent complications of this type of surgery are haemorrhage, surgical wound complications, persistent perineal sinus and perineal hernia. Intraoperative haemorrhage or contamination and neoadjuvant radiotherapy are risk factors for the development of perineal complications. Perineal wound infection, with subsequent healing delay, has multifactorial aetiology and its incidence can reach up to 66% according to literature. The prevention of these complications requires adequate surgical technique to avoid or minimise the known risk factors. The treatment of a perineal wound complication depends on the clinical and radiographic findings. When there is no wound resolution in 6 months, it is considered a persistent sinus and treatment will probably require a flap. Several options of surgical treatment are available however, there are no randomised studies to determine which one is the best.

BACKGROUND

This is a case of perineal reconstruction of a persistent sinus after abdominoperineal resection (APR) using an inferior gluteal artery perforator flap (IGAP). Persistent perineal sinus being a complication of surgery without standard treatment, we felt our results would be useful in defining the best treatment options for this kind of complication.

CASE PRESENTATION

A 66-year-old woman, without relevant morbidities, with the diagnosis of low-grade invasive adenocarcinoma of the lower rectum, (T3d, N0, Meso Rectal Fascia Negative, M0) was submitted to neoadjuvant chemoradiotherapy (CRT) with oral capecitabine followed by classical APR (ypTNM: T2 N0). During the postoperative period the patient presented with perineal wound infection with the need for surgical debridement and empirical antibiotic. After isolation of *Staphylococcus aureus* in the exudate of the wound, an antibiotic adjustment was instituted according to susceptibility testing.

The wound failed to heal, so a negative pressure therapy trial was taken for 1 month, but no clinical improvement was obtained. Plastic surgery consultation was required, and the wound being non-infective, the patient was considered eligible for reconstruction. The posterior wall of the vagina was found missing during the operation. An IGAP flap was used for reconstruction of the posterior wall of the vagina and a superior gluteal artery perforator (SGAP) flap was used for reconstruction of the posterior perineal skin defect (figures 1-5).

In the postoperative period, there was a total IGAP flap necrosis and partial SGAP flap necrosis. Therefore, surgical debridement and a second IGAP 'propeller' flap was performed to correct the posterior perineal defect.

OUTCOME AND FOLLOW-UP

During follow-up, the surgical wound presented a favourable evolution, with small dehiscence on the external face of the propeller IGAP, but with gradual improvement until full healing (figure 6).

DISCUSSION

The APR entails frequent perineal complications with consequent associated morbidity. The optimal scenario would be to prevent its occurrence by a set of intraoperative and postoperative measures and care. Still, according to literature data, the incidence of complications is somewhere in between 14% to 80%. These numbers are related to complications in general, namely infection of the wound, abscess, dehiscence, late healing and persistent sinus.¹⁻⁵

We present a clinical case in which an APR by low-grade invasive adenocarcinoma of the lower rectum (T3d, N0, negative Meso Rectal Fascia, M0) with neoadjuvant CRT which was complicated with infection and dehiscence of the perineal wound. It was instituted AST guided antibiotic therapy

Figure 1 Persistent sinus post-abdominoperineal resection; Markings of the inferior gluteal artery perforator (IGAP) and superior gluteal artery perforator by Doppler; IGAP flap drawing.

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Figure 2 Absence of posterior wall of the vagina, verified after surgical exploration of the perineal wound with cervix pointed by a yellow arrow.

towards the isolated germ (*S. aureus*) with surgical debridement complemented with negative pressure wound therapy.

In the face of a delayed healing period of about 6 months, despite the supportive measures instituted, we can consider this wound to be a persistent sinus whose definitive treatment may require a regional flap. There are several reconstructive options described in literature, however, the choice is dependent on the surgeon, his experience and the clinical context.

Figure 3 Inferior gluteal artery perforator flap for reconstruction of the posterior wall of the vagina.

Figure 4 Superior gluteal artery perforator flap to cover the posterior perineal defect.

In this case, the patient submitted to neoadjuvant CRT, colostomy and a persistent sinus with a complete avulsion of the posterior wall of the vagina, an IGAP flap was chosen for reconstruction of the posterior wall of the vagina and a SGAP flap for the posterior perineal defect. Fasciocutaneous flaps, when compared to myocutaneous flaps, allow maintenance of anatomical integrity and function of gluteal muscles. Simultaneously it does not interfere with the colostomy or the integrity of the abdominal wall. Wagstaff MJ *et al* presented favourable results with this technique in 14 patients between 2004 and 2008 (11 SGAP and 3 IGAP), without partial or total loss of the flap or perineal hernia.⁶

Ayestaray Bet *al* presented a reconstruction of a similar defect with a propeller flap based on 2 perforators of the the upper gluteal artery with complete healing after 3 weeks.⁷

A systematic review of prospective and retrospective studies indicates that perineal healing and complication rates of APR are improved with the use of flaps when compared with the primary closure of the perineal wound in patients previously submitted to radiotherapy. Nevertheless, this review also points out to its meagre evidence and the need for randomised prospective studies to support this recommendation.^{8,9}

Figure 5 Final result after inferior gluteal artery perforator and superior gluteal artery perforator reconstruction.

Figure 6 Small dehiscence on the external face of the propeller inferior gluteal artery perforator with gradual improvement.

Lakkis *et al*, showed 'deep inferior epigastric perforator' (DIEP) flap as a potential option for perineal reconstruction after APR. The study had 12 patients who underwent DIEP flap reconstruction, with two flap necrosis. One requiring negative pressure therapy and the other a pedicled gluteal musculocutaneous flap.⁹

Learning points

- ▶ Perineal wound after abdominoperineal resection (APR) continues to be a challenge.
- ▶ Delayed healing of about 6 months, despite the supportive measures instituted, defines a persistent sinus whose treatment requires a regional flap.
- ▶ There are no randomised studies to determine which is the best surgical treatment for persistent sinus.
- ▶ The inferior gluteal artery perforator flap is a viable option to correct perineal defects, such as persistent sinus in patients with low rectum carcinoma submitted to APR and neoadjuvant chemoradiotherapy.

Hainsworth *et al*, demonstrated that in 40 patients with rectal carcinoma (33 primary and seven recurrent disease) who underwent immediate IGAP flap reconstruction after APR had good results. 10% of the patients had major flap complications with one enteroperineal fistula and three deep wound infections. Two patients had perineal hernias requiring revisional surgery. They concluded that although the operating time were long (median time 402 min), the IGAP flap is robust with no flap necrosis observed in their series.¹⁰

In our case report we demonstrate that the IGAP flap could be a viable option to correct perineal defects, such as persistent sinus in patients with lower rectum carcinoma submitted to APR and neoadjuvant CRT.

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