

Bipedicled Dartos Myocutaneous flap for perianal defects – A simple flap with immense potential

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Citation

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Abstract

Perianal defects pose a particular challenge for reconstruction to the Plastic Surgeon. These defects, depending on their size, have been reconstructed using local advancement, rotation and transposition flaps or regional flaps. We describe the use of scrotal myofasciocutaneous (Dartos) flap for reconstruction of a peri-anal defect. The use of this simple yet robust flap for peri-anal reconstruction is rare. We propose the use of dartos flap as a viable alternative for challenging peri-anal reconstructions.

INTRODUCTION

Peri-anal defects largely result following surgical resection for a variety of malignant and non malignant conditions. Advanced carcinomas of the rectum, vulva, anal squamous cell carcinoma or extra-mammary Paget's disease require extensive resection and result in large peri-anal defects.. Some non cancerous conditions requiring wide perianal resections include pilonidal sinuses, hydradenitis and very rarely traumatic wounds.

The nature of the peri-anal reconstruction is determined by a number of patient factors and clinico-pathologic factors. Patient factors include age, sex, nutritional status, existing co-morbidities, patient's desires and expectations. Clinico-pathologic factors include the nature of the underlying pathology, local infection, nature of local available tissue, previous radiotherapy and size and extent of the defect.

There are a number of possible options for closure of perianal defects, these include local flaps, regional flaps and rarely free flaps. Occasionally skin grafts may be used but usually these have a poor outcome in the perineum. In this paper we discuss the use of dartos flap in a patient with a peri-anal defect secondary to fistula and wound breakdown following ultra low anterior resection due to adenocarcinoma of the rectum.

CASE

A 57 year old male patient was referred by colorectal surgeons for assistance in reconstructing the peri-anal defect and closure of colo-anal fistula. This patient was diagnosed a

year ago with a low rectal carcinoma and from the onset was keen on retaining the anal sphincter function. An ultra low sphincter sparing abdomino-perineal resection resulting in coloanal anastomosis with a diversion loop colostomy was undertaken. Subsequently, the patient became septic and sustained an anastomotic breakdown in the 12 to 3 o'clock position with the development of a neo-recto perineal fistula. Recurrent efforts to repair this fistula using both an intra-anal approach and mobilisation of the peri-anal skin flap were unsuccessful and resulted in persistent fistula with an approximately 6cm x 4cm peri- anal defect extending intra-anal (Figure 1).

Figure 1

Figure 1: showing the perianal defect with patient in Lithotomy position



Following referral to our care after debridement of all necrotic tissue, a bipedicled scrotal flap was planned.

FLAP DIMENSIONS AND DESIGN

A 15 cm x 5cm bipedicled dartos myofasciocutaneous flap was mobilised as shown in from the dorsal aspect of the scrotum with patient in lithotomy position (Figure 2).

Figure 2

Figure 2: Shows the markings of the proposed Dartos flap with patient in Lithotomy position. The two blue dots inside the circle indicate the point of entry of blood vessels and the central line indicates the midline raphae.



The intermediary skin between the scrotum and the perineal defect was also mobilised and the flap was rotated almost about 180° (Figure 3).

Figure 3

Figure 3: Shows the position of the flap after complete mobilisation and closure of the donor defect.



Figure 4

Figure 4: Shows the flap inset and the closure of the defect in Jack-Knife position.



COMPOSITION OF THE FLAP

The flap was composed of skin, dartos muscle, external spermatic fascia, cremaster and the cremasteric fascia, internal spermatic fascia and the septum.

BLOOD SUPPLY OF THE FLAP

The posterior aspect of the scrotum is supplied by the superficial perineal arteries arising from internal pudendal arteries.[1]

FLAP INSET AND DONOR SITE CLOSURE

The patient was shifted to Jack-Knife position to aid in the inset of the flap. The tip of the flap was anastomosed intra-anal to the edges of the colon between the 10 and 2 o'clock position using 4-0 poliglecaprone, 25(monocril) and 4-0 polyglactin vicryl rapide sutures (Figure 4). Thus both the intra and peri-anal defects were closed with healthy vascular tissue. The donor site was closed in 3 layers primarily without tension.

DISCUSSION

Some of the common flaps used in the peri-anal reconstruction include V-Y fasciocutaneous island flaps [234], buttock rotation flaps gracilis myofasciocutaneous flaps[5], and rectus abdominis myocutaneous flaps [6].

Although the application of scrotal flap have been widely described for reconstruction of urogenital defects [1789], its use in reconstructing perianal defects has only been described once before in the literature [10] by Karim et al. where a scrotal island myofasciocutaneous flap for reconstruction of a 4cm x 4cm perianal defect following excision of an anal basal cell carcinoma.

The current case related to a defect about 8cm x 6cm with the defect extending into the anal canal between the 10'o'clock to 2'o'clock positions. Although large, the defect was shallow and only suitable for a local fasciocutaneous flap. Since the local fasciocutaneous option had already been used and failed, there was the need for a relatively thin long robust flap which could cover a shallow large peri and intra anal defect. In the circumstances a scrotal (Dartos) flap provides an excellent reconstructive option.

It is a myofasciocutaneous flap with the incorporated Dartos muscle. It is widely used in urethral and penile

reconstruction, and less often for peri-anal and anal reconstruction. It can be raised as a bipedicled flap based on the superficial perineal arteries either along with the scrotal septum^[7, 8] or without. Septum contains 2 to 3 deep arterial branches arising from the internal pudendal artery and thus raising the flap with the septum gives the added advantage of incorporating these vessels in the flap thus increasing the vascularity but making it less mobile. The flap can also be used without the septum and is considered more mobile and can be used tunnelled under the skin to reach the defects in the anal and the peri-anal region.^[11]

The drawbacks of using a scrotal flap in peri-anal reconstruction are that it provides a hairy skin and that the perineal pedicle is considered to be less mobile^[9].

However, mobilising the intermediary skin bridge between the anus and the scrotum helps in increasing the mobility and helps achieve almost a 180 degree turn. The advantages of a scrotal flap include a muscle flap which is less bulky but highly vascular thus providing the optimal tissue in a site prone to infections. Also the scrotum especially in the elderly population is a rich source of excess loose skin and with negligible donor site morbidity can provide up to 20cm of healthy vascularised tissue to reconstruct peri-anal defects. The flap can be conditioned by epilation and expander based tissue expansion to remove the hair and to obtain more tissue respectively depending on the type of reconstruction planned.^[1]

In the current case, patient had a good post op recovery and the fistula was closed successfully. At the three month follow-up, there was some excess skin in the peri-anal region and the patient was offered reduction (Figure 5), but he declined as he was pleased with the outcome and currently did not want any further intervention.

Figure 5

Figure 5: Shows the position of the flap and the healed wound at 3 months duration. As seen the flap is bulky and the patient was offered debulking



CONCLUSION

Dartos bipedicled myocutaneous flap is a simple, robust and thin flap and should be considered in cases of shallow peri and intra anal defects.

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