The pedicled ‘policeman’ flap salvage of exposed vascular prosthesis – a case report

MOHAMMED ELLABBAN¹, DEEMISH OUDIT¹, MARK LAMBERT², ALI JUMA¹

¹Plastic Surgery Unit, Royal Preston Hospital, Preston, UK

²General Surgery Department, Victoria Hospital, Blackpool, UK

ABSTRACT

A case report of a patient with exposed, infected, subcutaneous, extra-anatomical, vascular prosthesis is presented, which was successfully salvaged using pedicled omental flap after other reconstructive procedures had failed.

KEYWORDS

Pedicled omental flap – Exposed vascular prosthesis – Defect reconstruction – Resistant infection

CORRESPONDENCE TO

Mohammed Ellabban, SpR in Plastic Surgery, St John's Hospital at Howden, West Lothian, 1 Lyefield Place, Eliburn, Livingstone EH54 6TL, UK. E: mohammedellabban@aol.com

The omental (policeman of the abdomen) flap has been used for a variety of reconstructive purposes in different surgical disciplines.¹ It has been used to reconstruct defects in the lower abdomen, groin or perineum resulting from trauma or ablative surgery especially those complicated by radiotherapy,² in treatment of difficult sternal closure,³ postoperative spine infection,⁴ breast reconstruction^{5,6} and in coverage of variable difficult defects and refractory wounds.^{1,7–9}

We present a case report of a patient with exposed, infected, subcutaneous, extra-anatomical, vascular prosthesis which was successfully salvaged using pedicled omental flap after failure of other reconstructive procedures.

Case report

A 79-year-old woman was referred to our plastic surgery unit for advice regarding salvage of an infected, exposed, subcutaneous, extra-anatomical, right axillary, bi-femoral, Dacron graft for treatment of chronic lower limb ischaemia.

The condition started 4 years previously, when the patient suffered severe bilateral leg claudications and was clinically diagnosed as chronic leg ischaemia. She was referred to a vascular surgeon where an angiogram was performed which showed complete occlusion of the lower aortic and bi-femoral arteries. The patient was a heavy cigarette smoker and constitutionally thin.

She was taken to theatre and left axillary bi-femoral subcutaneous extra-anatomical prosthesis was used to nourish the ischaemic legs. Unfortunately, 2 years after her operation, the upper part of the vascular graft eroded through the skin.

This was treated elsewhere with left pedicled pectoralis major myocutaneous flap which covered the prosthesis for a while but the graft eroded through it. Another attempt to cover the vascular graft with pedicled latissimus dorsi myocutaneous flap was temporarily effective. Eventually, the vascular surgeons removed the vertical component of the vascular graft and another right axillary Dacron graft was tunnelled in a deep subpectoral plane and joined to the inverted y-junction of the old prosthesis.

Again, a patch of skin necrosis developed over the prosthesis triple junction on the left flank and another attempt with local skin advancement flap failed to solve the problem. She was then referred to our unit for advice regarding salvage of the vascular graft and cover of the defect.

On examination, there was about a 20-cm length of exposed infected Dacron prosthesis over the left flank proximal to the triple junction and another small area of breakdown of skin in the middle line. The bridge of the skin between the two areas was thin and looked unhealthy (Fig. 1).

Under general anaesthetic and with antibiotic cover, the thin unhealthy skin bridge was removed and the prosthesis washed with Betadine® and hydrogen peroxide. Through a right trans-rectus abdominal incision, the omentum was dissected and raised as a pedicle flap on the gastro-epiploic vessels (Fig. 2). This was tunnelled through the abdomen to reach the defect through a small intramuscular opening at the base of the exposed prosthesis and comfortably wrapped around it (Fig. 3). The abdominal defect was closed with Monocryl® 3/0 in layers and a split skin graft was applied to the exposed surface of the omental flap (Fig. 4).

The postoperative period was uneventful and the patient was discharged home after a week on oral antibiotics to

Figure 1 Pre-operative view with the vascular prosthesis exposed.

Figure 2 The pedicled omentum dissected through a right transverse incision.

combat a small area of infection at the upper part of the flap. After 5 months (Fig. 5), the flap is viable and providing adequate cover, with the aid of the skin graft, to the vascular prosthesis.

Figure 3 The omentum covering the exposed prosthesis.

Figure 4 Skin graft applied and the abdominal wound closed

Discussion

Infection in vascular surgery represents a serious complication that may largely compromise the outcome of the operation and, possibly, the patient's life. The possibility of rupture of the anastomosis eroded by infection makes

Figure 5 Five months' postoperatively.

removal of the prosthesis imperative and is often associated with direct threat to the limb involved.¹⁰

It is generally recognised that a prerequisite for the control of infection is good vascularisation of the area involved. This experience can be used also in infectious complications in vascular surgery by transplantation of well-vascularised and infection-resistant tissue to the focus of the infection. In our patient, this vascularised tissue was the omentum.

The greater omentum (policeman of the abdomen) is a double layer of fused peritoneum which arises from the greater curvature of the stomach to be draped over a variable portion of the abdominal viscera, and then reflects posteriorly over the transverse colon. It is based on the right and left gastro-epiploic vessels which join to form the gastro-epiploic arch. From this main arch, a variety of vascular arcades then distributes the blood throughout the omentum and makes it very rich in blood supply. The average size of the adult omentum is some 24–25 cm long and 33–35 cm wide.²

The pedicled omentum is a unique organ with many advantages that makes it a good choice for implantation in infected regions:

1. It is richly vascularised with arcades of blood vessels that can be used as a bed for revascularisation of other tissues.
2. It is highly immunoreactive and can resist infection.
3. It is very malleable, expandable and can be moulded easily to fill a dead space or irregular defect.
4. The unique vascular anatomy permits it to be extended or divided easily into two or more separate units based on either of the epiploic vessels that gives versatility in wound coverage.
5. It provides an excellent surface for skin grafting.^{1,2,8}

In our patient, the salvage of the exposed, infected, vascular prosthesis, and consequently the lower limbs, was dictated by the ability to bring a richly vascularised flap to combat infection and provide reliable cover of the prosthesis that could resist breakdown and erosion. As the patient was constitutionally thin with a lack of sufficient subcutaneous fat support, a heavy smoker and suffering from severe limb ischaemia, the possibilities of using a peripherally based flap will not succeed as been shown by the failure of the different random and axial flaps to cover the prosthesis. The pedicled omentum offered a core flap away from the peripheral ischaemia with a rich blood supply and immunoreactive properties to fight infection and resist erosion.

Conclusions

Omentum provides an excellent and available flap stored inside the abdomen, ready to use when the indications arise. As it acts as 'the policeman' of the abdomen, it can do the same extra-abdominally and fight infection. We recommend its use in situations where infection-resistant, pliable tissue is needed to cover complex defects.

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