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Clinical use of a pedicled anterolateral thigh flap

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KEYWORDS
Pedicle flap;
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Groin reconstruction

Summary *Background:* Anterolateral thigh flap is a safe and reliable flap for soft tissue reconstruction. It has successfully been used as free flap reconstruction for defects in the head and neck region, the upper extremities and lower extremities. However, there were only a few reports in the literature concerning the clinical application of this flap for regional reconstruction.
Methods: The authors describe their experience of using the pedicled island anterolateral thigh flap for reconstruction of soft tissue defects in neighbouring areas. Representative cases are presented for illustration.
Result: Between July 2005 and September 2006, seven patients underwent an immediate reconstruction with pedicled anterolateral thigh flap. The patients were between 49 and 69 years old. The size of the flaps measured from 5 × 8 cm to 15 × 15 cm. They were prepared as myocutaneous flaps in three cases and as perforator flaps in four cases. One patient, who had the largest flap harvested, needed skin grafting of the donor site. Primary closure was performed for all other cases. All flaps survived without any vascular compromise and the donor site healed without complication.
Conclusion: Our study has shown that the pedicled anterolateral thigh flap is a safe and reliable flap for repair of defects at the internal pelvis, lateral thigh, groin, and genitoperineal region. The long vascular pedicle and having no restriction to the arc of rotation are keys to the successful transposition of the flap for immediate reconstruction of soft tissue defects in neighbouring areas.

The anterolateral thigh (ALT) flap is a safe and reliable flap for soft tissue reconstruction. Since it was first described for clinical use by Song in 1984,[1] the ALT flap has gained worldwide popularity over other flaps and today is the workhorse flap in many centres.[2,3] It has an established role as a free tissue transfer for reconstruction of defects in the head and neck region and the upper and lower extremities.

However, there are only a few reports in the literature concerning the clinical application of this flap for regional reconstruction. The authors describe their experience of using the ALT flap as a pedicled island flap for reconstruction of soft tissue defects in neighbouring areas.

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Materials and methods

Study design

Between July 2005 and September 2006, the records of pedicled anterolateral thigh flap surgery performed by the Division of Plastic and Reconstructive Surgery of the Department of Surgery, University of Hong Kong Medical Centre of Queen Mary Hospital were reviewed. They represented the work of two senior surgeons (RN and GL). We will explain the operative technique, patient's demographic data and flap results. Representative cases are presented for illustration.

Operative technique

The patient is placed in a spine position for an anterior defect or lateral thigh defect. If the lesion is located at the perineum or the back of the thigh, the lithotomy position is employed. The longitudinal axis of the flap is designed along a line extending between the anterior superior iliac spine and the lateral border of the patella. The location of the perforators, which usually lie within a 3 cm circle on the mid-point of this line, can be defined using an intraoperative Doppler device. The dimension of the skin island and the length of its vascular pedicle should be planned before the operation. The length of the vascular pedicle should be about 120% of the distance between the pivot points of the vascular pedicle to the proximal edge of the wound to be resurfaced. This will avoid kinking of the vascular pedicle when the flap is transposed.

The medial border of the flap is incised through deep fascia until the lateral edge of the rectus femoris muscles is identified. The vascular pedicle, located under the femoris muscle, is carefully dissected proximally to its junction with the transverse branch of the lateral femoral circumflex artery. If a longer pedicle is necessary, additional length can be gained by dissection proximally to the level of the profunda femoris artery and vein. The lateral border of the flap is incised to complete the skin island elevation.

A perforator ALT flap is raised only if the skin coverage is indicated and its blood supply is carefully preserved from either the septocutaneous or musculocutaneous perforating

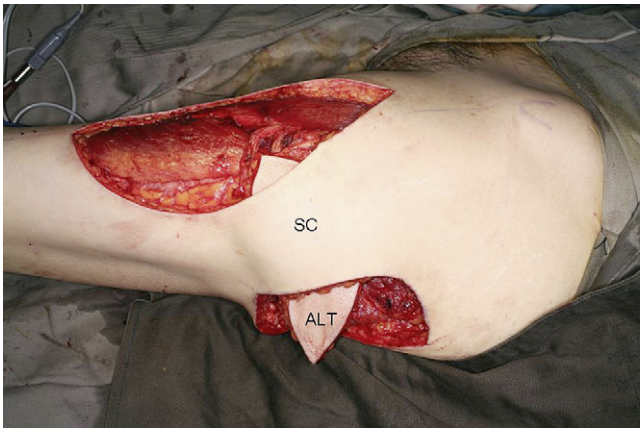

Figure 1 The anterolateral thigh flap (ALT) was transposed to the lateral thigh defect through a subcutaneous tunnel (SC).

Table 1 Patient and flap data

#	Sex	Age (yr)	Diagnosis	Operation	Indication	Type of flap	Flap size (cm × cm)	Closure of donor site
1	M	69	Recurrent right groin metastasis from carcinosarcoma of penis	Wide excision + brachytherapy tube insertion	External skin coverage	Perforator flap	15 × 15	Skin graft
2	M	66	Recurrent extramammary Paget's disease (peniloscrotal region)	Wide excision + resurfacing of penile shaft and scrotum	External skin coverage	Perforator flap	8 × 12	Primary closure
3	F	49	Myxofibrosarcoma (right upper posterior thigh)	Wide excision + brachytherapy tube insertion	External skin coverage	Perforator flap	8 × 20	Primary closure
4	F	63	Liposarcoma (right upper lateral thigh)	Wide excision	External skin coverage	Perforator flap	12 × 15	Primary closure
5	F	57	Ca urethra	Urethrectomy + vagina and bladder neck resection + urinary diversion	Anterior vaginal wall reconstruction	Myocutaneous flap	5 × 10	Primary closure
6	F	67	Ca cervix	Pelvic exenteration + urinary diversion + end sigmoid colostomy	Tissue bulk to fill up irradiated pelvic defect	Myocutaneous flap with de-epithelialisation of skin island	5 × 8	Primary closure
7	F	67	Post-pelvic exenteration; urinary-genital tract fistula	Revision of ileal conduit + revision of colostomy	Tissue bulk to fill up irradiated pelvic defect	Myocutaneous flap with de-epithelialisation of skin island	5 × 8	Primary closure