Maximizing the Utility of the Pedicled Anterolateral Thigh Flap for Locoregional Reconstruction

Technical Pearls and Pitfalls

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KEYWORDS

• Anterolateral thigh flap (ALT) • Pedicled perforator flap • Perineal reconstruction
• Abdominal reconstruction • Trochanteric reconstruction • ALT flap technique

KEY POINTS

- The pedicled anterolateral thigh flap (PALT) is reliable, has a good arc of rotation, and can be harvested as a fasciocutaneous flap with or without muscle depending on local anatomy and reconstructive needs. All these features make the flap a versatile option for locoregional reconstruction.
- Understanding the anterolateral thigh (ALT) flap vascular anatomy and its variations helps in flap design and reach.
- When ligating the arterial branch to the rectus femoris muscle, the secondary blood supply to the muscle must be assessed before ligation to avoid muscle necrosis. Also, during ALT flap harvest, care should be taken to preserve the minor pedicles to the rectus femoris muscle and ensure muscle viability.
- Tunneling the flap deep to the rectus femoris and sartorius muscles, ligating the arterial branch to the rectus femoris when deemed necessary and safe, and including the largest distal skin paddle perforator are all key factors in maximizing the reach of the PALT flap for locoregional reconstruction.

INTRODUCTION

The anterolateral thigh (ALT) flap was initially described as a free flap by Song and colleagues in 1984.[1] It gained popularity after Wei and colleagues[2] published their experience using 672 free ALT flaps over a 14-year period. Since then, the clinical applications of the ALT flap have dramatically increased.[3] The ALT flap was initially heavily used in head and neck reconstruction, and its use has extended to extremity and trunk reconstruction as well. Although primarily described as a free flap, the use of the ALT as a pedicled flap has gained more popularity recently.[4–6] The pedicled anterolateral thigh flap (PALT) has been described for reconstruction of

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groin and abdominal wounds,[7] perineal,[8,9] penoscrotal, vaginal, vulvar,[10] trochanteric, ischial,[11] and posterior thigh defects. The PALT reach to reconstruct epigastric and supraumbilical defects has been reported to be reliable in about one-third of the patients.[12] It has also been described as a functional flap for lower abdominal wall reconstruction[13] (**Fig. 1**).

The PALT flap is a versatile flap due to its reliable vascular anatomy, relatively long pedicle, versatile skin paddle, and the feasibility of flap harvest as a chimeric flap based on the profunda artery vascular system. The PALT flap can be harvested as a fasciocutaneous, myocutaneous, or adipofascial flap. In addition, the PALT can be harvested with the rectus femoris (RF), vastus lateralis, or the tensor fascia lata (TFL), depending on the local anatomy and the reconstructive needs. Flap reach can be extended by including a distal perforator when appropriate. Suprafascial harvest has also been described to provide pliable tissue coverage when less flap bulk is needed. Few case series reported the use of PALT flap for locoregional reconstruction, but there is a paucity of technical details pertaining to extending the flap's reach for different anatomic locations. Here the authors review their institutional experience and outcomes using the PALT flap for locoregional reconstruction with an emphasis on technical details pertaining to flap design, elevation, and extending reach.

PATIENTS AND SURGICAL METHODS

Patients

Twenty-one consecutive patients underwent PALT for locoregional reconstruction at the Mayo Clinic,

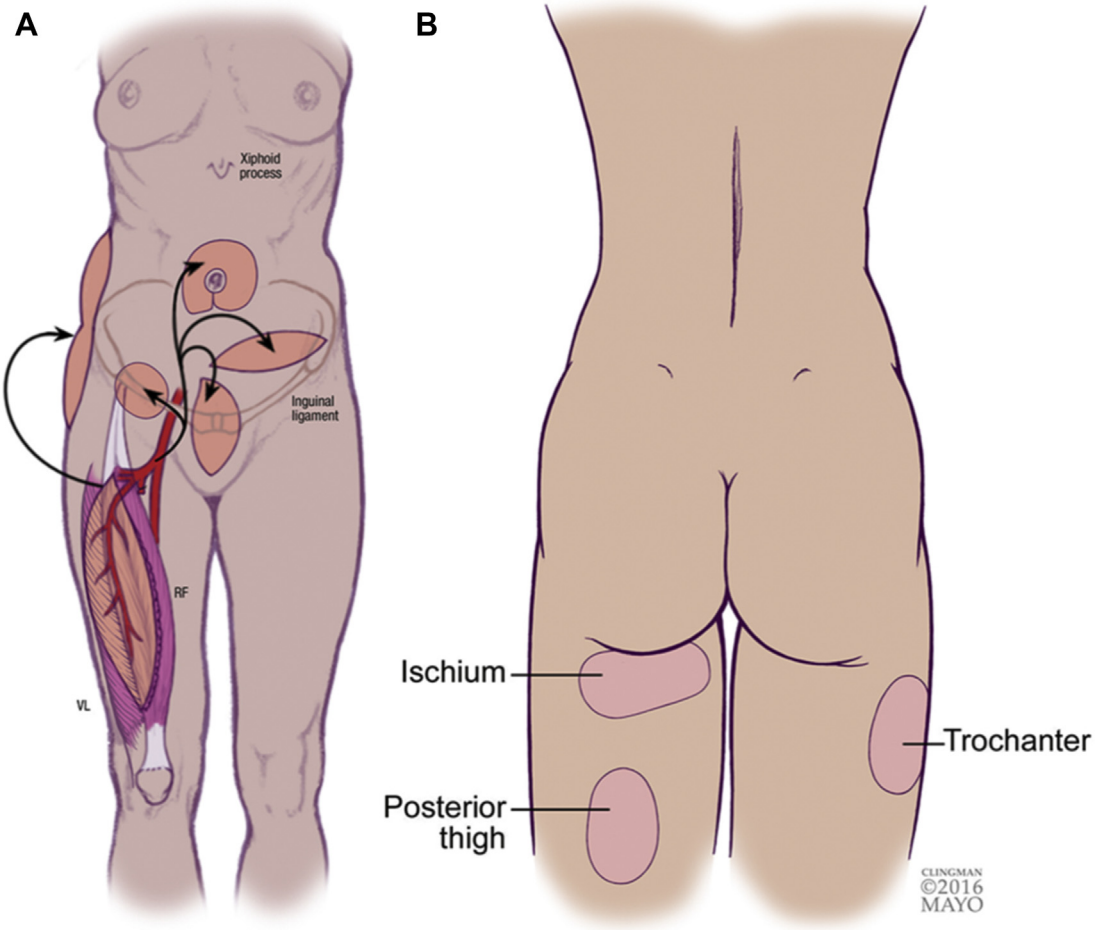

Fig. 1. (*A* and *B*) The PALT flap can be used to resurface the lower abdomen, epigastrium, perineum, ipsilateral groin, contralateral groin, trochanter, ischial, posterior thigh, and lower thigh defects. (*A*) Anteriorly, the PALT flap can be extended to reach the ipsilateral groin, suprapubic region/lower abdomen, contralateral groin, and periumbilical region. Laterally, the PALT flap can be extended to reach the lower flank region. (*B*) The PALT flap can reach the posterior thigh via intermuscular tunneling as well the ischial region. The PALT can also be used to resurface the trochanteric region.