

In-Situ Anterolateral Thigh Flap for Lower Abdominal Reconstruction: Versatile Way for Reconstruction

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How to cite this article:

P R Venugopal/In-Situ Anterolateral Thigh Flap for Lower Abdominal Reconstruction: Versatile Way for Reconstruction/New Indian J Surg. 2021;12(1):59–62.

Abstract

A case of Osteomyelitic sinuses of the ilium with lower abdominal defect following a run over accident is treated with primary excision of sinuses with bone and reconstruction using pedicled anterolateral thigh flap. The Anterolateral thigh flap is a versatile pedicled flap^{1,2} for the reconstruction of the abdominal wall more effective and efficient than the fascia lata flap or other rotation flaps. Here is a case report describing the procedure and outcome in a complicated case.

Keywords: Anterolateral thigh flap; Abdominal defects; Osteomyelitis of the pelvic bones; Sinuses of lower abdominal regions.

Introduction

Anterolateral thigh flap is one of the most widely used flaps for the reconstruction in various parts of our body. This flap is commonly used as free flap based on the feeder, the descending branch of the lateral circumflex artery.⁴ The flap is well known for its reliability and wide skin paddle, attached fascia lata, or muscle the vastus lateralis for the reconstruction.

We are reporting a case of an in situ ALT flap for

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the reconstruction of the lower abdominal defect. The defect was due to an old run over accident with loss of tissue and primary reconstruction done with skin grafting. The patient had multiple sinuses due to osteomyelitis of the ilium and sacroiliac joint region. The defect was well covered and the osteomyelitic bone well revascularised due to vascularity of the flap.⁷

Case report

28 years old male patient reported with recurrent fistula in the left iliac crest area and the posterior part of the ileum near the sacroiliac joint following a run over accident 4 yrs back. He was treated with wound repair and skin grafting initially, and later by curettage of the bone many times.



Fig.1: Preoperative picture.

When the patient presented to us, he had multiple sinuses over the ilium - left side and the posterior side of the ileum near the sacroiliac joint extending deep to the bone with sequestrum. There was a large defect of 25 x 15 cm in the left lower abdomen with bowel adhesions to the skin. There was no attachment of the muscles or tendons to the iliac crest-detached defect.

Xray showed osteomyelitic bone with sequestrum and osteonecrotic areas left ileum and sacroiliac joint. MRI revealed osteomyelitic lesions showing sequestrum with collection in the deep plane.



Fig. 2: Xray showing the destroyed bone.



Fig. 3: MRI report of the case.

Procedure

Under General anaesthesia, the sinuses were explored by putting superior-crest incision, excising the sinus and the scared tissue down to the inner iliac plate. The sinus was penetrating the iliac plate and going posteriorly. The dead bone removed and the sinuses cleared. Posterior sinus over the sacroiliac region was explored by detaching the gluteal muscles. The exposure was extended upto the sciatic foramen. The sinus with the dead bone

and granulations removed completely. The lower abdominal defect was delineated and the bowels released from the adherent skin. The peritoneum was mobilised and approximated over the defect. A mesh of 10 x 12 cm placed in the extraperitoneal space. Then the ALT flap is elevated and the pedicle is traced upto the major pedicle and rotated to the defect by tunnelling. The flap is inset in the defect and closed. Postoperative period was uneventful and follow up for 6 months showed well healed wound with no hernia or sinuses.

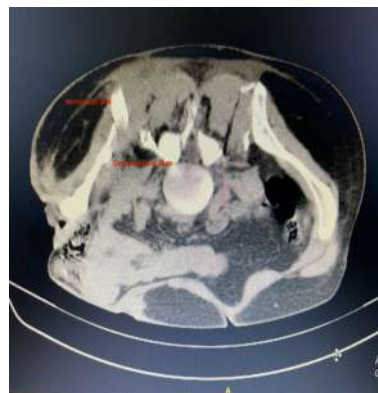


Fig. 4: Planning of the flap.



Fig. 5: Intraoperative.



Fig. 6: Rotation of the flap.

Technique of Raising The Flap

A line is drawn from the anterior superior iliac spine to the supero-lateral point of the patella. The junction between the upper one-third and the lower two-third corresponds to the first perforator. These perforators are identified by hand-held Doppler. The flap is designed in such a way that adequate paddle or skin is marked on the medial and lateral side equally. The flap raising is done from medial side in the subfascial plane till the medial border of the vastus lateralis. The perforators to the flap are identified over the surface of the vastus lateralis or through the fibres and these perforators with the septum or muscle is elevated and the pedicle is traced towards the base under the quadriceps femoris. Once the pedicle is identified and separated, we will start dissection from the lateral side. Then the lateral dissection in the subfascial plane including the fascia lata is done towards the medial side. In our case, we have included a part of vastus lateralis muscle for increasing the vascularity at the inset site. By dividing the skin above the upper end of the flap, the pedicle is rotated at 180 degrees and flap inset is given.



Fig. 7: Post operative picture.

Discussion

High velocity run over accidents are very common and mostly associated with pelvic fractures and sliding injury with loss of tissues in the hip region. The defects of abdominal wall in such cases are managed by abdominal muscles rotation or sliding flaps with or without skin grafting. There are situations where in this procedure is not sufficient and there will be a residual defect and is covered with skin graft for later reconstructions. The ALT flap is a good flap used for such lower abdominal reconstruction. In our case there were multiple sinuses due to osteomyelitis of the bone and hence the challenge of removing the dead bone

and clearing the osteomyelitis was an additional procedure.

The ALT flap is a skin with subcutaneous tissue based on the descending branch of the lateral circumflex artery. This can be added with fascia lata and vastus lateralis muscle too.^{3,5,6} We planned the defect closure with ALT and the pedicle length was extended by dissecting deep down to its major vessel. The hernia defect was delineated first and anatomical dissection done. Once the bowel was separated the surface was covered with peritoneum. It was done by mobilising the peritoneum and approximating without tension. In our case the peritoneal of the lateral abdominal wall was dissected for some distance and the same was mobilised to approximate over the bowel without tension. Once the defect is covered with peritoneum a mesh was placed to reinforce the defect. The defect with no tendinous attachment or muscle attachment. The defect may be reinforced with mesh and the lower end must be fixed to the iliac crest with non absorbable sutures.

The fascia lata component is used to reinforce the mesh like external oblique aponeurosis which is again fixed to iliac crest. In this case even though the sinuses were there the defect over the bone could be covered with muscles on both sides of the ileum i.e. iliacus muscle on inner side and gluteal muscles over the outer side.

The flap is rotated 180 degrees and the surfaced over the mesh. Once a vascularised tissue is placed over an infected area the healing is better and it will control the infection and vascularise the tissue (the basic principle of the flap).

We are presenting this case because these types of lower abdominal defects are very common and ALT flap is a very good option for such defects.

Conclusion

In complex situations like large defects of abdominal wall with herniations and lack of tissue for reconstruction pedicle anterolateral thigh flap is a good option. It can be taken as fasciocutaneous flap or with fascia lata to reinforce the defect. This flap can be taken as musculocutaneous flap with Vastus lateralis. So a diversified complex tissue transfer can be done using the pedicled ALT flap.

In our case two issues were there viz, the osteomyelitic bone with sinuses and herniation with no abdominal wall. So by using a vascularised tissue transfer the healing is better and it helps in revascularisation of the bone too. Hence we are reporting this case.

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