

# Extended Pedicle Rectus Abdominis Myocutaneous Flap for Thigh Reconstruction

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## Summary

A rectus abdominis myocutaneous flap can provide a large amount of tissue for defect coverage. Rarely a flabby and redundant abdominal tissue was used as a huge extended flap. We report a case of recurrence malignant fibrous histiocytoma of the thigh which was radically resected. The resultant massive defect was successfully reconstructed with an extended pedicle inferiorly based rectus abdominis myocutaneous flap.

**Key Words:** Rectus abdominis myocutaneous flap, Thigh reconstruction, Malignant fibrous histiocytoma

## Introduction

Malignant fibrous histiocytoma is a locally aggressive tumor with a high recurrence rate. Only radical surgery offers the best option for cure. The resultant defects however, are frequently very large requiring a huge amount of tissue for coverage. In cases where the neurovascular bundle and bone have been exposed, the need for vascularised tissue is even more critical. A large locoregional myocutaneous flap will offer a satisfactory solution.

## Case Report

A 55-year-old lady was referred with an ulcerative and bleeding right thigh mass. She had noticed six years earlier a progressively painful and enlarging growth on the medial aspect of her right thigh. There were recurrences after three consecutive local excisions. The most recent excision was about three months prior to her referral to our center. The patient was lethargic and pale. There was a 10 by 12 cm fungating mass with contact bleeding. The lesion encroached onto almost

three quarters of the circumference of the right thigh and extended from the groin to the distal third of the thigh (Figure 1). It was fixed to the underlying muscle of the posterior and the adductor compartments. Computerized tomography showed a large soft tissue tumor on the medial aspect of the right thigh involving the hamstring and adductor muscles. There was no vessel or bony involvement. Bone scan showed high uptake of tracer over the soft tissue without evidence of metastasis. Incisional biopsy confirmed a malignant fibrous histiocytoma.

The tumor was resected with a 5 cm margin. Only the quadriceps muscle, the femur and the neurovascular bundle to the leg were preserved. The resection left a defect of 20 by 30 cm involving three quarters of the circumference of the thigh extending from the groin to the popliteal fossa exposing the neurovascular bundle and part of the femur (Figure 1). A 21 by 32 cm rectus myocutaneous flap based on the inferior epigastric vessel was used to cover the defect (Figure 2). An extended flap was designed obliquely to obtain the

This article was accepted: 14 July 2004

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maximum amount of tissue for transfer with adequate pedicle length and at the same time allowing donor site closure. A rhomboid flap was used to achieve a tension-free donor site closure.

Postoperatively, the patient was ventilated. She developed pneumonia which responded well to treatment. Ten days later, she was allowed to ambulate.

The wound healed well and she was discharged home with crutches. A radiotherapy regime was instituted three weeks after the operation. Histopathological examination of the specimen confirmed a moderately differentiated fibrosarcoma. The excision was complete. On subsequent follow up review, she had progressed well. There was no donor site morbidity and she was walking without any crutches.



**Fig 1: Pre-operative view of the tumour and intra-operative view of the defect after resection**



**Fig 2: Flap design and post-operative view of defect coverage**

## Discussion and Conclusion

The reconstruction of a significantly large defect of the lower limbs can be very challenging. With the tissue deficit involving almost three quarter of the thigh extending from the groin to the knee, the exposed bone and neurovascular structures, a large soft tissue flap was needed for transfer. A simple, reliable, quick technique to achieve this, with low morbidity would prove a major advantage.

An extended inferiorly based pedicle rectus abdominis myocutaneous flap provided an attractive solution for this extensive defect<sup>1,2,3</sup>. The flap was versatile, robust and the procedure was relatively easy. The flabby and redundant abdominal wall tissue provided an adequate amount of bulk for transfer, producing a complete coverage of the defect as well as total correction of the contour deformity. The donor defect was closed with the aid of a local transposition flap. Although this flap has been used widely for closure of groin, perineal and thigh defects, it was not reported for a subtotal closure of thigh defect extending to the knee level. The natural process of tissue expansion resulted in the flabby abdomen providing the tissue for transfer. The extended oblique design and pedicle dissection increase further the reach of the flap.

The operation involved a pedicle islanded flap, obviating the need for microsurgery. Microsurgical related morbidity was thus avoided. The myocutaneous flap was highly vascular thus providing a viable, durable thick soft tissue cover for the exposed structures. This allowed early postoperative adjuvant radiotherapy treatment. Limb salvage was achieved with this reconstructive procedure. During resection, the quadricep muscles, the flexors and extensors of the hip and the neurovascular structures to the lower leg were preserved, thus retaining their functions. The rehabilitation of the patient was further aided by the 'untouched' latissimus dorsi muscle. The patient could be mobilized early using crutches.

In this particular case there were few other alternatives for limb salvage such as local muscle transposition and skin grafting or free flap surgery. Generally the more traditional option was amputation or disarticulation.

With local soft tissue transposition to cover the exposed bone and neurovascular structures, a skin graft would be needed over the transposed muscle. This would have been an easy and quick way of providing cover. However, with the limited amount of tissue and muscle left in the thigh, this would compromise further the chance of functional rehabilitation. The repair would produce an unstable scar with high tendency of wound breakdown and significant contour deformity.

Another option was free tissue transfer. The latissimus dorsi myocutaneous transfer would provide enough bulk to correct the contour deformity. The disadvantage of this approach included the sacrifice of a functioning muscle unit, which was potentially important in the rehabilitation of the patient. It also involved microsurgical expertise with the need of extra instrumentations such a microscope and other microsurgical instruments. Operating time would also be longer and the microsurgery would increase the morbidity significantly.

The seemingly easiest approach would be disarticulation or a hind quarter amputation. Although in principle it is a simple approach, hind quarter amputation can be very demanding as the blood loss can be significant. Rehabilitation of the patient will be very difficult in view of the loss of balancing limb stability. Fixation of a prosthesis will also pose a major problem. Another factor was the psychological aspect of losing a leg. This particular patient had blatantly refused the idea of losing her leg. With the extended pedicled rectus myocutaneous flap, a relatively simple technique has been used in this limb salvage procedure achieving an adequate functional and aesthetic repair of the large tissue deficit.

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