Through-knee amputation: mediolateral fasciocutaneous flaps with the addition of a protective gastrocnemius layer

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BACKGROUND

Despite several biomechanical advantages (enhanced proprioception, a longer lever and an end-weight bearing stump)¹ through-knee amputation is performed much less frequently than transfemoral amputations.² Concerns regarding higher rates of wound complications have recently been evaluated with no significant difference found between the two levels.³ Several approaches to fashioning through-knee flaps have been reported.¹ None instructs on mediolateral fasciocutaneous flaps fashioned from specific, predefined measurements that facilitate reproducible results. This technique, together

with the use of a gastrocnemius muscle flap to cover bone, is described.

TECHNIQUE

- > Mark and measure the circumference at the level of the tibial tuberosity (Fig 1).
- > One-quarter the length of the circumference medial and lateral to the tibial tuberosity marks midpoint of base of the flaps.
- > One-sixth the length of the circumference from the midpoints distally marks apex of flaps (Fig 1).
- > Complete markings to define fasciocutaneous flaps (Fig 2).
- > Dissect through the knee joint preserving the patella, hamstring tendons, cruciate ligaments and sciatic nerve.
- > Distract the leg anteriorly; control and transfix the pedicle.
- > Isolate the gastrocnemius muscle.
- > Suture hamstring and patellar tendons to the cruciate ligaments.
- > Secure the gastrocnemius over the femur (Fig 3).
- > Insert a suction drain deep to the muscle flap.
- > Close the fascia and skin (Fig 4).

DISCUSSION

Through-knee amputation is a rarely performed but safe alternative to above-knee amputation in selected patients.^{1,2} Wound healing remains problematic in all major amputations.¹⁻⁴ Preserving the

Figure 1 Circumferential skin marking at the level of the tibial tuberosity and one-sixth circumference length to mark apical height of fasciocutaneous flaps.

Figure 2 Skin marking of mediolateral fasciocutaneous flaps.

Figure 3 The gastrocnemius muscle provides good coverage of femur.

gastrocnemius muscle may aid wound healing in general and facilitates vacuum-assisted wound management in particular.

References

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Figure 4 Completed through-knee amputation.

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