

Reconstruction of soft tissue defects around the knee with free anterolateral thigh flaps using greater saphenous vein interposition grafts to the popliteal artery as recipient vessels

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Objective

Extensive defects with a wide zone of injury or poor soft tissue condition around the knee often require microvascular tissue transfers for soft tissue coverage and closure of large cavities. However free tissue transfer to the knee can be difficult due to limited options for reliable recipient vessels. We present two cases of soft tissue defect reconstruction around the knee with free anterolateral thigh flaps using greater saphenous vein interposition grafts to the popliteal artery as recipient vessels.

Methods

A 54-year-old patient with poor soft tissue quality around the anterior knee and proximal lower leg following multiple prior surgeries because of open tibia fracture and posttraumatic arthritis was presented at our department. Another knee replacement was planned but could not be performed due to the poor soft tissue quality (**Figure 1**). The Second case was a 40-year-old polytrauma patient presented with open proximal tibia fracture Gustilo IIIB (**Figure 2**).

In both cases soft tissue defect reconstruction around the knee was performed with an anterolateral thigh flap from the contralateral leg. A greater saphenous vein graft was harvested from the contralateral lower leg. The vein graft was used as interposition and anastomosed end to side to the popliteal artery as the recipient artery. The venous pedicle was anastomosed end to end to the ipsilateral greater saphenous vein.

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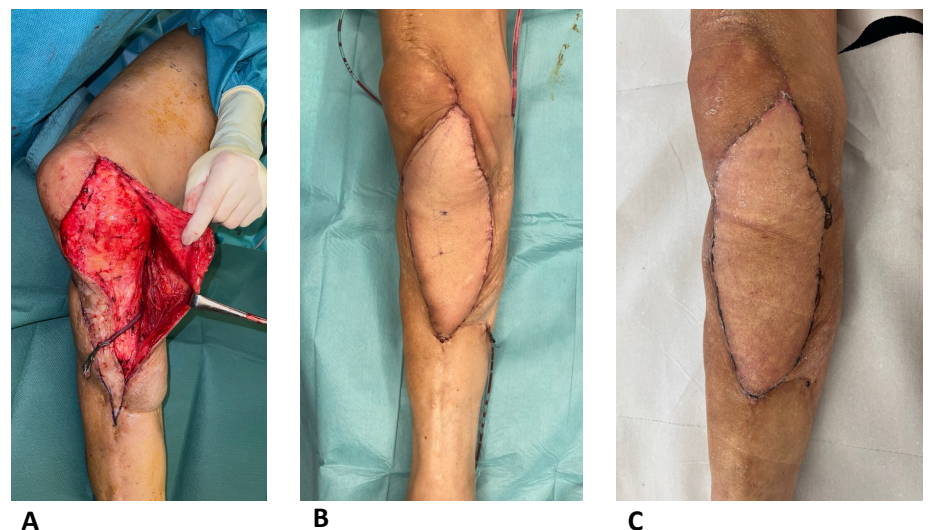


Figure 1: Case 1, A: Defect right knee with greater saphenous vein interposition graft, **B:** End of surgery, **C:** 4 weeks after surgery

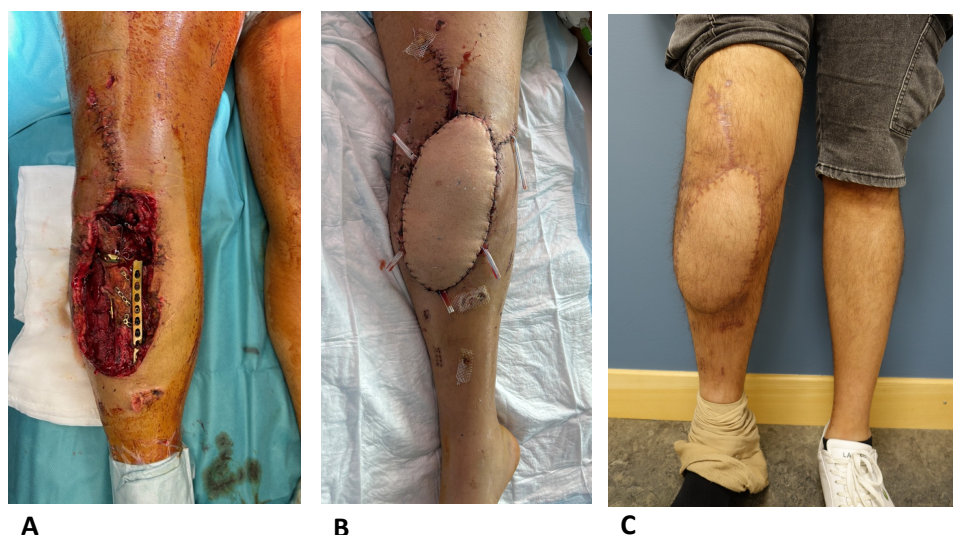


Figure 2: Case 2, A: Defect right knee, **B:** 2 days after surgery, **C:** 3 months after surgery

Conclusions

Extensive soft tissue defect reconstruction around the knee is challenging due to the anatomical location and lack of appropriate recipient vessels for free flaps. Interposition vein grafts for arterial pedicle extension to anastomose to a major arterial vessel is a reliable option to gain adequate arterial inflow. Other options like arteriovenous loops should be considered in complex cases.