reconstruction. During the operation, arterial thrombosis was observed 3 times in the microvascular anastomotic site. Intraoperative examination showed AT activity decrease (37 %) and AT transfusion was performed. Fourth arterial anastomosis was performed after AT transfusion and no further thrombosis was observed. Intraoperative bleeding volume was 1480ml and operation time was 18 hours 20 minutes.

RESULTS: Thrombosis was not observed in any of three patients intraoperatively after the transfusion or postoperatively and no other complications were observed.

DISCUSSION: AT deficiency was thought to be a main reason for the thromboses observed during the operation in all three cases. AT is synthesized in the liver and inhibits thrombus formation. It accounts for about 80 % of the thrombin inactivation in the blood, and is greatly related to the balance of the coagulation-fibrinolytic system. Various factors are thought to explain the decrease of AT activity observed in the cases presented; including hereditary AT deficiency, severe intraoperative blood loss, highly invasive operation, malnutrition and impaired liver function. It is necessary to consider AT deficiency in case repeated thrombosis developed intraoperatively.

Fasciocutaneous Free Flaps in Extremity Reconstruction: Safety of Re-Elevation

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PURPOSE: Free flap-based extremity reconstruction in the settings of chronic osteomyelitis and acute traumatic wounds can be a complex, multi-staged process that requires elevation of the free flap at each stage. Use of fasciocutaneous flaps is a safe and effect option in this situation, and may actually be preferable to muscle or musculocutaneous flaps despite traditional recommendations. Here the authors present their experience in utilizing fasciocutaneous flaps for reconstruction of the lower extremity in the settings of chronic osteomyelitis and acute traumatic wounds.

METHODS: A retrospective review of a single-center's experience with lower extremity fasciocutaneous free flap reconstruction in the setting of chronic osteomyelitis and acute traumatic wounds was performed. Patients were identified from the senior surgeon’s prospective database. Osteomyelitis was diagnosed with tissue culture as well as corresponding radiographic changes. Charts were reviewed for relevant risk factors, operative details, and outcomes.

RESULTS: Twenty-one patients underwent reconstruction with free anterolateral thigh fasciocutaneous flaps. Of the fourteen trauma patients, there were seven Gustilo IIIB lower extremity injuries, three open hand or wrist fractures, two degloving injuries of the foot, one crush injury to the foot, and one traumatic hand amputation. Of the seven chronic osteomyelitis patients, the original mechanism of injury leading to chronic osteomyelitis was traumatic bony fracture in five patients and neoplasm excision in two patients. Mean patient age in our series was 44.3 (7 to 80) years. Mean BMI at time of reconstruction was 27.8 kg/m² (21.5 to 36.5 kg/m²). The average defect size was 270 cm² (32 cm² to 525 cm²). The average length of hospital stay was 32 days. Patients required a mean of 3.7 debridements prior to flap reconstruction and a mean of 6.9 surgeries to complete the reconstructive process. The average time from initial debridement to flap was 15.5 days; mean time from flap to final surgery was 122 days. Mean follow-up time period was 10 months. There were two urgent returns to the operating room with two flap losses. Nine flaps were re-elevated 13 times (1 to 4 re-elevations per flap) for flap debulking, draining wound, antibiotic spacer replacement or removal, bone grafting, and ligament or tendon reconstruction; there were no major complications following flap re-elevation.

CONCLUSION: Use of fasciocutaneous flaps in lower extremity reconstruction in the settings of chronic osteomyelitis and acute traumatic wounds appears to be safe and effective, even when the flap is subsequently re-elevated during revision surgery. Fasciocutaneous flaps allow for soft tissue coverage and the potential for protective sensation. Despite operating on a Western population with an overweight BMI, it was possible to utilize fasciocutaneous flaps for reconstruction. The optimal time from the initial injury to flap reconstruction may actually be longer than once thought.

Revisiting the Reverse Sural Artery Flap in Lower Extremity Reconstruction: A Systematic Review and Pooled Analysis