of a variety of techniques for reconstruction. In contrast to previous management descriptions, NPWT and DRTs are commonly used in the management of these injuries. NPWT is frequently employed as a wound dressing with goal options of achieving a wound bed adequate for supporting a skin graft, temporizing until definitive surgical management, or bolstering a DRT or skin graft. Dermal regeneration templates are commonly utilized to reconstruct injuries involving tendons to aid in future tendon gliding. Based on the available literature and our experience with these difficult injuries, we propose a reconstructive algorithm based on three factors: the anatomic extent of injury with respect to the extremity’s deep fascia, the “usability” of degloved tissues, and the status of underlying critical structures including tendon/paratenon and bone/perioisteum. Superficial DSTIs involve structures superficial to the extremity’s deep fascia therefore management includes debridement and defatting of usable degloved tissues to produce a full thickness skin graft (FTSG). If the degloved tissue is inadequate for use, split thickness skin grafting (STSG) is completed. Deep DSTIs involve tissues deep to the extremity’s deep fascia and therefore may involve critical structures such as tendons and bone. Deep DSTIs with viable paratenon and/or periosteum and usable degloved tissues are reconstructed with appropriate tendon/bone intervention followed by application of the degloved soft tissues as a FTSG. Dermal regeneration templates should be considered in the DSTI with tendon/paratenon injury to improve future tendon motion. If the coverings of bone or tendon are injured and lack adequate vascularity to support any form of graft/DRT, reconstruction will require flap reconstruction (local/regional/free tissue).

Outcomes of Reconstructive Limb-Salvage Surgery in Lower Extremity Soft Tissue Sarcomas: A 20-Year Experience

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INTRODUCTION: Extremity sarcoma management follows a multidisciplinary approach involving orthopedic oncologists, plastic surgeons, medical oncologists, and radiation oncologists. Surgical resection of lower extremity soft tissue sarcomas often leads to large, complex defects with exposure of underlying neurovascular structures, tendons, and/or bone. Subsequent reconstructive surgery is often required in order to provide adequate soft tissue coverage and allow for functional preservation of the limb. We report our 20-year experience with limb-salvage surgery following lower extremity soft tissue sarcoma resection.

METHODS: We performed a retrospective review on all patients 18 years or older at the time of operation that underwent soft tissue reconstructive surgery following resection of lower extremity soft tissue sarcomas between 1996 and 2016 at our institution. Medical records were reviewed for patient demographics, tumor characteristics, details of tumor resection and plastic surgery reconstruction, administration and timing of chemo/radiation therapy, and postoperative outcomes.

RESULTS: 136 patients underwent plastic surgery reconstruction following tumor resection. The average age was 55.7 years. The majority of tumors were high grade (47.1%), greater than 5 cm (66.9%), AJCC stage 3 (38.2%) and located in the proximal thigh (41.2%). 93.4% of reconstructive procedures were performed in the same operative setting as the oncologic resection. Approximately 90% of the advanced plastic surgery reconstructions involved a flap for coverage. Local flap reconstruction was most common for proximal thigh wounds (69.6%) and microvascular free flap reconstruction was most common for distal leg wounds (60.9%) (p=0.013). Skin grafts alone were most common for tumors ≤5cm (p=0.043), superficial wounds (p=0.001), and re-excisions (p=0.029) due to incomplete margins or recurrent disease. In conjunction with surgery, seventy-two patients (52.9%) received neoadjuvant radiation and twenty-six patients (19.1%) received neoadjuvant chemotherapy. The utilization of neoadjuvant radiation or neoadjuvant chemotherapy was not associated with the type of reconstruction utilized following tumor resection.

Wound complications occurred within 6-months postoperatively in 52.9% of patients. The most common complication was wound dehiscence (26.4%), followed by infection (18.4%), and seroma (15.4%). Thirty-two patients (23.5%) required a re-operation for wound complications. Average time to healing was 13.0 weeks. Limb survival was 94.9%. There was no significant difference in the incidence of overall wound complications, re-operations, time to heal, or limb survival, between patients receiving local flap, free flap, or skin graft coverage. 16.9% and 36.8% of patients had evidence of local recurrence or metastatic disease.
through last known follow up, respectively. There was no significant difference in local recurrence or metastatic disease between the different reconstructive techniques.

CONCLUSION: Patients with extensive lower extremity soft tissue defects often require plastic surgery soft tissue reconstruction after sarcoma resection. Based on our results, in patients that cannot undergo primary closure, local flaps can effectively reconstruct the majority of lower extremity sarcoma defects. However, microvascular free tissue transfer may be warranted for large wounds, areas of previous irradiation damage, or in the distal lower extremity. The post-operative management of sarcoma patients remains challenging due to high rates of wound complications. Local recurrence and metastatic disease confer additional morbidity and mortality in this patient population.

Efficacy of Neuroma Excision for Treatment of Severe Neuropathic Burn Pain

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INTRODUCTION: Neuropathic pain after burn injury can severely impair functional recovery, and can persist despite maximal pharmacotherapy, laser remodeling of hypertrophic scars, and fat grafting to the scar interface. We present a novel algorithm involving neuroma exploration, excision, and nerve implantation, for refractory cases.

METHODS: We performed a retrospective analysis of 41 burn patients with incapacitating neuropathic pain refractory to medical, pharmacologic, and conventional surgical management, and positive Tinel sign; who underwent excision of 63 hypertrophic scars and neuromas from Jan 2014 – Feb 2018 (mean age 43.5 years, range 11–67; median burn surface area 8.0%). Hypertrophic scar was excised in continuity with neuroma and deep fascia, from distal to proximal, until a feeding nerve was identified, divided, and implanted into muscle (22), fascia (15), or fat (22), with 5 patients having no identifiable source. Improvement was rated as definite (subjective decrease in pain AND decreased use of pain medications), somewhat (decrease in pain OR medications), none, or worse.

RESULTS: Forty-one burn patients, with severe neuropathic pain refractory to pharmacologic therapy, proximal nerve decompression, laser resurfacing, and fat grafting, underwent hypertrophic scar excision in the lower extremities (31), upper extremities (23), trunk (8), and face (1), an average of 2.2 years post-burn. Neuromas were identified on pathology for 33 excisions. Wound healing complications occurred in 10.0% of procedures (12 complications in 10 patients), including dehiscence (6.7% of cases) and recurrence of neuroma (11.5% of cases). At a mean of 20.2 months postop, 53.3% of patients reported definite improvement, 36.6% had somewhat improved, 5.0% had no improvement, and 5.0% were worse.

CONCLUSION: In patients with severe neuropathic burn pain, refractory to aggressive medical, pharmacologic, and surgical interventions, the presence of a neuroma may be the cause of neuropathic pain, and scar tissue may impact cutaneous sensory nerves. Excision of the hypertrophic scar and neuroma can provide long-term relief and decrease the use of pain medication; as such, surgery is indicated in the majority of these carefully selected patients.

Evaluating the Economic Sustainability of Plastic and Reconstructive Surgical Efforts in the Developing World

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PURPOSE: The lack of surgical capacity in the developing world causes substantial disability, affecting approximately five billion people worldwide.¹ In response, surgical communities provide specialty surgical care to individuals living in low- and middle-income countries (LMICs). Plastic surgeons commonly participate in short-term mission trips to deliver high volume surgical care. However, these trips are costly and often funded by charitable institutions. Evaluating the economic impact of these outreach efforts is principal to the development of sustainable healthcare in LMICs.