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INTRODUCTION: Hypodermal restoration via fat grafting after burn trauma to the face provides padding for the overlying skin, helps restore native features, and enhance contour and texture. While powerful, this technique is limited by graft retention often requires multiple rounds of grafting. Here we utilize a cryopreserved allogeneic fat transfer model to demonstrate the efficacy of cryopreserved fat in bolstering skin thickness and dermal-epidermal architecture after burn debridement and skin graft reconstruction.

METHODS: Female Yorkshire swine received 16 4 × 4 cm full-thickness burns. After 48 hours escharectomy was performed to fascia. Wounds were allocated to the following treatment groups: (a) No Treatment; (b) Fat Grafting Only; (c): Skin Grafting Only; (d) Skin then Fat Grafting. Split-thickness skin autografts (0.012 in.) were collected from the lateral thighs, pie crusted at back table, and grafted directly to the wound base. After 10 days, cryopreserved allogeneic adipose from female Yorkshire swine were grafted immediately deep to the graft or eschar depending on group allocation. Subjects were maintained for 8 weeks with interval ultrasound and biopsy for histologic analysis.

RESULTS: On ultrasonic evaluation total skin thickness was noted to be significantly greater in Skin + Fat group when compared with Skin Only (P < 0.05). On histologic assessment, dermal thickness was increased in both Fat Only versus Untreated (P = 0.0395) and Skin + Fat versus Skin Only groups samples (P = 0.0016). When compared with Skin Only samples, Skin + Fat groups demonstrated significantly increased epidermal depth (P = 0.0011). Both groups receiving skin grafts demonstrated significantly greater presence and depth of dermal papillae versus groups without skin graft (P < 0.052).

CONCLUSIONS: Facial burns are highly morbid injuries affecting quality of life and psychosocial well-being. Debridement and reconstruction can require extensive and repeat surgical interventions often with significant soft tissue deficit and obliteration of native facial architecture with long-lasting disfigurement. Fat grafting may address this; however, uncertain retention and need for multiple surgeries provides a barrier to some patients. Cryopreservation of adipose at initial liposuction addresses that limitation and here we demonstrate the efficacy of this technique in enhancing the thickness and structure of reconstructed skin.

Microsurgical Perceptions among Medical Students: Time for Intervention?

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BACKGROUND: The early perceptions of medical students have been shown to play an integral role in the specialty they pursue. Residency programs such as Plastic and Reconstructive Surgery expect applicants to demonstrate significant interest in the field and display extensive resumes that include research and academic achievements, all of which require preparation during the pre-clinical years. Due to limited exposure, most medical students are not aware of the scope of Plastic Surgery, let alone subspecialties such as microsurgery. This study aims to characterize the perceptions of Plastic Surgery and microsurgery among medical students to provide an impetus for intervention.

METHODS: A questionnaire created with Google Forms was distributed to medical students at medical schools across the nation. The survey assessed two aspects: (1) perceptions of Plastic Surgery and (2) knowledge of microsurgery.

RESULTS: In total, 750 responses were collected from medical students in all years of training. An estimated 50.8% were in preclinical years and 49.2% were in clinical rotations. When queried about the sources of their Plastic Surgery knowledge, 85.2% cited social media, 65.6% television, and 49.2% movies. Only 26% of respondents mentioned first-hand exposure to Plastic Surgery. Nearly 60% of students had a negative perception of Plastic Surgery due to media portrayal of the specialty, which is consistent with previous studies. In total, 22% of participants showed an interest in Plastic Surgery, but no respondents indicated an interest in microsurgery as a career option. When asked to describe what they thought microsurgery entailed, the majority answered “I don’t know,” or only had a very general understanding that it involved surgery of “small things.” Several respondents thought microsurgery pertains to robotic surgery. When questioned about
why microsurgery was not a career option, three-quarters cited not knowing enough about it, though nearly nine in 10 were interested in learning more.

CONCLUSIONS: It is no secret that Plastic Surgery has struggled with a negative or misconceived image in the media. That this perception will be carried forward by future colleagues is troubling. Additionally, subspecialties of plastic surgery such as microsurgery continue in relative anonymity due to lack of early student exposure in spite of significant student curiosity confirmed by this study. Our results highlight the need for microsurgeons to engage this population in order to foster interdisciplinary partnerships with well-informed colleagues. Additionally, the more students understand the impact that microsurgery has on improving patient lives, the more diverse an applicant pool we can attract, further enriching the specialty.

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Combined Face and Bilateral Hand Transplant: Preparation, Execution, and Early Functional Outcomes

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**Purpose:** Vascularized composite allotransplantation has redefined the frontiers of plastic and reconstructive surgery. The field has advanced considerably since the first successful hand transplant in 1998 and the first face transplant in 2005. To date, over 40 bilateral hand transplants have been reported in the literature, along with 47 face transplants. These include two unsuccessful attempts at combined transplantation of face and bilateral hand allografts. Through objective assessment of reports of these past attempts, as well as evidence-based procedural design through serial cadaveric rehearsals, we established a protocol for comprehensive reconstruction of a composite face and hand injury in a carefully selected patient. This case represents the first successful combined full face and bilateral hand transplant ever performed.

**Methods:** A 21-year-old male was referred with sequelae of an 80% total body surface area burn sustained in a motor vehicle accident 1 year before. Facial injuries included extensive scarring and near total fusion of the eyelids, tissue deficit at the nose and ears, as well as debilitating left neck contracture. Bilateral upper extremities were severely scarred after multiple split thickness skin grafting procedures, with proximal digital syndactyly and distal amputations. The reconstructive approach was refined through 11 monthly cadaveric rehearsals, utilizing computerized surgical planning, objective outcome analysis, and validated teamwork assessment tools. These same measures were used to evaluate the clinical transplant outcomes. Computed tomography and angiography were performed 4 weeks postoperatively, and positional analysis was conducted for comparison with the preoperative surgical plan. Functional assessment included active range of motion, grip strength, sensory assessment, Carroll’s Upper Extremity Function test, and the Disabilities of the Arm, Shoulder, and Hand questionnaire.

**Results:** Combined full face (eyelids, ears, nose, lips, and skeletal subunits) and bilateral hand transplantation at the forearm level was performed over 23 hours, with donor and recipient operations executed in adjacent operating rooms and involving 140 personnel. The patient subsequently underwent staged soft tissue advancement of the