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PURPOSE: Delayed maxillomandibular reconstructions are challenging because the position of remaining anatomy is distorted or no surgical specimen is available for measurement. To optimize outcomes following reconstruction of these complex defects an algorithm using novel VSP techniques was developed.

METHODS: Delayed maxillomandibular reconstructions using VSP between 2009–2016 were identified at two medical centers. Demographics, modeling techniques, and surgical characteristics were analyzed.

RESULTS: Sixteen reconstructions met inclusion criteria with a mean follow-up of 21 months. Mandibular defects were most common (81.2%), followed by maxilla (12.5%), and one combined defect (6.3%). Indications for reconstruction were osteoradionecrosis with displaced fracture (50.0%), tumor (37.5%) or trauma (12.5%). Three VSP techniques were developed and used to facilitate delayed reconstruction: 1) patient-specific modeling using radiographs obtained prior to the defect (43.8%); 2) mirror imaging of the remaining contralateral normal anatomy (37.5%); 3) normative samples scaled to patient size (18.8%). Normative and mirrored reconstructions were always designed to restore normal anatomy; however, patient-specific data identified constraints necessitating non-anatomic reconstructions in 71% of cases. Complications: partial loss requiring a second fibula flap (1), complete flap failure (1), hardware exposure (3), infection (2), wound dehiscence (2), and sinus tract (2).

CONCLUSIONS: The current series of complex craniofacial defects was reliably reconstructed using a novel algorithm employing three different VSP techniques. The ability to preoperatively design reconstructions and precisely execute them in absence of normal anatomic landmarks demonstrates an added value of VSP beyond traditional techniques.

52.

EVAULATING OUTCOMES OF LOWER EXTREMITY FREE TISSUE TRANSFER: ARE MUSCLE FLAPS BETTER THAN SKIN FLAPS?

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PURPOSE: Clinical indications are expanding for the use of fasciocutaneous free flaps in complex lower extremity traumatic reconstruction. We assessed outcomes of muscle versus fasciocutaneous free flap coverage for acute and chronic traumatic defects.

METHODS: All patients who underwent lower extremity traumatic free flap reconstruction at Duke University (1997–2013) and the University of Pennsylvania (2002–2013) were retrospectively identified. Reconstructive and functional outcomes of muscle versus fasciocutaneous free flaps were analyzed in two subgroups: 1) acute trauma ≤30 days before reconstruction; and 2) osteomyelitis, non-union, and chronic traumatic wounds.

RESULTS: A total of 438 patients underwent lower extremity traumatic free flap reconstruction with 264 muscle flaps and 174 fasciocutaneous flaps. Muscle and fasciocutaneous flap groups did not differ in flap complication rates, amputation, or time to ambulation. Muscle flaps were more commonly performed for acute traumatic injuries, compared to chronic wounds (p<0.01).
Fasciocutaneous flaps were favored for foot wounds \( (p<0.01) \), whereas muscle flaps were favored for tibial wounds \( (p<0.01) \), Gustilo grade IIIb injuries \( (p<0.01) \), and wounds with exposed hardware/bone/tendon \( (p=0.03) \). Intraoperatively, fasciocutaneous flaps were associated with lower estimated blood loss \( (p<0.01) \). Increasing 17-year trends were noted in the use of fasciocutaneous flaps \( (p<0.01) \).

**CONCLUSION:** The use of muscle versus fasciocutaneous free flaps for lower extremity traumatic reconstruction achieved similar reconstructive and functional outcomes. Flap selection should be guided by defect characteristics and reconstructive needs.

**53.**

**THE WORLD’S FIRST PEDIATRIC BILATERAL HAND TRANSPLANT: ETHICAL CONSIDERATIONS AND IMPLICATIONS**

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**PURPOSE:** Since 1998, 110 upper limb vascularized composite allotransplantations (VCA) have been performed in adult patients worldwide. This year, an 8year old became the world’s first pediatric hand transplant recipient. The child was a quadriamputal amputee secondary to sepsis and had received a renal transplant. We present the unique social and ethical considerations in pediatric hand transplantation.

**METHODS:** Social and ethical issues in adult VCA recipients were reviewed and issues unique to children were identified. Issues related to patient autonomy (parental consent, patient assent, cognitive preparedness, noncompliance), personal identity (body integrity/image perception), risks (immunosuppression, graft loss), benefits (improved quality of life, sensibility, growth) and parental/family support were examined to mitigate harm to the patient.

**RESULTS:** A major disadvantage of hand transplantation compared to prosthetic options is the need for lifelong immunosuppression. Factors favoring this patient’s selection (preexisting immunosuppression, bilateral hand absence, and potential for improved function compared to prostheses) had to be balanced against possible technical failure, rejection of the transplanted hands and harm to the transplanted kidney. Critical emphasis was placed on psychosocial, compliance, family support, and emotional issues.

**CONCLUSION:** Pediatric VCA warrants significant social and ethical safeguards. Ensuring the optimal environment for compliance and an exit strategy in the event of failure are of paramount importance. In this case, careful consideration of ethical and social issues was undertaken during the patient selection process and can serve as a model for thinking through the broad range of social and ethical issues in future pediatric VCA candidates.

**54.**

**OUTCOMES OF CORTICOSTEROID TREATMENT OF TRIGGER FINGER BY STAGE**

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**PURPOSE:** While the literature reports that trigger fingers have a 90% response rate to a steroid injection, clinical experience suggests that not all trigger fingers respond the same. The purpose of this study was to refine a classification system for trigger finger that is simple and reproducible, with clearly definable and clinically relevant cutoff points, and then use the classification system to determine if responsiveness to steroid injection correlates to clinical staging.

**METHODS:** This was a prospectively collected longitudinal study of trigger finger patients separated into four stages.