

Formal Synopsis
Session Title: Posters

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Sensory and Motor Functional Outcomes of Four Patients 1 and 3 Years After Face Transplantation

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Background: After face transplantation, functional integration of the composite facial allograft depends on recovery of neuromuscular pathways and sensory and proprioceptive feedback, which guide cortical reorganization. Accordingly, successful coaptation of as many major sensory and motor nerves as possible is a key to optimizing functional outcomes. Furthermore, coaptation of motor nerves as close as possible to effector muscles results in targeted innervation, limiting synkinesias. Here we report on the return of sensory and motor function at 1- and 3-year postoperative timepoints for four full- and partial-face transplant recipients whose transplant procedures were performed utilizing these principles.

Methods: Four facial allotransplantations were performed in 2009-11. To the extent that recipient anatomy would allow, these procedures were characterized by reconnection of all sensory nerves (supraorbital, infraorbital, buccal, and mental) and all major facial nerve branches. Due to damage related to the patients' original traumas, nerve coaptation was not possible in several areas. Postoperatively, sensory recovery was evaluated using Semmes-Weinstein monofilament (SWm) and two-point discrimination (TPD) testing. Motor function was catalogued using still and video photography.

Results: Sensory recovery was generally not observed or lagged behind in areas where sensory nerves were not coapted. SWm testing showed graded improvement in gross sensation, and TPD testing demonstrated refinement of sensory discrimination over time (Figure 1). Motor recovery was significant (Figure 2) and improvements in speech, mastication, and social interaction were observed.

Figure 1. Results of serial postoperative two-point discrimination sensory testing.

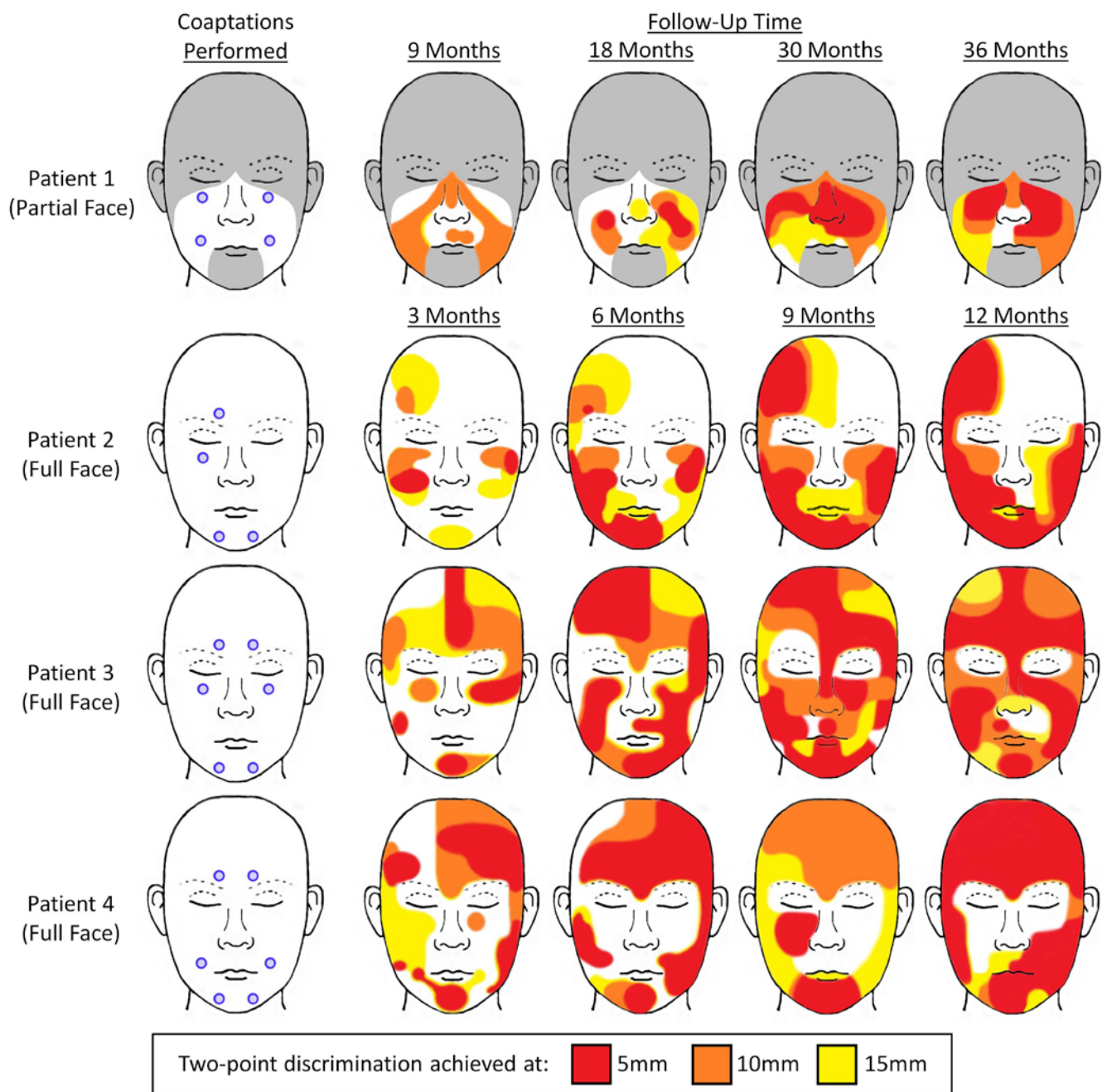
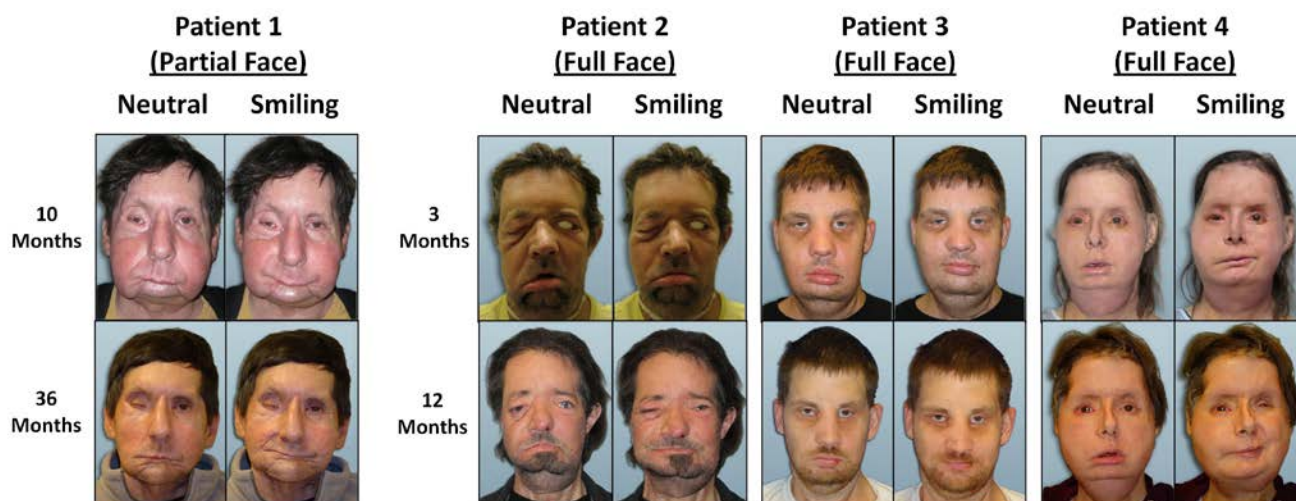


Figure 2. Performance of simple motor tasks at early and late postoperative timepoints.



Conclusions: All face transplant recipients have shown steady return of sensory function postoperatively; function is comparatively diminished in regions not selectively reinnervated with nerve coaptation. Motor function recovers symmetrically and becomes more robust and refined over time.

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