growth of the percentage of female residents and female representation on society leadership.

**CONCLUSION:** Female representation in plastic surgery residencies and plastic surgery society leadership has grown significantly and at a similar rate. Currently both absolute percentages sit well above the current percentage of female ABPS members of 15%, which is promising for female growth in the field. In contrast, female representation in editorial boards showed significantly less growth, which may reflect the slower turnover of their members.  

76

**Motor and Sensory Control of Robotic Hands Through Fascicular Targeting**

**Jonathan Cheng, MD, FACS**, **Edward Keefer, PhD**

*University of Texas Southwestern Medical Center, Dallas, TX, USA, Nerves Incorporated, Dallas, TX, USA*

**PURPOSE:** 18-25,000 upper limb amputations occur in the US annually. We have developed fascicular targeting (FAST) as a surgical approach for implanting electrode interfaces within the individual component fascicular groups of the nerves in the residual limb of upper extremity amputees. Our hypothesis is that FAST, when combined with custom-developed technologies including longitudinal intrafascicular electrode (LIFE) interfaces, nerve stimulation and recording electronics, sensory stimulation patterns, and artificial intelligence (AI) motor decoding algorithms, will enable the restoration of naturalistic hand function in robotic hand protheses used by upper extremity amputees.

**METHODS:** 5 upper extremity amputees were implanted with LIFE + cuff interfaces for durations ranging from 3 months up to 1 year. 3 subjects were partial-hand amputees with 2 FAST interfaces (2 ulnar nerve fascicles). 2 subjects were transradial amputees with 4 FAST interfaces (2 ulnar nerve and 2 median nerve fascicles). Weekly experimental sessions were performed: to assess stimulation parameters for sensory feedback, to record motor signals for robotic hand control, and to train and measure functional performance following restoration of naturalistic sensory feedback and motor control. Implants were removed at the completion of the trial.

**RESULTS:** All implants were well-tolerated by subjects, with little to no functional morbidity caused by their participation in the trial. Sensory stimulation thresholds remained within a usable range for the duration of the trial. Stimulation patterns were used to elicit sensations perceived as either natural or non-natural, according to subjects’ preferences. Sensory discrimination and anatomic localization were also assessed. Motor signals were recorded using a novel microchip design with built-in artifact rejection circuitry. Acquisition of single-unit motor data permitted the use of AI-based signal decoding algorithms to establish independent, free-will control of all 5 digits of the robotic hand. Single-session decodes continued to work for over 3–4 weeks post-training. Functional performance using closed-loop sensorimotor control, with anatomically relevant sensory feedback and user controlled activation of individual digits of the robotic hand, will be discussed in detail.

**CONCLUSION:** Fascicular targeting, when combined with specialized sensory stimulation and motor recording strategies, can enable true dexterity for upper extremity amputees using robotic hands. This holds promise for the development of full clinical systems to restore the hands of upper extremity amputees.  

77

**Pre-Operative DIEP Flap Patient Education Class Helps Decrease Anxiety and Increase Excitement/Preparedness Around Surgery**

**Lisa Gfrerer, MD PhD, Matthew J. Carty, MD, Jessica Erdmann-Sager, MD, Stephanie A. Caterson, MD**

*Brigham and Womens Hospital, Boston, MA, USA*

**PURPOSE:** Patients undergoing mastectomy and DIEP flap breast reconstruction may experience psychosocial distress in the perioperative period. We hypothesized that preoperative patient and family education improves levels of anxiety, and increases excitement for surgery as well as level of preparedness.

**METHODS:** An educational class for patients and families preparing for DIEP flap surgery was initiated. The class was held on the in-patient floor where subjects would be recovering. The session was led by a plastic surgeon, a floor nurse, and a mid-level practitioner who was on the
inpatient care team. Participants toured the inpatient unit, and were oriented to rooms. A group presentation was held discussing details around each day in the hospital, flap monitoring, pain management, perioperative goals, and discharge instructions. Patients were asked to complete a survey pre- and post-class, as well as upon discharge.

RESULTS: All patients who attended educational sessions reported positive significant change in preoperative levels of anxiety, excitement, and preparedness. The majority of subjects (94%) thought that the course was very helpful. Postoperatively, subjects described significantly less anxiety during their inpatient stay than pre- and post-class and felt more prepared for what they experienced in the hospital.

CONCLUSION: Pre-surgery patient education including detailed information about perioperative care, as well as exposure to inpatient facilities and pertinent providers significantly decreases levels of anxiety and increases excitement and preparedness for DIEP surgery. These findings highlight the importance of patient instruction prior to autologous breast reconstruction and stress the need for structured information sessions for prospective DIEP candidates.

Outcomes Following Augmentation Mammoplasty in Transgender and Cisgender Females

Nicholas G. Cuccolo¹, Christine O. Kang, MD, MHS, MS¹, Elizabeth Boskey, PhD, MPH¹, Ahmed M.S. Ibrahim, MD, PhD¹, Louise L. Blankensteijn, MD¹, Amr Taghinia, MD², Bernard T. Lee, MD, MPH, MBA¹, Samuel J. Lin, MD, MBA¹, Oren Ganor, MD²

¹Beth Israel Deaconess Medical Center/ Harvard Medical School, Boston, MA, USA, ²Boston Children’s Hospital/ Harvard Medical School, Boston, MA, USA

BACKGROUND: Gender dysphoria (GD) refers to an incongruence between one’s self expressed gender and their birth assigned sex that causes marked distress. In addition to psychological and medical therapy, many patients also seek gender affirmation surgery (GAS). For transgender females, breast augmentation (‘Top Surgery’) is typically the first, and in some cases, the only, GAS procedure that they will undergo. Recent legislative changes have significantly expanded access to GAS and the demand for these procedures has increased in parallel. The aim of this study was to compare postoperative outcomes of augmentation mammoplasty in transgender and cisgender females.

METHODS: We queried the ACS-NSQIP database from 2006–2017 to establish two cohorts: 1) transgender females undergoing gender affirming top surgery and 2) cisgender females seeking cosmetic breast augmentation (without any other or concurrent procedures). Postoperative outcomes were compared between the two cohorts. Multivariable regression analysis was used to control for confounders.

RESULTS: A total of 1,360 cases were identified, of which 280 (21%) were male-to-female (MtF) top surgeries and 1,080 (79%) were cosmetic breast augmentation (CBA) cases. The MtF cohort was significantly older (36.8 ± 12.9 years versus 34.8 ± 10.6, p=0.02), had a higher average BMI (26.7 ± 5.6 kg/m² versus 22.3 ± 3.4 kg/m², p<0.001), and had a different racial distribution (45.7% white versus 88.2% white, p<0.001) compared with the CBA cohort. MtF patients also had higher rates of smoking (27.1% versus 10.9%, p<0.001), diabetes (4.3% versus 0.9%, p<0.001), and hypertension (10.4% versus 3.1%, p<0.001). The rate of all-cause complications was 1.8% (n=5) in the MtF cohort and 1.6% (n=18) in the CBA cohort (p=0.890). Rates of readmission were also similar between the two groups (1.4% [n=4] in the MtF cohort versus 0.5% [n=5] in the CBA cohort). Multivariable regression analysis revealed no statistically significant predictors for all-cause complications.

CONCLUSION: Transfeminine breast augmentation is a safe procedure that has a similar complication profile to its cisgender counterpart. As the social climate for transgender individuals in the United States continues to improve and access to care expands, the need for such procedures will continue to rise. The results of this study should reassure and encourage surgeons who are considering performing this procedure.

The Affordable Care Act State-Specific Medicaid Expansion Effect on Insurance Coverage and Breast Reconstruction