has issued a statement that all gluteal fat grafting procedures should be performed in the subcutaneous plane only. Our device measures tissue bioimpedance and provides the surgeon with instantaneous visual and audible feedback of the tissue type (fat or muscle) in which the cannula tip is located at all times during the procedure.

**Methods:** First generation prototype devices were constructed by adapting standard liposuction cannulas with electrodes located on an insulated sheath. Sensing circuitry was designed to be able to differentiate between tissue types using electrical impedance. Testing was performed in an ex vivo porcine model. The device was then tested by performing simulated fat grafting procedures in fresh cadavers. Device tip location was confirmed using ultrasound. A second generation of the device was then developed using an insulated cannula and a distant reference electrode. This device was similarly tested using ex vivo porcine tissue and fresh cadavers.

**Results:** The sensing cannulas were able to differentiate between fat and muscle with 100% accuracy in the ex vivo porcine model. The cannulas were also able to distinguish fat and muscle with sub-centimeter accuracy in the cadaver model and this was confirmed using real time ultrasound. The second generation of the device appears to offer the advantage of sensing the fascia and muscle before penetrating them, providing a margin of safety to the surgeon.

**Conclusion:** The “smart” sensing cannula will provide surgeons with instantaneous feedback as to which tissue type the cannula tip is located in. The second generation of devices may also be able to alert the surgeon to when they are in close proximity to fascia and muscle, therefore preventing inadvertent violation of the fascia. This device may improve the safety of gluteal fat grafting procedures. With further development, the sensing cannula may serve as a safety adjunct during other liposuction and fat grafting procedures as well.

**Purpose:** Gender-based discrepancies in surgical outcomes are well documented in medicine; however, there is a paucity of data within the plastic surgery literature. The purpose of this study is to assess gender-based trends in aesthetic procedures, examine risk factors and complications associated with male aesthetic surgery.

**Methods:** A retrospective cohort study was performed on all reported aesthetic procedures within the Tracking Operations and Outcomes for Plastic Surgeons (TOPS) database between 2009-2014. All missing/invalid values and gender specific procedures were excluded. Regression analyses were used to characterize all reported patient variables.

**Results:** 41,633 patients were included, 5,451 males and 40,682 females. On bivariate analysis, males were significantly younger, had higher mean BMI, percentage of tobacco use and diabetes. Overall complication rate between males and females did not differ significantly. However, the number of major complications, defined as unplanned ER visit, readmission, or reoperation within 30 days was higher in men (p=0.006). Of all collected CPT codes, body-contouring procedures had the highest complication rates; complications from buttock lift, thigh and abdominoplasty were significantly higher in males compared to females (p< 0.05). On multivariate analysis, male gender was found to be an independent risk factor for hematoma (OR 2.7, p=0.001) and reoperation (OR 1.8, p<0.001). In males regardless of procedure performed, obesity was associated with an adverse event (OR 3.6, p=0.04); combining surgical procedures were associated with seroma (OR 1.9, p<0.001), major complication (OR 3.2, p<0.001) and hematoma (OR 2.9, p=0.02).

**Conclusion:** Male gender is a risk factor for hematoma and re-operation independent of BMI, comorbidities and surgery performed. This association is well established in facelift literature due to increased facial perfusion in men, however, these results may suggest other factors at play such as decreased postoperative compliance or earlier return to strenuous activity. Despite these associations, male anesthetic surgery is overall safe with a low major complication rate comparable to females. This is one of the biggest multi-institutional study to date to benchmark surgical outcomes in male aesthetic surgery, it highlights the importance of preoperative counseling, and provides a standard reference that may guide clinical practices in the future.