High risk biology includes women with genetic predispositions to cancer, as well as obese and post-menopausal women. bASCs were isolated from the stromal vascular fraction of breast adipose tissue from patients. Additionally, commercially-available ASCs isolated from the abdomen were obtained from Zenbio. Senescence was measured in bASCs using the SPiDER beta gal senescence detection kit (Dojingo). Senescence-associated cytokines were measured in conditioned media collected from these bASCs by ELISA (R&D Systems). The ability of bASCs to differentiate into adipocytes was measured using the Adipo-Red adipocyte differentiation assay (Lonza).

**Results:** To date, we have isolated bASCs from 16 patients undergoing mastectomies at Duke University Hospital. We have studied differences in the biology of these bASCs that may be associated with increased breast cancer risk. A commonality observed in high risk patients was senescence, demonstrated by bASCs undergoing growth arrest and secretion of beta-galactosidase. Similarly, bASCs from high risk patients demonstrated secretion of inflammatory cytokines such as Interleukin-6 (IL-6), Interleukin-8 (IL-8), and Interleukin-1beta (IL-1 beta) that are associated with the senescence-associated secretory phenotype. We hypothesize that the secretion by these bASCs of such cytokines creates an inflammatory breast microenvironment that increases breast cancer risk. Our data also indicate that bASCs from high risk patients exhibit a defect in their ability to differentiate into adipocytes.

**Conclusion:** Our studies are the first to report on a repository of breast ASCs (bASCs) from patients undergoing mastectomies. Results indicate that bASC biology differs significantly amongst patients, with a subset exhibiting a senescent secretory phenotype associated with a block in their ability to differentiate into adipocytes. We hypothesize bASC senescence, associated with a senescence secretory phenotype, results in: 1) the inability of these bASCs to differentiate into adipocytes, and 2) a senescence-associated secretory phenotype that impacts the breast tumor microenvironment. As we continue to build the repository, studies are in progress to test if inflammatory cytokines secreted by senescent bASCs work in a paracrine fashion on breast epithelium to drive breast cancer initiation/progression.

** QS3 **

**Does Top Surgery Reduce Chest Dusphoria in Trans/Non-binary Adolescents and Young Adults**

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**Purpose:** Top surgery (i.e. mastectomy) has been shown to improve gender dysphoria and quality of life in adult transmasculine patients. However, even as an increasing number of adolescents and young adults present for gender-affirming surgery, the impact of top surgery on this population is not well described. Minor patients require parental consent and often face more stringent insurance restrictions. This prospective study aims to increase the body of evidence for gender-affirming top surgery in adolescents and young adults. We will measure the change in self-reported gender dysphoria, gender congruence, body image, and chest dysphoria.

**Methods:** This is a prospective, multi-institutional study. Transmasculine and non-binary, designated female at birth, patients between the age of 13-25 years presenting for top surgery consultation were recruited from: Northwestern Memorial Hospital, The University of Illinois at Chicago, or Ann & Robert H. Lurie Children’s Hospital of Chicago. Patients completed four patient-reported outcomes.
measures at three time points: pre-operative baseline, three-months postoperative, and one-year postoperative. The questionnaires employed included the Transgender Congruence Scale (TCS), the Utrecht Gender Dysphoria Scale (UGDS), the Chest Dysphoria Measure (CDM), and the Body Image Scale (BIS). Preliminary interim analysis of mean change scores between pre- and three-month postoperative surveys was performed using paired, two-sided t-tests with confidence level at 95%.

**Results:** Thirty nine patients have been enrolled to date. At interim analysis, ten patients, mean age 18.6±2.9, range 15-24 years, had completed 3-month follow-up. Eight identified as transmasculine, one non-binary/genderqueer, and one identified as ‘other.’ Mean change from baseline to three-months of the TCS appearance congruence sub-scale was 7.3 points ($p = 0.002$), mean change of the internal congruence sub-scale was 7.4 points ($p = 0.002$), and total score scale was 7.4 points ($p = 0.002$). The UGDS demonstrated a mean change of -2.1 points at three-months ($p = 0.099$). The Chest Dysphoria Measure demonstrated mean change of -28.3 points at three-months ($p < 0.001$). The BIS total score mean change was -12.3 points at three-months ($p = 0.011$). Among the BIS subscales, the primary sexual characteristics score had a mean change of -5.5 points ($p=0.003$), secondary sexual characteristics had a mean change of -4.0 points ($p = 0.047$) and neutral characteristics had a mean change of -1.6 points ($p = 0.259$) at three months.

**Conclusion:** Our preliminary findings demonstrate that gender-affirming chest surgery improves chest dysphoria, appearance congruence, and overall gender congruence in transmasculine and non-binary adolescents and young adults. We anticipate that the final data will inform clinical practice guidelines for transgender and non-binary patients seeking mastectomy and chest masculinization.

**QS4**

**Genital Neurosensory Outcomes After Innervated Radial Forearm Phalloplasty**

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**Purpose:** Radial free forearm flap (RFFF) phalloplasty is the most commonly-used technique for gender-affirming phalloplasty procedures. Microsurgical coaptation of the free flap nerves to branches of the genital nerves aims to provide patients with a sensate neophallus. Return of sensation in the neophallus is poorly understood and has yet to be well characterized in the literature. This study serves to describe sensation in the neophallus, which will assist in setting patient expectations for recovery and improving operative technique and planning, especially in selection of nerves for coaptation.

**Methods:** A total of 14 patients undergoing RFFF were tested for pressure sensation in the neophallus postoperatively. Testing was conducted via 1-point static (1PS) testing using the Pressure Specified Sensory Device (PSSD). A 100g monofilament was used to screen the neophallus for sensation beginning at 3 cm distal to the base and advancing distally by 1 cm until the patient reported no sensation; the PSSD was then applied at the last point the patient reported sensation for precise pressure measurements. These measurements were taken on the right and left ventral and dorsal shaft 1 cm from the ventral and dorsal midlines, respectively. The right and left urethral meatus was also measured for sensation (representing the ulnar-most skin of the RFFF). Measurements were taken at intervals beginning as early as 1 week postoperatively; the longest patient follow-up thus far has been 17 months.

**Results:** Of the 14 patients, 13 had tactile pressure sensation at their most recent measurement (range 1-17mos). The remaining patient did not have a measurement beyond one month postoperatively. Of the 14 patients, consistent long-term follow-up measurements were currently available for 7. Among these patients, return of any sensation was measured at an average of 69 days (12-160 days) postoperatively. The earliest time point at which a patient had any sensation was two weeks postoperatively while another patient had sensation through the full length of the neophallus measured at 2.5 months postoperatively; subsequent measurements of this patient showed a decreased threshold (increased sensitivity) for pressure sensation over time.

**Conclusions:** Preliminary data suggests that innervation of the RFFF neophallus can be accomplished via microsurgical nerve coaptation and that recovery of sensation may occur much faster in some patients than previously thought possible. Further follow-up and a larger patient cohort is necessary to fully characterize nerve recovery and regeneration in gender-affirming phalloplasty patients.