RESULTS: Of 560 primary vaginoplasty operations performed at Mount Sinai, 147 patients underwent 209 revisions. Seventeen patients who underwent primary vaginoplasty with outside providers underwent 19 revisions. Of 228 total revisions, 83 patients underwent 100 revisions for neovaginal stenosis, defined as "loss of depth" or internal strictures. The remaining revisions were 50 introitus strictures, 75 external revisions (clitoroplasty, urethroplasty, cosmesis of labia minora), and 3 cases involving hair or cysts. Of those with vaginal stenosis, 61 patients (73.5%) had experienced difficulty with dilating postoperatively (odds ratio [OR], 7.92). Other conditions known to affect wound healing were not as strongly associated with neovaginal stenosis: diabetes mellitus (OR = 0.98), history of keloids (OR = 0.84), and former smoker (OR = 0.58). Age distributions were similar between groups. Mental health morbidity was prevalent among those with revisions (41%), but not a significant factor in difficulty dilating. Median time from primary vaginoplasty to revision was 14 months.

CONCLUSION: Patient difficulty with postoperative dilation is a significant factor in the incidence of neovaginal stenosis, greater than traditional risk factors known to affect wound healing.

Predicting Donor Site Complications: A Review of 2,316 Abdominal Flaps for Breast Reconstruction

Viren Patel, BS, Adrienne Christopher, MD, Joseph A Mellia, BS, Martin Morris, MBE, Arturo J Rios-Diaz, MD, Jessica Cunning, MD, Robyn B Broach, PhD, Joseph M Serletti, MD, FACS, John P Fischer, MD, FACS
Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA
University of Pennsylvania Health System, Philadelphia, PA
Penn Medicine Health System, Philadelphia, PA
WITHDRAWN

Radiation Therapy and Breast Reconstruction: a Retrospective Analysis of Reoperation Rates

Jiaxi Chen, MD, Vivian J Hu, BS, Robert Tung, MD, Edward C Ray, MD, FACS
Cedars-Sinai Medical Center, Los Angeles, CA

INTRODUCTION: Postmastectomy radiation therapy (PMRT) has a major role in determining the optimal timing and technique used in breast reconstruction. We report a single-center experience of patients who underwent mastectomy with reconstruction to demonstrate the effect of PMRT on reoperation rates.

METHODS: Patients who underwent total mastectomy followed by breast reconstruction from 2008 to 2019 with more than 6 months of follow-up were included. Primary end point was reoperation, which was further categorized as planned or unplanned. Unplanned reoperation encompassed reoperation related to complications of original procedure. Multivariable Poisson regression analysis was used to model the correlation between patient factors and reoperation.

RESULTS: The study cohort comprised 2,305 patients. Mean age was 51.5 years, 75.5% of patients were non-Hispanic White, and 80.1% were privately insured. Thirty-five percent of patients had chest radiotherapy, of these patients 69.4% had PMRT. Overall, 80.7% of patients required at least 1 reoperation, with 67% of patients requiring at least 1 planned reoperation and 40% of patients requiring at least 1 unplanned reoperation, and 6.7% of patients underwent at least 1 urgent reoperation. Subgroup analysis revealed no statistical difference in overall reoperation rate with PMRT (81% vs 79%; p > 0.56). However, unplanned reoperation rate was higher in patients who have had chest radiation compared
with patients who have not had chest radiation (47% vs 36%; p < 0.03).

**CONCLUSION:** Radiation therapy can significantly influence the outcomes of breast reconstruction and the need for reoperation afterward. Understanding the effects of chest radiation can help improve preoperative patient counseling in breast reconstruction.

**Risk Factors Associated with Post-Mastectomy Breast Cancer Lymphedema: The New York State Experience**

Annet S Kuruvilla, BS, Aleksandra Krajewski, MD, Xiaoning Li, PhD, Jie Yang, PhD, Sagar R Mulay, MD, Sohaib M Agha, BS, Harmehar K Kohli, BA, Raymond M Bellis, BS, Henry J Tannous, MD, Laurie W Shroyer, PhD

**Renaissance School of Medicine Stony Brook University, Stony Brook, NY**

**INTRODUCTION:** As an edematous condition diminishing quality of life, the risk factors predictive of breast cancer patients’ post-mastectomy lymphedema have not been identified previously. The objective is evaluating trends over time and identifying risk factors predicting breast cancer post-mastectomy lymphedema.

**METHODS:** Using billing codes, the 2010-2016 New York State-wide Planning and Research Cooperative System database identified first-time, breast cancer, post-mastectomy, 2-year survivors (n = 65,543; median age = 59 ± 20 years).

**RESULTS:** Overall, 1-year and 2-year post-mastectomy breast cancer survivor’s lymphedema diagnosis rates were 4.06% (99% CI, 3.85% to 4.27%) and 6.25% (99% CI, 5.99% to 6.51%), respectively. Rates varied by index surgical procedure (n = 11,110 [16.95%] lymph node biopsies only, n = 14,786 [22.56%] lymph node dissections, and n = 39,647 [60.49%] mastectomy-only procedures; p < 0.001). In addition, full vs partial mastectomies had lymph node procedures more frequently (p < 0.001). Trending upward over time (p < 0.001), post-mastectomy rates at 1 year (2.69% [2010] to 5.97% [2016]) rose dramatically at 2 years (4.62% [2010] to 9.75% [2016]). Through 2018, 3,409 patients with breast cancer (5.20%) had 2-year post-mastectomy lymphedema-related diagnoses; predictors of lymphedema development included (in priority order): higher Elixhauser score, prolonged mastectomy stay (more than 1 day), time period (mastectomy procedural year), obesity, younger, non-Asian race, Medicaid insurance, and hypertension (all, p < 0.01).

**CONCLUSION:** To improve post-mastectomy care, broad-based screening for the “at risk of lymphedema development” breast cancer patient sub-group should include perioperative counseling, pre-discharge consultations, and post-discharge monitoring. Additional research appears warranted to proactively reduce post-mastectomy breast cancer patients’ future lymphedema rates.

**Single-Cell RNA Sequencing Reveals Fibroblast Heterogeneity Across Mouse and Human Embryonic Origins**

Michelle Griffin, MBChB, MRCS, MSc, MRes, PhD, Megan EW King, BS, Nicholas Guardino, BS, Ruth Tewin, MB BAO BCh, Evan J Faby, MD, Shamik Mochtar, BS, Darren Abbas, MD, Christopher V Lavin, BS, Derrick Wan, MD, Michael Longaker, MD, MBA

**Stanford University, Palo Alto, CA**

**INTRODUCTION:** Human skin scarring varies according to anatomic location, with the face healing at differing rates from scalp, ventrum, and dorsum. Fibroblasts are the key cells involved in wound healing originating from 4 embryonic origins. Fibroblasts from the face, scalp, ventrum, and dorsum originate from the neural-crest, cephalic mesoderm, lateral plate mesoderm, and somite mesoderm, respectively. Here, we use single-cell RNA sequencing to understand fibroblast heterogeneity across embryonic origins.

**METHODS:** Stented excisional wounds were created in the facial, scalp, ventrum, and dorsum regions in C57/BL6J mice. Wounds were harvested at postoperative day (POD) 7 (midday through healing) and POD 14 (wound re-epithelialization), with unwounded skin serving as controls. Fibroblasts were then processed for droplet-based microfluidic single-cell RNA sequencing analysis.

**RESULTS:** Facial wounds derived from the neural-crest displayed significantly accelerated wound closure and decreased scar thickness, compared with dorsal, ventral, and scalp wounds (7 vs 14; *p < 0.05*) (n = 10). We identified 6 distinct clusters of fibroblasts at POD 14. Two subpopulations were abundant in facial-derived fibroblasts enriched for CD200, Ncam1, and Jag1. Pathway analysis showed upregulation of known neural-crest signaling pathways, including Wnt canonical signaling, transforming growth factor-β.