50 patients (92.6%) prior to incision, whereas prophylactic postoperative PO cephalixin was prescribed to 38 patients (70.4%) at time of discharge. Four patients (7.4%) received neither preincision nor postoperative prophylactic antibiotics. No significant difference in surgical site infections was identified between patients who were prescribed postoperative antibiotics (2.6% SSI) versus no postoperative antibiotics (6.3% SSI) \((P = 0.509)\). However, the study had an insufficient power (13%) to determine significance.

**CONCLUSIONS/FUTURE PLANS:** These data demonstrate significant variation in postoperative antibiotic prescription rates after operative gynecomastia treatment at our institution. Patient- and procedure-specific factors including age over 30, history of obesity (body mass index > 30), and inframammary incisions have association with significantly higher rates of antibiotic prescriptions by our plastic surgeons. No significant difference in surgical site infections was identified between patients who were prescribed postoperative antibiotic versus those receiving no antibiotic. Decisions regarding postoperative antibiotic prophylaxis should be evidence-based, especially for elective gynecomastia operations, which tend to have low baseline risk for surgical site infections. Further studies are needed to determine which factors, if any, carry risk that warrants postoperative antibiotic prophylaxis after gynecomastia surgery.

**PRACTICE MANAGEMENT ABSTRACTS**

**Opioid Consumption Following Breast Reconstruction Decreases With a Brief Educational Intervention: A Randomized, Controlled Trial**

**Presenter:** Katie G. Egan, MD

**Co-Authors:** Michelle De Souza, MD; Elizabeth Muenks, PhD; Niaman Nazir, MD, MPH; Richard A. Korentager, MD

**Affiliation:** University of Kansas Medical Center, Kansas City, KS

**PURPOSE:** There has been a focus on opioid consumption and overprescribing, but the utility of patient education in reducing opioid consumption has only recently been explored. This randomized trial aimed to evaluate the effectiveness of a brief patient educational intervention in reducing pain and opioid consumption in patients undergoing mastectomy and breast reconstruction. We hypothesized that implementation of an educational intervention on pain control would decrease postoperative opioid consumption.

**METHODS AND MATERIALS:** A parallel, randomized, single-center controlled trial of women undergoing mastectomy and immediate, implant-based breast reconstruction was completed to evaluate the utility of a patient educational instrument. The control group received standard patient counseling, and the treatment group received an additional single-paged handout intervention. Goals of the educational instrument were to normalize the pain experience, set expectations for pain after surgery, and inform patients of alternative (nonopioid) methods of pain control. A questionnaire was administered postoperatively to collect data on pain control and opioid consumption.

**RESULTS:** Over a 12-month time period, 100 patients were randomized. A total of 46 participants from the control group (92%) and 39 participants from the intervention group (78%) completed the postoperative questionnaire. Postoperative questionnaires were completed a median of 13.0 days after surgery in both groups. Review of the electronic medical record showed similar demographics and comorbidities between the control and intervention groups; however, participants in the control group were statistically more likely to be a current tobacco user \((P = 0.04)\). There were no statistical differences in surgical characteristics or postoperative
prescriptions between the 2 groups. All outcome analysis was performed according to intended treatment groups. A statistically significant reduction in the number of opioid tablets consumed was seen in the intervention group (control 24.3, SD 21.8; intervention 16.2, SD 16.4; \( P = 0.05 \)). Although immediate postoperative prescriptions were equivalent between the 2 groups, more participants in the control group required a prescription refill compared to the intervention group (control n = 10, 21%; intervention n = 6, 12%; \( \chi^2 = 1.3; P = 0.3 \)). Due to the differences in need for prescription refill, the total average number of opioid tablets prescribed to the control group was statistically higher than the intervention group (control 46.6, SD 21.8; intervention 39.2, SD 11.9; \( P = 0.04 \)). There was a marginal trend toward lower average postoperative pain scores reported by the intervention group (control 3.6/10, SD 1.6; intervention 3.0/10, SD = 1.8; \( P = 0.06 \)).

CONCLUSIONS: This study was successful in trialing an easily implemented, brief intervention. When tested in a randomized population of breast reconstruction patients, the instrument was found to reduce opioid consumption, while maintaining noninferior pain control and need for opioid refills. The effectiveness of a brief patient education tool on patient opioid consumption has been shown, and implementation of similar protocols in this patient population is recommended.

Standardizing Upper Extremity Indocyanine Green Lymphography in a Lymphedema Outpatient Setting

**Presenter:** Itay Wiser, MD, PhD

**Co-Authors:** Andrew L. Weinstein, MD, MS; Elizabeth Kenworthy, MD; Babak J. Mehrara, MD; Joseph H. Dayan, MD

**Affiliation:** Columbia University, New York, NY

**INTRODUCTION:** Indocyanine green (ICG) lymphography is increasingly used to diagnose upper extremity lymphedema in outpatient settings, but its protocol lacks consensus. The purpose of this study was to standardize the ICG injections location and optimal timing for ICG lymphatic imaging.

**METHODS:** ICG lymphography was performed on healthy upper extremities. Optimal ICG injection pattern was determined by injecting ICG to the subdermis in 6 different combinations that included up to 2 locations in the interdigital webspaces or wrist ulnar border. Optimal ICG imaging was determined by comparing lymphatic visualization at 5, 30, and 60 minutes following injections. Outcome measures included number of visualized lymphatic pathways, lymphatic vessels, and lymph nodes in the upper extremity.

**RESULTS:** ICG injection to the first and third webspaces yielded higher lymphatic vessel count in the wrist (5.3 ± 1.3 versus 3.1 ± 0.9; \( P < 0.001 \)), forearm (4.4 ± 1.2 versus 2.4 ± 0.9; \( P < 0.001 \)), antecubital fossa (4.5 ± 1.8 versus 2.9 ± 1.0; \( P = 0.04 \)), and the upper arm (3.1 ± 1.4 versus 1.9 ± 0.7; \( P = 0.01 \)); demonstrated higher frequency of dual lymphatic pathways visualization in the wrist (80% versus 32%; \( P = 0.001 \)), forearm (76% versus 32%; \( P = 0.002 \)), upper arm (64% versus 28%; \( P = 0.011 \)), and total upper extremity (44% versus 0%; \( P < 0.001 \)); and higher frequency of axillary lymph node visualization (100% versus 68%; \( P = 0.002 \)). Imaging at 30 minutes compared to 5 minutes after ICG injection yielded higher visualization of lymphatic vessel number in the wrist (4 versus 3; \( P = 0.028 \)), antecubital area (4 versus 2; \( P < 0.001 \)), and upper arm (3 versus 1; \( P < 0.001 \)); demonstrated higher frequency of medial (48% versus 84%; \( P = 0.016 \)) and lateral (60% versus 92%; \( P = 0.018 \)) arm lymphatic pathways; and demonstrated higher frequency of axillary lymph nodes visualization (100% versus 16%; \( P < 0.001 \)). No significant visualization differences were observed between 30- and 60-minute time points.

**CONCLUSION:** ICG lymphography in the outpatient settings provides a detailed view of the upper extremity lymphatic system and can be optimized using ICG injection pattern of first and third webspaces together with imaging time points at 5 and 30 minutes.

Assessing Readability of Patient Education Materials on Breast Reconstruction by Major US Academic Institutions

**Presenter:** Lauren E. Powell, BA

**Co-Authors:** Emily S. Andersen, MD; Andrea L. Pozez, MD

**Affiliation:** Virginia Commonwealth University School of Medicine, Richmond, VA