

Are Prophylactic Postoperative Antibiotics Necessary after Masculinizing Mastectomy with Free Nipple Graft? A Single-institution Retrospective Review

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Summary: Antibiotic overuse, particularly in the postoperative period, has contributed substantially to increased rates of antibiotic resistance. Despite insufficient evidence to support prolonged prophylactic antibiotics following the majority of plastic surgery operations, and societal recommendations against the practice, many surgeons continue to perpetuate this cycle. Regarding “newer” operations, wherein minimal data pertaining to antibiotic use have been published, decision-making is often based on historical tradition. As such, continued communication of relevant data is essential to inform best practice guidelines. The aim of this case series was to report postoperative outcomes following chest masculinization with free nipple grafts performed according to a strict antibiotic protocol, which restricted prophylaxis to a single preoperative dose, in the absence of specific risk factors indicating a need for postoperative antibiotics. In this case series featuring 62 consecutive patients undergoing chest reconstruction with 124 free nipple grafts, there were no nipple losses or nipple graft infection events. (*Plast Reconstr Surg Glob Open* 2020;8:e2615; doi: [10.1097/GOX.0000000000002615](https://doi.org/10.1097/GOX.0000000000002615); Published online 17 January 2020.)

Antibiotic therapy has played an important role in modern medicine. Emergence of resistant microorganisms, however, represents a significant threat to the longevity of currently available antibiotics. One of the principal causes of this trend is antibiotic overuse. Concerns about overuse are highly salient in the perioperative period, as studies have demonstrated resistance can develop following a single dose of surgical antibiotic prophylaxis (SAP).¹⁻³ However, research has also suggested that SAP reduces the risk of postoperative infections.⁴

Best practices regarding SAP use for plastic surgery continue to be a topic of debate. A 2015 American Society of Plastic Surgeons consensus statement concluded that the benefit of SAP was confined to a single preoperative dose and should not be continued beyond 24 hours.⁵ Guidelines from the Center for Disease Control also

advise against SAP in the postoperative period for clean and clean-contaminated procedures, even if drains are in place.⁶ Despite these recommendations, routine use of SAP beyond 24 hours has persisted.^{7,8}

Evidence-based recommendations for SAP have been established for the majority of common plastic surgery procedures, but there are less data for “newer” operations. In the case of masculinizing mastectomy with free nipple graft (FNG), there have been no studies evaluating the role of SAP. Although existing data can be extrapolated to a degree,⁹ FNG represents a unique intersection of breast and skin graft surgery, and thus warrants separate review. Our protocol for FNG SAP involves a single preoperative dose and, absent unique risk factors, no additional antibiotics in the postoperative period. The aim of this study was to evaluate the incidence of postoperative infectious complications following masculinizing mastectomy with FNG using this protocol.

METHODS

Study Population and Data Collection

Sixty-two consecutive cases of masculinizing chest reconstruction with FNG, also known as bilateral mastectomy with nipple grafts, performed by the senior author (OG) from July 2017 to June 2019, were identified from our internal database. Patients’ charts were retrospectively reviewed,

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and only patients with a minimum follow-up of 1 month were included. Data collection consisted of demographic characteristics, perioperative risk factors, and postoperative outcomes. Descriptive statistics were calculated using Stata version 15 (StataCorp LLC, College Station, TX).

Chest Masculinization Protocol

All patients received the standard, weight-based dose of cephalixin preoperatively. The operation starts with harvesting of each nipple–areolar complex (NAC) as single-unit, full-thickness graft. Each NAC is harvested down to the subcutaneous plane and through the nipple ducts. Then, the NAC is carefully thinned down to the level of the mid-dermis and placed separately in moist sponges.

Once the mastectomy is completed, the incisions are closed in 3 layers. The surgeon locates the optimal NAC position on the chest site, and the skin is incised and de-epithelized. Then, the thinned NACs are placed on the recipient site and secured with half buried 5-0 chromic mattress sutures.

A 15-round Blake drain (Ethicon, Inc., Somerville, NJ) is placed on each side and brought out through the lateral port site and fixed in place with 3-0 nylon sutures. The surgeon then places a bolster dressing made out of a Xeroform (Covidien, Dublin, Ireland) sheet. The bolster is secured with eight 4-0 silk sutures, and the chest is dressed with a foam and a surgical vest. On postoperative day 7 or 8, the bolsters are removed, and the patient is instructed to lightly wash the area daily. Postoperative antibiotics are not prescribed, with the exception of patients at increased risk for infection.¹⁰ In the present study, postoperative antibiotics were prescribed for 1 patient with a history of prescribed steroid use and 1 patient with a history of diabetes.

RESULTS

Demographics

Sixty-two patients were included in this study. Average patient age was 19.4 ± 4.0 years (Table 1), and most patients were white. More than one-third of patients (37.1%) were obese, defined as body mass index ≥ 30.0 kg/m².

Comorbidities, including diabetes and hypercholesterolemia, were rare. However, rates of cigarette smoking, marijuana usage, and alcohol history were 17.7%, 30.6%, and 29%, respectively. The majority of patients [86.9% (n = 53)] reported wearing binders regularly.

Postoperative Outcomes

Postoperative complications were infrequent in this cohort (Table 2), with only 5 patients (8.1%) experiencing an adverse event. There were 3 cases of hematoma and 1 wound dehiscence. There was also 1 instance of postoperative seroma and cellulitis where the fluid was positive for gram-positive cocci. The fluid was drained, and the patient was placed on antibiotics with no sequela.

DISCUSSION

The rate of infectious complications, including seroma, among our cohort is equal or lower than other

Table 1. Patient Demographics and Baseline Health Characteristics at Time of Surgery

| | n | % |
|--|------------|------|
| No. patients | 62 | |
| Mean age ± SD, y | 19.4 ± 4.0 | |
| Mean BMI ± SD, kg/m ² | 28.8 ± 6.9 | |
| <18.5 | 1 | 1.6 |
| 18.5–24.9 | 19 | 30.6 |
| 25–29.9 | 19 | 30.6 |
| 30–39.9 | 19 | 30.6 |
| 40+ | 4 | 6.5 |
| Relevant medical and surgical history | | |
| Congenital heart defects | 3 | 4.8 |
| Diabetes | 1 | 1.6 |
| Hypercholesterolemia | 1 | 1.6 |
| Previous breast/chest surgery | 2 | 3.2 |
| Smoking | 11 | 17.7 |
| Marijuana usage | 19 | 30.6 |
| Alcohol use | 18 | 29.0 |
| Wears binder regularly | 53 | 86.9 |
| Mean duration of testosterone use ± SD, mo | 14.9 ± 9.9 | |

BMI, body mass index.

Table 2. Operative Characteristics and Postoperative Outcomes

| | n | % |
|--------------------------|--------|-----|
| No. patients/nipples | 62/124 | |
| Complications | | |
| Nipple graft loss | 0 | 0 |
| Infectious complications | | |
| Superficial SSI | 1 | 1.6 |
| Deep SSI | 0 | 0 |
| Organ/space SSI | 0 | 0 |
| Hematoma/seroma | 3 | 6 |
| Wound dehiscence | 1 | 1.6 |

SSI, surgical site infection.

rates reported in the literature.^{11–13} However, many of these other studies fail to report duration or method of antibiotic usage, including where surgical technique is described. Our results suggest that SAP usage through 24 hours is sufficient to prevent postoperative infectious complications among most patients.

To our knowledge, our study is the first exploring the reasonableness of limiting prophylactic postoperative antibiotics in chest reconstruction with FNGs. Our data suggest that a single preoperative dose of antibiotics is sufficient to address the risk of infectious complications, even in the presence of specific risk factors for postoperative infection, such as obesity. Only 1 (1.6%) patient in this study experienced an infectious complication and all but 2 patients were managed with a single preoperative antibiotic dose. This is consistent with the limited data on SAP for other types of full-thickness skin grafts.¹⁴

This study has several important limitations. First, our sample size of 62 patients with 124 nipple grafts is relatively small. Second, the cohort in this study is largely composed of young, otherwise healthy patients, in whom postoperative infectious complications are less likely.¹⁰ This should be taken into consideration when extrapolating the results. Still, given the growing number of patients seeking chest reconstruction,¹⁵ it is important to build the evidence base related to SAP.

CONCLUSIONS

Overprescription in the postoperative period continues to threaten the longevity of antibiotics. Shifting toward more evidence-based practices may represent a potential solution. This study demonstrates that chest masculinization with FNGs can be safely performed with a single preoperative dose of antibiotics and no postoperative prophylaxis.

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