

The Use of Perioperative Antibiotics for Free Tissue Transfer in Head and Neck Surgery

Stefanie Saunders, MD, MS¹, Stephen Reese¹, Jimmy Lam¹, Andrew Salama, MD, DDS², Scharukh Jalisi, MD¹, Waleed Ezzat, MD, FACS¹

¹Department of Otolaryngology – Head and Neck Surgery, Boston University School of Medicine, Boston, Massachusetts
²Department of Oral and Maxillofacial Surgery, Boston University Goldman School of Dental Medicine, Boston, Massachusetts

BOSTON
UNIVERSITY

BOSTON
MEDICAL
CENTER

Abstract

Objectives: Free tissue transfer is commonly practiced for reconstruction of head and neck defects. Antibiotics are frequently used postoperatively given prolonged exposure to oral flora. There is a paucity of literature on optimal duration of antibiotic prophylaxis. Our objective was to determine if a 7-day postoperative antibiotic course increased the risk of antibiotic-associated complications.

Methods: Retrospective chart review of subjects who underwent head and neck free tissue transfer between 9/1/2011 and 3/31/2014. Data was collected to determine outcomes of using a 7-day course of postoperative antibiotics.

Results: 72 subjects were included with a postsurgical infection rate of 13.9%. There was not an increased risk of antibiotic-associated infections (1.4% in our cohort versus 1.13% hospital-wide). There was one case of *C. difficile* colitis in the cohort, which was not significantly increased from UHC data of all head and neck patients. Surgical postoperative infections varied based on antibiotic with a significantly increased risk of postoperative infection when using clindamycin over cefazolin/metronidazole (OR=14.38; 2.7 – 75, p=0.002).

Conclusions: There is no conclusive evidence regarding the optimal duration for antibiotic prophylaxis, however our data suggest that a 7-day course does not predispose the patient to increased risks of antibiotic associated complications.

Introduction

Free tissue transfer has become the gold standard in reconstructing complex defects of the head and neck. Despite advances in this field, perioperative protocols, such as perioperative antibiotic prophylaxis, have lacked a significant amount of evidenced-based input and vary widely among institutions.^{1,2}

Many procedures in head and neck are considered clean-contaminated wounds, and current guidelines recommend the use of 24 hours of prophylactic antibiotics.^{3,4} An antibiotic duration of > 24 hours is common in free flap reconstruction given prolonged exposure to saliva and oral flora, and the high cost of a failed reconstruction.

We employ a 7-day postoperative antibiotic regimen on all microvascular reconstructions involving the upper aerodigestive tract. However, the differing opinions amongst microvascular surgeons has led some to question of the necessity of such a prolonged regimen, noting the possible risk of antibiotic-associated complications such as drug reactions, antibiotic-associated infections and the emergence of antibiotic resistant organisms. The aim of this study is to help ascertain whether a 7-day postoperative course of antibiotics has an increased risk of antibiotic-associated complications and compare these results to our institution's UHC data for surgical patients.

Methods and Materials

- Retrospective chart review on subjects > 18 years old undergoing free flap head and neck reconstruction at Boston University Medical Center between September, 2011 and March, 2014.
- Post-operative infections and post-operative complications were recorded and divided into medical versus surgical categories for each group. Antibiotic regimen and duration were noted for each subject.
- Statistical analysis was performed to determine frequency of medical and surgical complications, and any association with particular antibiotic.
- The University HealthSystem Consortium database was queried to obtain data regarding the Otolaryngology specialty at Boston Medical Center, and hospital-wide data regarding all medical and surgical patients.⁵ Factors included post-operative infection rates, antibiotic-associated infection rates, overall infection rate. This included the same time period as above.

Results

72 subjects included, 44 males (61%), 28 females (39%), median age 59 years, range 18-86 years.

Majority of subjects received cefazolin/metronidazole (69.4%). Subjects with beta-lactam allergy received clindamycin (12.5%). The remainder received an alternative regimen (18.1%). All received at least 7 days of antibiotics.

Clindamycin was associated with:

- 100% infection rate, either medical or surgical infections (figure 1).
- OR 14.38, p=0.002 for surgical infection in the clindamycin group when compared to cefazolin/metronidazole.
- Prolonged hospital stay (18 days, p < 0.005) compared to other groups (11.4 days).
- Necrotizing infections were rare (n=2), but were only seen in the clindamycin group. Other SSI were seen across all antibiotics (figure 2).

The rate of hospital acquired *C. difficile* colitis was 0.57% hospital-wide, 1.13% in Otolaryngology patients, and 1.4% in our study (n=1).

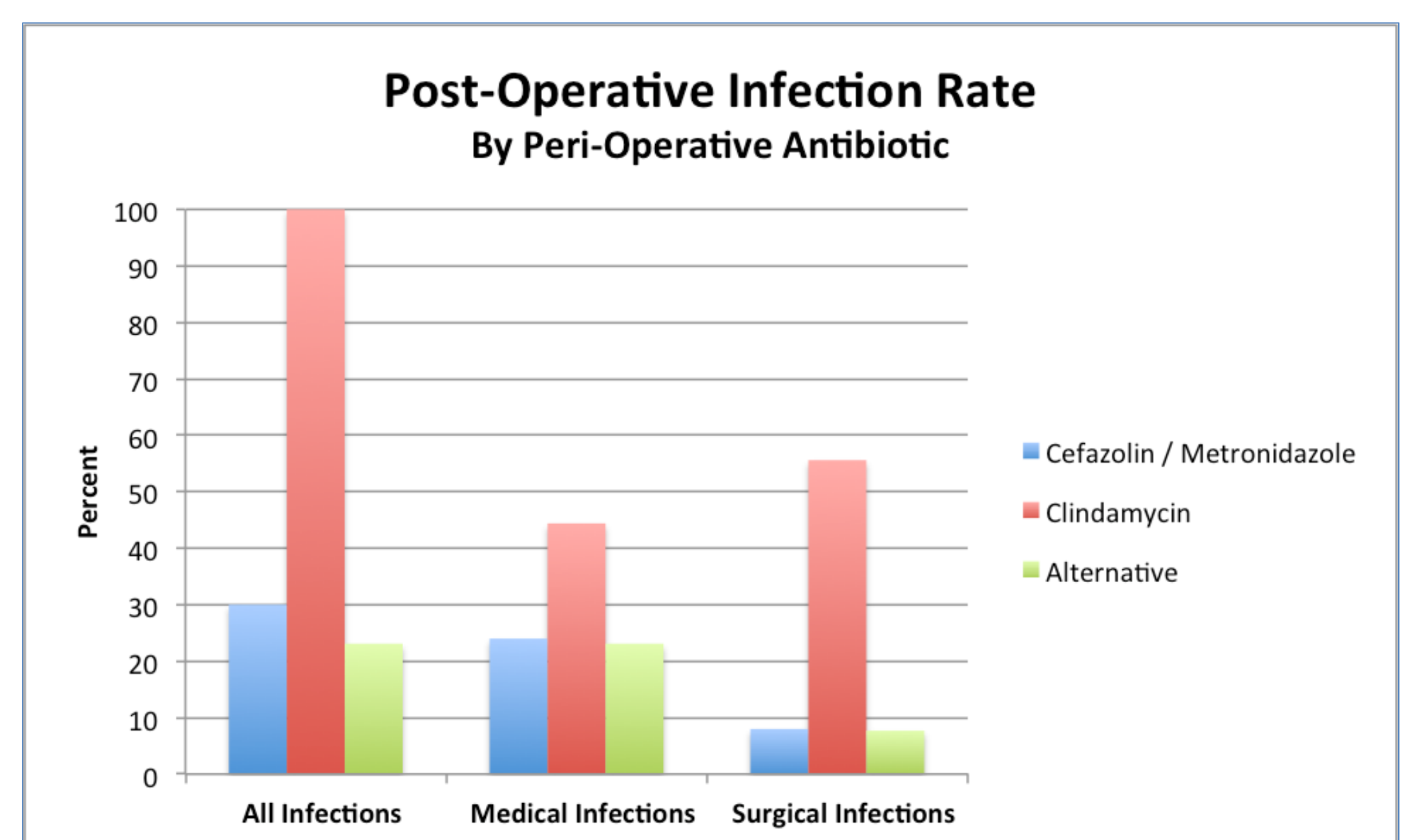


Figure 1. Post-operative infection rates including all medical and surgical infections

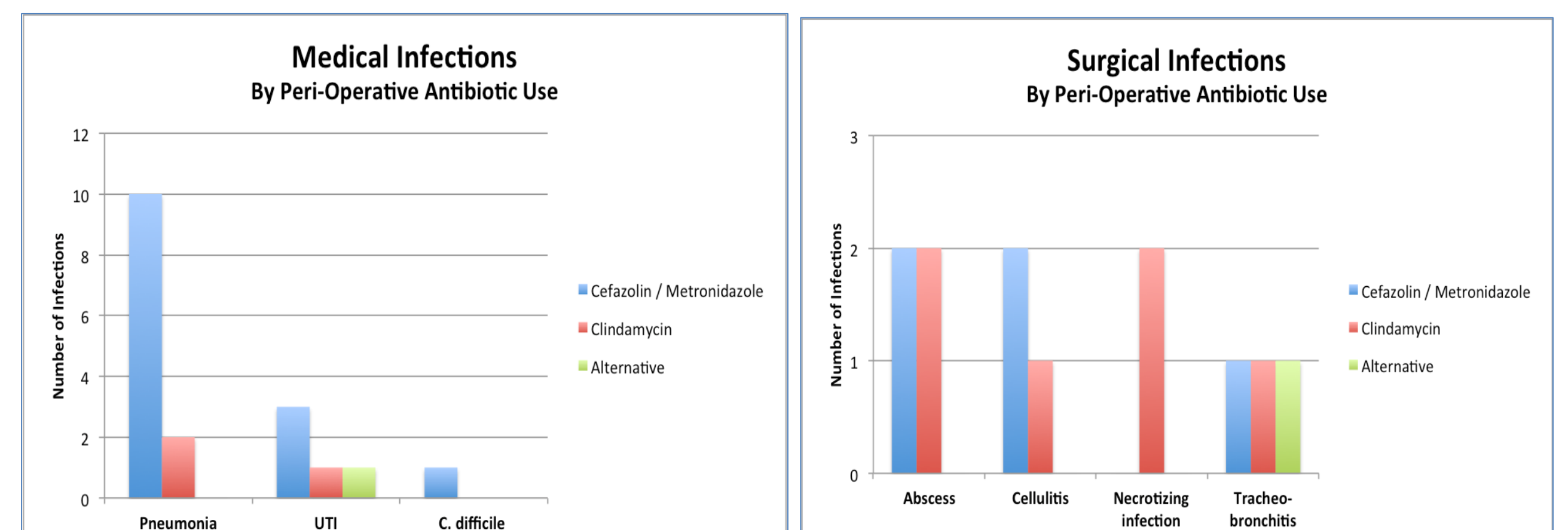


Figure 2. Post-operative infection types by peri-operative antibiotic and divided by medical and surgical infections.

Discussion

- Currently no consensus and lack of data in the literature on antibiotic regimen and duration in free tissue transfer.
- Current recommendations for all head and neck surgery are for antibiotics for ≤ 24 hours.
- Our study agrees with other published reports of increased incidence of infection with clindamycin use.^{1,2}
- No increase in antibiotic-associated infections or superbugs.
- We recommend a combination of levaquin and flagyl in beta-lactam allergic patients rather than clindamycin.
- Prospective randomized controlled trial needed to compare antibiotic durations and regimens

Conclusions

- Use of a 7-day prophylactic antibiotic regimen is not associated with increased risk of antibiotic-associated infections, multi-drug resistant superbugs, or antibiotic-associated complications such as drug reactions.
- Clindamycin is associated with increased risk of medical and surgical infections post-operatively.

Contact

Stefanie Saunders, MD
Boston University Medical Center
Department of Otolaryngology – Head and Neck Surgery
stefanie.saunders@bmc.org
617-638-7066

References

1. Mitchell RM, Mendez E, Schmitt NC, Bhrany AD, Futran ND. Antibiotic prophylaxis in patients undergoing head and neck free flap reconstruction. JAMA Otolaryngol Head Neck Surg. 2015 Dec 1;141(12):1096-103.
2. Pool C, Kass J, Spivack J, Nahumi N, Khan M, Babus L, Teng MS, Genden EM, Miles BA. Increased Surgical Site Infection Rates following Clindamycin Use in Head and Neck Free Tissue Transfer. Otolaryngol Head Neck Surg. 2015 Nov 16.
3. Mangram AJ, Horan TC, Pearson ML, Silver LC, Jarvis WR. Guideline for Prevention of Surgical Site Infection, 1999. Centers for Disease Control and Prevention (CDC) Hospital Infection Control Practices Advisory Committee. Am J Infect Control. 1999 Apr;27(2):97-132.
4. Bratzler DW, Dellinger EP, Olsen KM, et al. Clinical practice guidelines for antimicrobial prophylaxis in surgery. Surg Infect (Larchmt). 2013;14:73-156.
5. Data from the UHC Clinical Data Base/Resource Manager™ used by permission of UHC. All rights reserved.