Postoperative Drains in Plastic Surgery: Dispelling the Myths

Alyssa J. Reiffel, MD; Lindsay A. Pharmer, MD; Jason A. Spector, MD

Abstract

Background: Many surgeons fear closed-suction drains serve as a portal for bacterial entry into surgical spaces. Despite a lack of supporting evidence, postoperative antibiotics are often prolonged while drains are in place (1-3). We therefore examined potential risk factors drain colonization and surgical site infection (SSI) in the presence of closed-suction drains.

Methods: Medical records of all patients who underwent intraoperative Jackson-Pratt drain placement by a single surgeon over a 12m period were prospectively analyzed. Only patients whose drains remained in place for ≥5d, removed under sterile conditions, and cultured were included.

Results: Fifty-five patients with 101 drains were included (Tables 1-2). Drains were in place for 5-43d (mean 13.2±5.9d). Sixty-three percent of drains had positive cultures, including coagulase-negative Staphylococcus (24.8%), MSSA (8.9%), and Enterococcus faecalis (6.9%). All patients received perioperative antibiotics. Thirty-nine patients received postoperative antibiotics (mean 12.9±13.0d). There were 2 cases of cellulitis. One patient required reoperation. Forty-three drains (42.6%) were placed in the presence of prosthetic material. Risk factors for colonization included abdominal wall location, p=0.008 (OR 3.14 [95% CI: 1.35-7.32]), and the number of outpatient drainage days, p=0.048 (OR 1.16 [95% CI: 1.00-1.34]). Location in the back, p=0.028 (OR 0.37 [95% CI: 0.15-0.90]), the presence of prosthetic material, p=0.003 (OR 0.17 [95% CI: 0.06-0.54]), and duration of postoperative antibiotics, p=0.039 (OR 0.92 [95% CI: 0.85-0.99]), were protective against colonization.

Drain Site	Patients	Drains	Drains in the Presence of Prosthetic Material	Total Days, mean	Culture Positive Drains (%)	SSI (%, by patient)	SSI (%, by drain)
Abdomen	27	47	29	13.0	35 (74.5)	1 (3.7)	1 (2.1)
Chest/Breast	8	19	12	8.6	9 (47.4)	1 (12.5)	1 (5.3)
Back/Spine	15	28	21	16.1	15 (51.7)	1 (6.7)	1 (3.6)
Groin/Perineum	7	7	3	15.1	5 (71.4)	0 (0.0)	0 (0.0)
Total	55*	101	65	13.2	64 (63.4)	2 (3.6)	2 (2.0)

Table 1: Drain characteristics.

Pathogen N (%)	Abdomen, N=47 (%)	Chest/Breast, N=19 (%)	Back, N=28 (%)	Groin/Perineum, N=7 (%)	Total, N=101 (%)
Coagulase-negative *Staphylococcus*	12 (25.5)	5 (26.3)	7 (25.0)	1 (14.3)	25 (24.8)
MSSA	5 (10.6)	2 (10.5)	1 (3.6)	1 (14.3)	9 (8.9)
E. faecalis	7 (14.9)	0 (0.0)	0 (0.0)	0 (0.0)	7 (6.9)
Diptheroid sp.	4 (8.5)	1 (5.3)	1 (3.6)	0 (0.0)	6 (5.9)
P. aeruginosa	2 (4.3)	0 (0.0)	2 (7.1)	1 (14.3)	5 (5.0)
E. coli	3 (6.4)	0 (0.0)	2 (7.1)	0 (0.0)	5 (5.0)
Candida sp.	1 (2.1)	0 (0.0)	2 (7.1)	0 (0.0)	3 (3.0)
A. baumannii	1 (2.1)	0 (0.0)	0 (0.0)	1 (14.3)	2 (2.0)
M. luteus	0 (0.0)	1 (5.3)	1 (3.6)	0 (0.0)	2 (2.0)
C. jeikeium	0 (0.0)	0 (0.0)	1 (3.6)	1 (14.3)	2 (2.0)

Table 2**:** Microbiology of drain colonization.

Conclusions: Nearly two-thirds of drains were colonized. Despite this, our wound complication rate was extremely low (5.5%). Thus, drains may be left in place for an extended period of time without increasing the risk of infection, even in the presence of prosthetic material. Furthermore, these data suggest the use of antibiotics to "cover" drains is unnecessary given the potential for detrimental consequences of superfluous antimicrobial therapy.

References:

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