

Does the Timing of Antibiotic Administration Affect Culture Results in Resection Arthroplasty for Periprosthetic Joint Infection?

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INTRODUCTION: Preoperative aspirations are usually performed off antibiotics for at least 2 weeks to accurately define the infecting organism for targeted antimicrobial therapy during resection arthroplasty for periprosthetic joint infection (PJI). Similarly, antibiotics are often withheld until intraoperative cultures are obtained during resection arthroplasty as preprocedure antibiotics may reduce the sensitivity of cultures. This has important implications as failures frequently involve different organisms that may not be identified by resection cultures. Recent literature suggests that preoperative antibiotics do not affect intraoperative cultures, but the small sample sizes in these underpowered studies raises concern over practice changing recommendations.

METHODS: Patients treated at the OC PJI Center with resection arthroplasty were included provided preoperative and intraoperative cultures were available, as well as the timing of antibiotic administration. Patient outcome was also documented.

RESULTS: A total of 178 patients (181 procedures) were included. Fifty-three patients received antibiotics prior to obtaining intraoperative cultures. Fifteen of 53 (28%) had discordant cultures. Nine of 53 (17%) went on to fail. Eight of 9 (89%) failed with the same organism. One of 9 (11%) failed with a different organism. In contrast, 128 patients had their antibiotics held until intraoperative cultures were obtained. Twenty-six of 128 (20%) had discordant cultures; 14/128 (11%) went on to fail; 3/14 (21%) failed with a different organism; and 11/14 (79%) failed with the same organism. There was a lower incidence of culture discordance in patients who had antibiotics withheld until obtaining cultures (20%) compared to patients who received preoperative antibiotics (28%). Additionally, the failure rate of reimplantation when antibiotics were withheld was lower than when antibiotics were given preoperatively (11% vs. 17%).

DISCUSSION AND CONCLUSION: If antibiotics are routinely held prior to aspiration, intuitively it seems that the same principle should be observed perioperatively during resection for PJI. A lower discordance and failure rate when antibiotics are withheld supports this principle.