Unexpected Positive Intraoperative Cultures (UPIC) at Index Press-fit Osseointegration Do Not Lead to Postoperative Infection Events

Sarah Hébert, Zachary Glassband, Taylor Reif, S Robert Rozbruch, Jason Shih Hoellwarth

INTRODUCTION: Although diagnosis remains ambiguous, infection remains the most commonly reported adverse event following transcutaneous osseointegration. The assumption is that the majority of contamination originates from the transcutaneous portal, but pre-existing intramedullary or intraoperative contamination can represent another potential source. However, only one study has evaluated this potential impact. The current study builds upon the previous publication, evaluating the clinical impact of unexpected positive intraoperative cultures (UPIC) on postoperative infection rates after osseointegration.

METHODS: Medical records were retrospectively reviewed for 17 patients with UPIC and 111 patients with negative intraoperative cultures (NIC), all of whom had at least one year of post-osseointegration follow-up. All patients received routine immediate preoperative and postoperative antibiotic prophylaxis for 24 hours; patients with UPIC (determined from intraoperative cultures from the intramedullary canal immediately after exposure) were given additional targeted antibiotics based on culture sensitivities. The main outcome measure was postoperative infection intervention, which was graded as 0) none, 1) oral antibiotics prescribed for clinical reasons unrelated to culture results at the initial surgery, 2) operative debridement with implant retention, or 3) implant removal.

RESULTS: Table 1 shows the UPIC vs. NIC rate of interventions to manage post-operative infection: Grade 0, 47.1 % (8/17) vs. 37.2 % (42/113) (Fisher's p = 0.437); Grade 1, 35.3 % (6/17) vs. 50.4 % (57/113) (p = 0.303); Grade 2, 17.6 % (3/17) vs. 9.7 % (11/113) (p = 0.394); Grade 3, 0 % (0/17) vs. 0.9 % (1/113) (p = 1.000). No differences were statistically significant. No UPIC patients who received the therapeutic antibiotic course developed antibiotic-related adverse sequelae.

DISCUSSION AND CONCLUSION:

At the current volume, there is no recognized impact of UPIC on postoperative infection intervention, when the UPIC patients are provided a therapeutic course of postoperative antibiotics. Targeted antibiotic therapy was not associated with adverse outcomes. However, the clinical benefit of providing versus not providing directed antibiotic therapy for UPIC remains unknown, as no UPIC patients did not receive a therapeutic course.

Infection-related events after osseointegration.

Cohort	UPIC (n = 17)				NIC (n = 111)			
Grade	0	1	2	3	0	1	2	3
Humerus n = 3	0	0 (1)	1	0	2	0	0	0
Femur n = 75	4	1 (2)	1	0	23	33 (39)	11	0
Tibia n = 52	4	5 (6)	1	0	17	24 (25)	0	1
Total n = 130	8	6 (9)	3	0	42	57 (64)	11	1