



COST ANALYSIS OF ICG ANGIOGRAPHY IN TREATING STERNAL WOUND INFECTIONS: HOW ICG FALLS SHORT



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Introduction

- Indocyanine green (ICG) angiography provides an intraoperative assessment of vascular supply that can be used to detect hypoperfusion and thus prevent subsequent wound complications.
- Previous work has shown that ICG is cost-effective in preventing wound infections when implemented in patients with high-risk comorbidities, particularly obesity and smoking history.
- This study analyzed the effectiveness of ICG use in patients undergoing debridement for sternal wound infection following cardiothoracic surgery.

Methods

- A retrospective cohort study was performed including all adult patients who underwent nontraumatic cardiothoracic surgery at a single institution between 2016 and 2018 (n=1199).
- Patients suffering wound infection following surgery were identified and dichotomized into cohorts based on ICG-usage during wound debridement.
- The association between groups was evaluated by independent samples t-tests and χ^2 tests ($\alpha = 0.05$).

Table 1: Operative characteristics of patients with wound infections stratified by ICG use

	Total (n=43)	No ICG (n=24)	ICG (n=19)	p-value
Type of surgery, n (%)				
CABG	22 (40.7)	9 (28.1)	13 (59.1)	0.04
Valve	5 (9.3)	1 (3.1)	4 (18.2)	
Lung Transplant	14 (25.9)	11 (34.4)	3 (13.6)	
Heart Transplant	6 (11.1)	4 (12.5)	2 (9.1)	
Aorta repair	1 (1.9)	1 (3.1)	0 (0)	
LVAD	1 (1.9)	1 (3.1)	0 (0)	
Other	5 (9.3)	5 (15.6)	0 (0)	
Closure technique, n (%)				
Sternal wires	42 (82.4)	20 (69.0)	22 (100)	<0.01
Other (layered)	9 (17.6)	9 (31.0)	0 (0)	

Table 2: Readmission and debridement by ICG status.

	No ICG (n=24)	ICG (n=19)	p value
Readmission, n (%)	10 (52.6)	7 (29.2)	0.21
2 or more debridements, n (%)	15 (78.9)	12 (50)	0.06

Results

- 52 patients were diagnosed with postoperative wound infection, 43 of whom underwent operative wound debridement.
- ICG angiography was used in the debridement for 19 of the 43 patients.
- The use of ICG angiography did not reduce readmission for sternal wound infection (52.6% vs. 29.2%, $p = 0.209$).
- 78.9% of the ICG patients had 2 or more sternal wound debridements, versus 50%, who underwent debridement without ICG ($p = 0.064$).
- The median number of debridements with ICG angiography was 2.0 (mean 2.5).

Conclusions

- ICG angiography did not significantly reduce readmission or reoperation in patients with sternal wound infections.
- When used indiscriminately for all patients and surgical procedures, ICG may not be universally beneficial.