



Incidence of postoperative infectious complications in patient with iron deficiency: CARIPO observational study

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Introduction

Iron deficiency (ID), with or without anemia, is common during the perioperative period and its association with postoperative infectious complications is debated. We designed the CARIPO prospective observational study to assess the incidence of postoperative infections in patients with and without ID.

Method

We conducted this monocentric study at Angers University Hospital (France), from November 2021 to May 2022. The primary outcome was the incidence of postoperative infections 90 days after surgery, in patients with and without ID (defined as a ferritin < 100 µg/L or < 300 µg/L with a TSAT < 20%). Secondary endpoints included preoperative ID prevalence among the type of surgery and the incidence of all postoperative complications (according to POMS classification). Multivariate analysis was performed with adjustment on age, sex, preoperative hemoglobin, and diabetes. The protocol was registered on ClinicalTrials.gov with the identifier NCT04994275.

Results

Table 1. Baseline characteristics	No iron deficiency (n=220)	Iron deficiency (n=170)	p-value
Female sex	75 (34.1)	81 (47.6)	0.009
Age (years)	69 [63-75]	70 [60-76]	
BMI (kg.m ⁻²)	27.4 ± 4.9	27.8 ± 6.0	
ASA status 3-4	105 (47.8)	78 (45.9)	
Patient comorbidities			
Cancer	48 (21.8)	35 (20.6)	
Renal disease	28 (12.7)	19 (11.2)	
Cardiac disease	104 (47.3)	72 (42.4)	
Diabetes	28 (12.7)	48 (28.2)	p<0.001
Chronic hypertension	127 (57.7)	94 (55.3)	
Preoperative haemoglobin (g.dL ⁻¹)	13.9 ± 1.6	13.4 ± 1.5	0.004

Figure 1. Flow chart

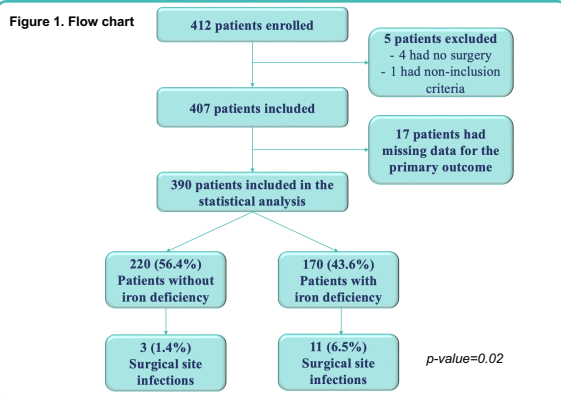
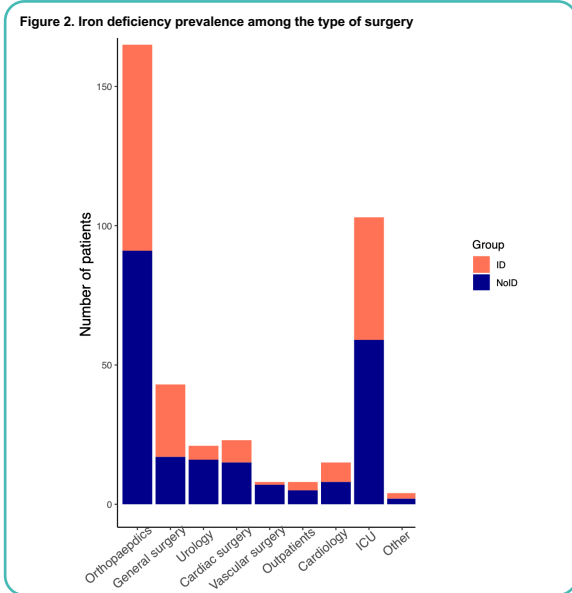


Table 2. Outcomes

	No iron deficiency (n=220)	Iron deficiency (n=170)	p-value Multivariate
Postoperative infectious complication	26 (11.8)	27 (15.9)	
Operating site	3 (1.4)	11 (6.5)	0.02
Bacteremia	2 (0.9)	1 (0.6)	
Urinary	4 (1.8)	2 (1.2)	
Pulmonary	11 (5.0)	5 (2.9)	
Catheter	5 (2.3)	7 (4.1)	
Other	3 (1.4)	4 (2.3)	
Type of POMS complication at 90 days			
Cardiovascular	36 (16.4)	25 (14.7)	
Pain	49 (22.3)	42 (24.7)	
Gastrointestinal	20 (9.1)	19 (11.2)	
Infectious	24 (10.9)	24 (14.1)	
Pulmonary	38 (17.3)	32 (18.8)	
Renal	16 (7.3)	26 (15.3)	0.007
Operating site	7 (3.2)	13 (7.6)	0.05
Neurological	18 (8.2)	11 (6.5)	
Hematological	13 (5.9)	12 (7.1)	
Blood transfusion	13 (5.9)	11 (6.5)	
Perioperative iron supplementation	50 (22.7)	39 (22.9)	
Nadir postoperative hemoglobin up to day 7 (g.dL ⁻¹)	10.8 ± 1.8	10.5 ± 1.7	
Hemoglobin at discharge (g.dL ⁻¹)	12.2 ± 1.9	11.9 ± 2.0	

Figure 2. Iron deficiency prevalence among the type of surgery



Conclusion

In our prospective cohort, surgical site infections were more frequent in patient with ID than in patients without ID. Whether treating ID may improve this remains to be evaluated.