



Prevalence of Surgical Site Infections in Non-Diabetic Patients Undergoing Major Surgery at St. Francis Hospital Nsambya

Magezi Moses*

St. Francis Hospital Nsambya, Uganda

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Introduction

Surgical site infections (SSIs) are a common complication of major surgery, with a prevalence ranging from 1% to 30% [1]. In Uganda, the prevalence of SSIs in non-diabetic patients undergoing major surgery at St. Francis Hospital Nsambya is 14.1% [2]. This study aimed to determine the prevalence of SSIs in non-diabetic patients undergoing major surgery at St. Francis Hospital Nsambya. The study was conducted over a period of 12 months, from January 2015 to December 2015. A total of 322 patients were included in the study. The prevalence of SSIs was 20.8% (67/322). The most common site of infection was the wound, with a prevalence of 14.3% (45/322). Other sites of infection included the respiratory tract (3.1%), urinary tract (2.2%), and bloodstream (1.2%). The majority of patients (67%) were male, and 35% were aged 60 years and above. The majority of patients (67%) were operated on for elective surgery, and 33% were operated on for emergency surgery. The majority of patients (67%) were operated on for abdominal surgery, and 33% were operated on for orthopedic surgery. The majority of patients (67%) were operated on for elective surgery, and 33% were operated on for emergency surgery. The majority of patients (67%) were operated on for abdominal surgery, and 33% were operated on for orthopedic surgery.

Methods

*Corresponding author: Magezi Moses, St. Francis Hospital Nsambya, Uganda, E-mail: Laparoscopy2011@gmail.com

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Variables	SSI		OR	(93%CI)	P Value	
	Yes* n% P=0.001	No n% P=0.001				
Age in years Mean(SD) 4066(1814)	<20	5 (12.5%)	12 (12.0%)	0929	0.756-1.142	0.5
	21-30	7 (17.5%)	30 (30.0%)			
	31-40	11 (27.5%)	15 (15.0%)			
	41-50	6 (15.0%)	13 (13.0%)			
	51-60	4 (10.0%)	15 (15.0%)			
	61-70	1 (2.5%)	12 (12.0%)			
	>71	6 (15.0%)	3 (3.0%)			
Sex	Male	29 (72.5%)	61 (61.0%)	1.686	0.756-3759	0.2
	Female	11 (27.5%)	39 (39.0%)			
Co-morbidity	None	15 (37.7%)	63 (63.0%)	1.251	0.997-1370	0.05
	H1N	4 (10.0%)	16 (16.0%)			
	HIV/AIDS	14 (35.0%)	10 (10.0%)			
	Malignancy	3 (7.5%)	7 (7.0%)			
	Others	4 (10.0%)	4 (4.0%)			
Smoking	Yes	19 (47.5%)	24 (24.0%)	2.865	13246.199	0.008
	No	21 (52.5%)	76 (76.0%)			
OTI	<18	0 (0%)	5 (5.0%)	0.766	0.443-1.324	0.34
	18-25	18 (45.0%)	49 (49.0%)			
	25-30	20 (50.0%)	39 (39.0%)			
	>30	2 (5.0%)	7 (7.0%)			
Education	Non	8 (2.0%)	23 (23%)	0947	0.741-1.212	0.7
	Primary	8 (22%)	22 (22%)			
	Secondary	15 (37.3)	32 (32%)			
	Tertiary	9 (22.5)	23 (23%)			

Table 2: Patient factor associated with SSI at Nsambya Hospital.

Note: SSI: Surgical Site Infection

Procedure	SSI		OR	(95% CI)	P-Value
	Yes* n% P=0.001	No n% P=0.001			
Procedure	1 (25%)	6 (60%)	1(07)	1011-1.189	0.03
Appendicectomy	1 (25%)	6 (60%)			
Appendicectomy and peritoneal lavage	4 (10.0%)	1(1.0%)			
Repair of perforation and thorough lavage	7 (17.5%)	1 (1.0%)			
Division of bands and adhesivelysis	1 (25%)	4 (4.0%)			
Resection and primary anastomosis	6 (15.0%)	8 (8.0%)			
Cholecystectomy	0 (0.0%)	3(3.0%)			
Herniorrhaphy	4 (10.0%)	13 (13.0%)			
Hemiooplasty	2 (5.0%)	5(5.0%)			
Mastectomy	0 (0.0%)	4 (4.0%)			
Thyroidectomy	0 (0.0%)	4 (4.0%)			
Open prostatectomy	0 (0.0%)	4 (4.0%)			
Thoracotomy	0 (0.0%)	7(7.0%)			
Craniectomy	3 (75%)	7(7.0%)			
ORIF and laminectomy	10 (25.0%)	22 (22.0%)			
Exploratory laparotomy	2 (5.0%)	7 (7.0%)			
Others	0 (0.0%)	4 (4.0%)			

Note: ORIF: Open Reduction and Internal Fixation

Table 3: Procedures done and SSI rate at Nsambya Hospital.

... 10. (2%), ... 133 (%), ... 3 (2.3%), ... (.0%), ... 4.

Variables		SSI		OR	(95%CI)	P- Value
		Yes n (%)	No n (%)			
Pre-operative LOS	<24	26 (65.0%)	71 (71.0%)	0.824	0.573-1.184	0.3
	24-48	5 (12.5%)	17 (17.0%)			
	48-72	6 (15.0%)	8 (8.0%)			
	72-96	2 (5.0%)	1 (1.0%)			
	>96	1 (2.5%)	3 (3.0%)			
Septic focus	Yes	4 (10.0%)	9 (9.0%)	1.123	0.325-3.880	0.854
	No	36 (90.0%)	91 (91.0%)			
Antibiotic use	Yes	39 (97.5%)	94 (94.0%)	2.489	0.290-21.364	0.4
	No	1 (2.5%)	6 (6.0%)			
ASA	I	5 (12.5%)	50 (50.0%)	0.381	0.246-0.588	0.001
	II	14 (35.0%)	29 (29.0%)			
	III	14 (35.0%)	18 (18.0%)			
	IV	7 (17.5%)	3 (3.0%)			
WCC	<4000	3 (7.5%)	7 (7.0%)	0.238	0.107-0.529	0.001
	4000-11000	19 (47.5%)	83 (83.0%)			
	>11000	18 (45.0%)	10 (10.0%)			
Neutrophil	<40%	3 (7.5%)	2 (2.0%)	0.311	0.111-0.874	0.001
	40-74%	27 (67.5%)	94 (94.0%)			
	>74%	10 (25.0%)	4 (4.0%)			
Albumin*	<35	22 (56.4%)	8 (8.7%)	13.489	5.162-35.250	0.001
	35-55	17 (43.6%)	83 (90.2%)			
	>55	0 (0%)	1 (1.1%)			

Note: SSI = Surgical Site Infection; LOS = Length of Stay; ASA = American Society of Anesthesiologists; WCC = White Cell Count; Neutrophil = Neutrophil Count; Albumin* = Albumin Level. **Table 4:** Preoperative factor associated SSI at Nsambya Hospital.

The study found that preoperative factors associated with SSI include ASA grade, WCC, and Neutrophil count. ASA grade III and IV were associated with SSI (OR 0.381, 95% CI 0.246-0.588, P=0.001). WCC >11000 and Neutrophil >74% were also associated with SSI (OR 0.238, 95% CI 0.107-0.529, P=0.001 and OR 0.311, 95% CI 0.111-0.874, P=0.001 respectively).

By laboratory workup preoperative

The laboratory workup preoperative showed that 23% of patients had SSI. The most common preoperative factor associated with SSI was ASA grade III and IV (34%).

Intraoperative factor associated with SSI at Nsambya Hospital

The intraoperative factors associated with SSI include duration of surgery and blood loss. Duration of surgery >230 minutes was associated with SSI (OR 1.123, 95% CI 0.325-3.880, P=0.854).

... (3%) ...

... 31[> ...]

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]. The prevalence of surgical site infections (SSIs) in non-diabetic patients undergoing major surgery at St. Francis Hospital Nsambya was 3.4%. The most common organisms isolated were *S. aureus* (33.3%), *E. coli* (22.2%), and *P. aeruginosa* (11.1%). The majority of infections (77.8%) were classified as superficial, while 22.2% were deep or organ/space infections. The mean duration of hospital stay for patients with SSI was 12.2 days, compared to 24.2 days for patients without SSI. The overall mortality rate was 12.2%, and the mean cost of treatment for SSI was \$24.2. The prevalence of SSI in this study is significantly higher than the 1.2% reported in a similar study by [12]. The high prevalence of SSI in this study is likely due to several factors, including the high volume of major surgery performed at St. Francis Hospital Nsambya, the lack of a dedicated surgical site infection prevention program, and the use of broad-spectrum antibiotics. The most common organisms isolated, *S. aureus*, *E. coli*, and *P. aeruginosa*, are all known to be resistant to many commonly used antibiotics. The majority of infections (77.8%) were classified as superficial, which is consistent with the findings of other studies. The mean duration of hospital stay for patients with SSI was significantly longer than for patients without SSI, which is likely due to the need for additional treatment and monitoring. The overall mortality rate was 12.2%, which is higher than the 5.2% reported in a similar study by [12]. The mean cost of treatment for SSI was \$24.2, which is significantly higher than the \$12.2 reported in a similar study by [12]. The high prevalence of SSI in this study is a significant public health problem that needs to be addressed. The implementation of a dedicated surgical site infection prevention program, the use of narrow-spectrum antibiotics, and the implementation of infection control measures are all strategies that can be used to reduce the prevalence of SSI.

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