

**IMPORTANCE OF SOUTHAMPTON WOUND GRADING SYSTEM IN SURGICAL SITE INFECTION**

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**ABSTRACT:** Post-operative wound infection is defined as surgical site infection from 0-30 days after surgery, or infection to surgical site till one year in cases of implants like mesh, vascular grafts and prosthesis. This study was done to find out incidence of post-operative wound infection in surgical patients in rural setup. This study of post-operative wound infection was carried out from August 2008 to August 2010. The study is of 3275 patients who underwent surgery in the A.V.B.R.H. Significant association was observed between the nature of surgery and Southampton Wound Grading System. It concluded that severity rate of post-operative wound infection was increased from grade I to grade V which was found to be similar in clean to contaminated nature of surgery and that was found to be statistically significant at P value less than 0.001.

**KEYWORDS:** Surgical site infection.

**INTRODUCTION:** Post-operative wound infection is defined as surgical site infection from 0-30 days after surgery, or infection to surgical site till one year in cases of implants like mesh, vascular grafts and prosthesis.<sup>1</sup>

**AIM & OBJECTIVES:** To find out incidence of post-operative wound infection (surgical site infection) in surgical patients in rural setup.

**MATERIAL AND METHODS:** The prospective study of post-operative wound infection was carried out in Acharya Vinoba Rural Hospital in the Department of Surgery from August 2008 to August 2010 after approval from the Ethical Committee. The study population consisted of 3275 patients who underwent surgery in the A.V.B.R.H. Wardha Maharashtra India.

All these patients were thoroughly examined on admission. All patients were investigated with hemogram, urinary examination, blood sugar, blood urea level, serum creatinine. Conventional x-rays and other special investigations were done, depending upon the case.

All these patients were prepared for operative procedures, either elective or emergency operations. All these patients were grouped in four categories depending on nature of surgery<sup>2</sup> i.e.

- clean wound
- clean contaminated wound
- contaminated wound
- dirty wound

Dirty wound and the patient operated outside A.V.B.R.H. were excluded.

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All these operated patients were followed up regularly, during the post-operative period. The patients who developed post-operative wound infections were studied in details, the clinical photographs were taken and the progress of wound healing was documented.

Severity of the post-operative wound infection were graded according to, Southampton wound-grading system. (Bailey IS et al).<sup>3</sup>

### SOUTHAMPTON WOUND - GRADING SYSTEM

(Bailey and love 25<sup>th</sup> edition)

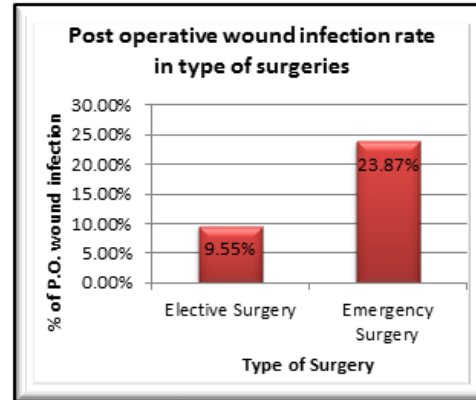
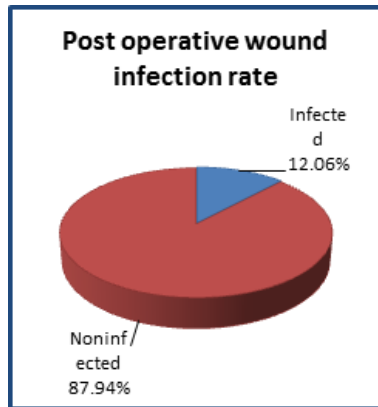
Grade	Appearance	
0	Normal healing	
I	Normal healing with mild bruising or erythema	
	Ia	Some bruising
	Ib	Considerable bruising
	Ic	Mild erythema
II	Erythema plus other signs of inflammation	
	IIa	At one point
	IIb	Around sutures
	IIc	Along wound
	IIId	Around wound
III	Clear or haemoserous discharge	
	IIIa	At one point only ( $\leq 2$ cm)
	IIIb	Along wound ( $>2$ cm)
	IIIc	Large volume
	IIIId	Prolonged ( $> 3$ days)
IV	Pus	
	Iva	At one point only ( $\leq 2$ cm)
	IVb	Along wound ( $>2$ cm)
V	Deep or severe wound infection with or without tissue breakdown; hematoma requiring aspiration	

**OBSERVATION AND RESULT:** In present study based on our inclusion criteria, total 3275 operated patients were eligible for analysis (2701 elective surgery and 574 emergency surgeries) who underwent surgery in A.V.B.R.H. Post-operative wound infection (SSIs) was found in 395 patients out of 3275 patients with an overall post-operative wound infection rate of 12.06%.

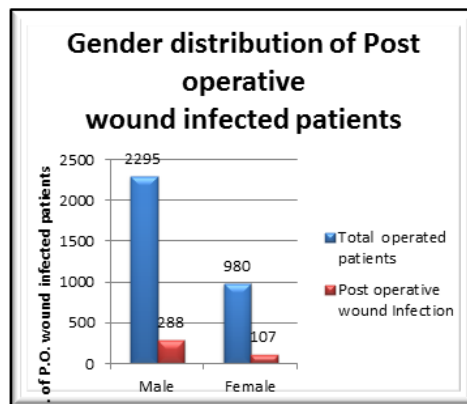
Post-operative wound infection was found in 258 patients out of 2701 elective surgery patients and in emergency surgery, 137 patients were found out of 574 patients.

The difference in post-operative wound infection rates between the two subgroups by type of surgery was statistically significant ( $P = 0.003$ , RR 0.58, with CI 0.441-0.768), being 9.55 %, for the Elective type, 23.87% for the Emergency. This difference was statistically significant with  $P 0.01$ , RR 1.18, with a CI of 1.13-1.24.<sup>3,4</sup>

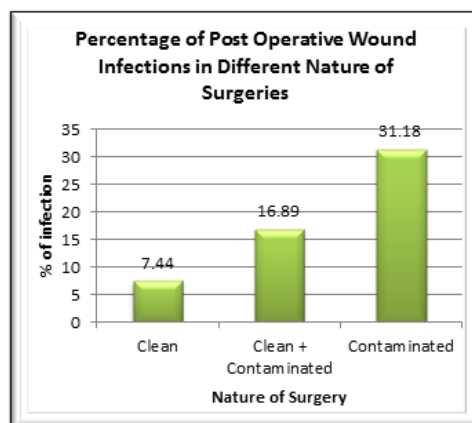
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Post-operative wound infection was more in male patients 288 out of 2295 (12.55%) as compared to female 107 out of 980 (10.92%). Male: female ratio was approximately 3:1 in Post-operative wound infected patients out of 395 patients. In males Post-operative wound infection was more as compare to females probably due to high exposure of environmental conditions and associated risk factors.<sup>5</sup>

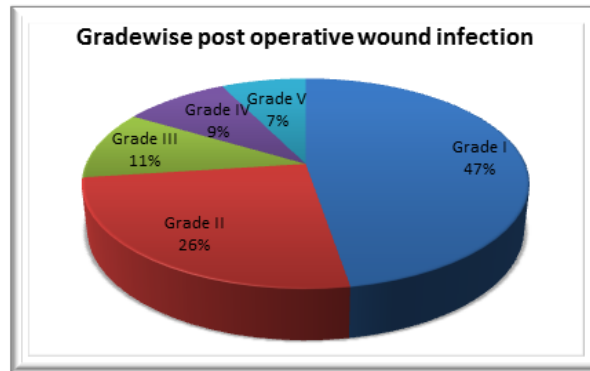


The difference in wound infection rates between the three subgroups by nature of surgery was statistically significant, being greater in Contaminated surgery cases with 31.18 % (87/279) followed by Clean + Contaminated surgery cases with the rate of 16.89% (152/900) and Clean surgery cases with the rate of 7.44% (156/2096) Post-operative wound infection.<sup>3</sup>

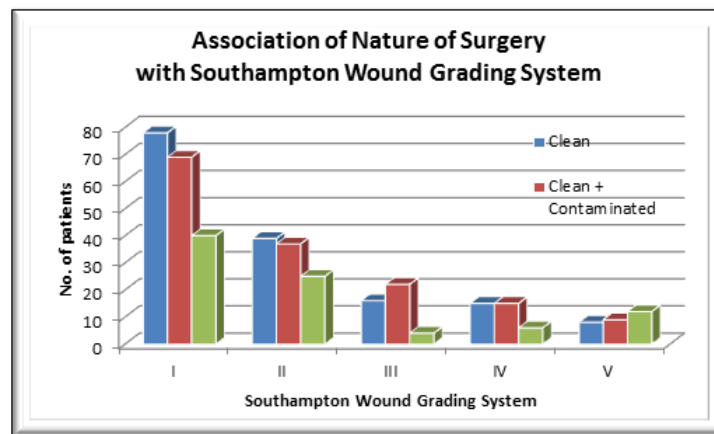


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It was observed that postoperative wound infected patients were maximum in grade 1 (47%) followed by grade II (25.57%), III (10.63%), IV (9.11%) and V (7.34%) according to Southampton Wound Grading System.



There was significant association were observed between the nature of surgery, study variable with the grade of Southampton Wound Grading System. It concluded that severity rate of Post-operative wound infection was increased from grade I to grade V which was found to be similar in clean to contaminated nature of surgery and that was found to be statistically significant at P value less than 0.001.<sup>3,4,5</sup>



Incidence of Post-operative wound infection (S.S.I.) was found 12.06% in our rural set up hospital which was more in emergency surgery patients and contaminated nature of surgery patients and it is quite comparable with many studies.

In present study it was observed that morbidity of Post-operative wound infected patients in terms of average hospital stay was more in grade V (21.72 days) as compare to grade IV (20.48), III (16.21), II (11.56) and I (11.36 days.) according to Southampton Wound Grading System.

It was also observed in present study that morbidity of Post-operative wound infected patients in terms of average hospital stay was more in contaminated nature of surgery (15.36 days) as compare to clean nature of surgery (12.37 days).

In our study due to severity of Post-operative wound infection (surgical site infection) according to Southampton Wound Grading System and nature of surgery, morbidity of patient increases in terms of longer Post-operative stay in hospital.

Complications were more common in grade V and grade IV as compare to grade I of Southampton wound grading system like fever, burst abdomen and death. Mortality was present in

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only one patient of SSIs, mostly due to associated condition like septicemia, renal failure, respiratory failure.

In this study it was observed that as severity of Post-operative wound infection (S.S.I.) increases, complications also increase which reflect increased morbidity and sometime mortality in Post-operative wound infection (S.S.I.)

**CONCLUSION:** Significant association was observed between the nature of surgery and Southampton Wound Grading System. It concluded that severity rate of Post-operative wound infection was increased from grade I to grade V which was found to be similar in clean to contaminated nature of surgery and that was found to be statistically significant at P value less than 0.001.

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