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A COMPARATIVE STUDY OF INCIDENCE OF WOUND INFECTION BETWEEN PATIENTS WITH AND WITHOUT SUBCUTANEOUS DRAIN IN PERITONITIS

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Abstract:
Background: Drains are made up of soft, flexible latex rubber or plastic strips and tubes, polyvinyl chloride or silicone multiholed firm catheters. They prevent the collection of serum or blood underneath large undermined areas because they itself may form the channel when it is tubular or it may form a channel in the tissues when it is a strip or ribbon.
Methods: The present study was carried out on 100 patients, admitted in surgical ward of SMS Hospital, Jaipur chosen at random irrespective of age, sex, undergoing contaminated and dirty elective or emergency surgical intervention.
Results: The overall infection rate was 23% in our study. Of the studied Group I (50), documented surgical site wound infection was found in the 7 (14%) and that of Group II (50), it was in 16 (32%) patients.
Conclusion: We conclude from our comparative study between Group I (i.e. subcutaneous drain used) and Group II (i.e. subcutaneous drain not used) that the wound infection is less in group I than group II (group 1-14% v/s 32% in group II). This signifies the rate of incidence of infection get doubled if subcutaneous is not used. Hence subcutaneous drain can prove as an effective device to prevent the wound infection in surgical patients of peritonitis.
Keywords: Suction drain, Wound dehiscence, Wound infection.

Introduction:

Infection is encountered by all surgeons, which invariably impair the first lines of host defenses- the cutaneous or mucosal barrier- between environmental microbes and the host's internal milieu. The entrance of microbes into host tissues is the initial requirement for infection. Preventing microbial penetration, reducing the microbial inoculums, and treating established infection have been important development in reducing the mortality associated with surgery.

The sepsis in wounds continues to haunt surgeons, of modern standards of preoperative preparation, antibiotic prophylaxis and refinements in anesthetic and surgical technique, post operative wound infections remain a serious problem. In additions to patient discomfort and morbidity associated with established wound infection, the cost and stay of patients is increased considerably.[1]

Drains are made up of soft, flexible latex rubber or plastic strips and tubes, polyvinyl chloride or silicone multiholed firm catheters. They prevent the collection of serum or blood underneath large undermined areas because they itself may form the channel when it is tubular or it may form a channel in the tissues when it is a strip or ribbon. Various studies have elucidated the beneficial effects of drains[2]. We were conducted a study to amplify the use of subcutaneous drains in preventing surgical wound infection in cases with peritonitis.

MATERIAL AND METHODS

The present study was carried out on 100 patients, admitted in surgical ward of SMS Hospital, Jaipur chosen at random irrespective of age, sex, undergoing contaminated and dirty elective or emergency surgical intervention.

Selection criteria: - Patients of any age and undergoing elective or emergency surgery classified as contaminated and dirty according to national research council were included. Patient undergoing out patient surgery and clean surgery in routine theatre are excluded.

Clinical history & investigation: - A complete history was obtained & thereafter necessary preoperative investigations carried out. Any risk factor for wound

infection, if present was detected pre operatively. Thereafter we planned for operation of patient.

Mechanical Preparation: - Preoperative saving of the area, on operation table area was painted with povidone Iodine followed by 70% alcohol & than draping done.

Application of subcutaneous drain: - After completion of procedure with thorough irrigation of peritoneal cavity & surgical wound site by Normal saline or mix with antiseptic solutions & proper haemostasis done. Than abdomen closed in layers or single layer (mass closure) a subcutaneous drain (either corrugated rubber drain or closed suction drain) put between anterior sheath & subcutaneous tissue. Insertion of subcutaneous drain either through main wound or separate stab wound & fixed to skin also.

Post operative surveillance: - All wounds are examined on 2 nd or 3rd postoperative days & seen for wound characteristics i.e. pain, erythema, tenderness, fluctuation and discharge.

Criteria of wound infection: - Wound infection was described as:

a. Incisional surgical wound infection - when it was located above the fascial layer.

b. Deep surgical wound infection - located below fascia.

Types of discharges through wound are:

- Serous - Clear transparent but orange tinged.
- Serosanguinous - Serous mixed with blood.
- Purulent - Yellow pus.

Diagnosis of wound infection: - Above mentioned any type of discharges or collection present on examination of wound means surgical wound was infected.

Removal of subcutaneous drain: - During examination of wound if collection was not present subcutaneous drain should be removed or if collection was present subcutaneous drain should not be removed till unless it was discharging fluid & treat accordingly.

OBSERVATIONS

The study was performed between Nov. 2001 and Jan. 2004 at the SMS hospital, Jaipur in wards of Upgraded Department of General Surgery. A total of 100 patients, who underwent peritonitis operations were included. Out of 100 Patients on whom we have used subcutaneous drain in 50 cases and rest of patients were operated without using subcutaneous drain.

Table 1: Total number of patient's

Patients	No.	Percents (%)
Group I	50	50%
Group II	50	50%
Totals	100	100%

Group I - Subcutaneous drain used Group II - Subcutaneous drain not used

Table 2: Age - sex distribution

S.N.	Age group	Male (%)	Female (%)	Total (%)
1	11-20	19	4	23
2	21-30	21	10	31
3	31-40	13	2	15
4	41-50	13	2	15
5	51-60	7	2	9
6	>60	6	1	7
	Total	79	21	100

[M: F Ratio-3.76:1]

Of the patients studied, males were 79(79%) and females were 21(21 %). Most of the patients were in the age group between 10-50 years.

Table 3: Primary disease - case & control distribution

Patient	Primary Disease	Females	Males	-	Total
				N	%
Group I	Peptic	2	18	20	20%
	Enteric	2	15	17	17%
	Appendicular	1	3	4	4%
	Tubercular	3	1	4	4%
	Traumatic	1	4	5	5%
	Peptic	2	18	20	20%
Group II	Enteric	5	12	17	17%
	Appendicular	2	2	4	4%
	Tubercular	2	2	4	4%
	Traumatic	1	4	5	5%
Total		21	79	100	100%

[N= Number of Patients]

In most of the operations male patients were found higher number in each category except Tubercular in which female patients were more.

Table 4: Status of wound

Patient	Collection absent	Collection present	Total
Group I	43(86%)	7(14%)	50
Group II	34(68%)	16(32%)	50
Total	77(77%)	23(23%)	100

The overall infection rate was 23% in our study.
Of the studied Group I (50), documented surgical site wound infection was found in the 7 (14%) and that of Group II (50), it was in 16 (32%) patients.

Table 5: Nature of discharge

Discharge	Group 1(50)		Group 11 (50)		Total (100)	
	N	%	N	%	N	%
Serous	2	4%	4	8%	6	6%
Sero-sanguinouS	2	4%	2	4%	---4	4%
Purulent	3	6%	10	20%	13	13%
Total	7	14%	16	32%	23	23%

In our study nature of discharge from surgical site in descending order (Purulent> Serous > Sero-Sanguinous).

DISCUSSION

Surgical wound infection continues to be a major cause of morbidity and mortality in surgical practice. Even though complete elimination of wound infection is not possible, a reduction of the wound infection rate to a minimum level could have marked benefits in terms of both patient comfort and resources used. Prevention of surgical site wound infection is far more practical than treating them once they have become established. Fortunately strict adherence to the principles of wound care and application of knowledge concerning the pathogenesis of wound infection can prevent the vast majority of infectious complication in surgical practice.

Long back, after the knowledge about prophylaxis of surgical wound infection, various measures came into practice but none of them could completely stop the surgical wound infection. These prophylactic measures are applicable at different time preoperative, intraoperative and I or postoperative period. Among all those measures, from last many years, subcutaneous drain also studied and used as intraoperative measure. In our study, the significance of subcutaneous drain in preventing surgical wound infection with contaminated and dirty operations has studied. We allocate the prophylactic measures randomly, which allowed a high degree of generalization concerning the results obtained.

The study was conducted in SMS hospital, Jaipur in wards of upgraded department of general surgery in between 2001 to 2004.

Out of these 100 cases 50% of the cases were grouped as I in which subcutaneous drain was used and group II included remaining 50% of cases in which subcutaneous drain was not used.

In our study males were 79% and females were 21%. Most of the patients were in the age group of 10-50 years. These finding were correlate with study of MC Dandapat and C Panda (1992) [3] in which males were 81% and females 19%. Most of the patients were in the mean age group of 30-40 years. So it implies the most of the patients are males because of more stressful and hard life in males compare to females and also incidence of peritonitis is more common in males. Most of the patients in age group 10-50 years which includes a wide spectra of patients with various causes of peritonitis that are peptic, enteric, appendicular, tubercular and traumatic.

Wound infection rate

In our study the overall surgical site wound infection rate was 23%. This higher rate of infection was because we taken only the cases of peritonitis in which wound get densely contaminated and comes in the category of contaminated and dirty wounds. Julia S Garner (1985)[4] mentioned the overall wound infection rate were 27.5% and > 27% respectively. In our series infection rate was less than these studies signifies importance of subcutaneous drain in prevention of infection in surgical site wound infection in cases of peritonitis.

J S Jeffery (957) [5]mentioned the incidence of overall wound infection rate were 26.1 in all types of cases (clean, clean contaminated, contaminated and dirty). In our series inspite of contaminated and dirty cases the infection rate was lower than these studies indicate the use of subcutaneous drain is very useful for preventing the surgical site wound infection in cases of peritonitis.

In our series we have divided our cases n two equal groups in which in group I the subcutaneous drain was used and group II was taken as control in which subcutaneous drain was not used. wound infection rate in group I was 14% and in group 11 the wound infection rate was 32%. Our finding were correlate with study of Lt. Col. HR Gupta and Col. K K Maudar (1996)[6] in which the wound infection rate was 20% with subcutaneous drainage and 30.8% in the control group.

The wound infection rate was much less in group I than patients in group II or we can say rate of incidence of infection gets doubled if subcutaneous drain is not used. Hence subcutaneous drain can prove as an effective device to prevent wound infection in surgical patients of peritonitis.

In our series the incidence of wound discharge were in group I (serous-4%, sero-sanguinous-4% and purulent-6%) and in group II (serous-8%. Sero-sanguinous-4% and purulent-20%). Serous and purulent discharge was more present in group II than group I and sero-sanguinous discharge was present equal number in both groups. This shows the subcutaneous drain is very good device for prevention of wound infection in cases of peritonitis.

Most of the studies show that the wound infection is more in elderly patients. Mary M Oslon et al (1990)[7] mentioned cases complicated with wound infection were most of in the age group of> 60 years. In our series the wound infection was also found in 42.85% cases of> 60 years of age group. This higher rate in elderly because of immune mechanism and resistance power of body decreased with age.

Mary M Oslon et al (1990) [7]mentioned infection rate were more in male patients. But in our study wound infection rate was 28.57% in female cases and 21.51% in male cases because females having more fat which hampers vascularity of adjoining tissue thereby increasing the rate of wound infection.

CONCLUSION

We conclude from our comparative study between Group I (i.e. subcutaneous drain used) and Group II (i.e. subcutaneous drain not used) that the wound infection is less in group I than group II (group 1-14% v/s 32% in group II). This signifies the rate of incidence of infection get doubled if subcutaneous is not used. Hence subcutaneous drain can prove as an effective device to prevent the wound infection in surgical patients of peritonitis.

REFERENCES

1. Vashist M, Singla A, Malik V, Verma M. Abdominal wall closure in the presence of sepsis: role of negative suction. Internet J Surg. 2013;29(1):5.
2. Fujii T, Tabe Y, Yajima R, Yamaguchi S, Tsutsumi S, Asao T, et al. Effects of subcutaneous drain for the prevention of incisional SSI in high-risk patients undergoing colorectal surgery. Int J Colorectal Dis. 2011;26(9):1151-5.
3. M C Dandapat & C. Panda: A perforated appendix: Should be drain. J. Indian Med. Assoc,1992;90:6, 147-148; 1992.
4. Julia Garner. Guideline for prevention of surgical wound infection 1985.
5. Mishriki SF, Law DJ, Jeffery PJ. Factors affecting the incidence of postoperative wound infection. J Hosp Infect. 1990 Oct; 16(3):223-30.
6. Lt Col HR Gupta & Col KK Maudar, Prevention of post operative wound infection in abdominal operations. Medical Journal Armed Forces India (1996):52(2): 71-74
7. Mary M. Olson, RN James T.Lee. Continuous, 10 year wound infection surveillance. Arch surgery 125 : 794 - 803; 1990.