

Original Article

Rate of wound infection in surgical ward, King Faisal Hospital, Makkah, during hajj period of 2011 (1432 Hijri)

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معدل التهاب جروح ما بعد العمليات الجراحية في عنابر الجراحة- بمستشفى الملك فيصل- مكة المكرمة في موسم حج 1432

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الملخص العربي

الاهداف: تهدت هذه الدراسة لتحديد معدل التهاب الجروح بعد العمليات الجراحية بمستشفى الملك فيصل بمكة المكرمة في موسم حج 1432 هجري (2011 ميلادي).

الطريقة: شملت الدراسة 131 مريض تم ادخالهم بقسم الجراحة بمستشفى الملك فيصل بمكة المكرمة في موسم حج 1432 هجري (2011 ميلادي) . منهم 102 اجريت لهم نوع من العمليات الجراحية. قد تم تصنيف جروحهم الي: نظيفة ونظيفة ملوثة وملوثة وتم مناظرة علامات التهاب جروحهم بواسطة مقيم الجراحة وممرضة من قسم مكافحة العدوي واشراف اشاري الجراحة حسب الجدول المعد مسبقا لهذه الدراسة. قد تم استبعاد 29 مريض منهم لكون جروحهم سيئة الالتهاب ومفتوحة من البداية او تم علاجهم تحفظيا.

النتائج: 102 مريض تم علاجهم جراحيا منهم 8 تم تسجيل علامات التهاب الجروح عندهم بمعدل عام 7.8 % وعندما تم تصنيف جراحاتهم تقليديا وجدنا معدل التهاب الجروح النظيفة 0.98 % (مريض واحد استئصال زائدة) ونظيفة ملوثة 4 مرضى بمعدل (3.94%) وملوثة 3 مرضى بمعدل (2.9%). جميع التهابات جروح العمليات سجلت لما بعد جراحة استئصال البطن الحاد. في هذه الدراسة لم يسجل اي التهاب 0 % لاي مريض مكث 3 ايام او اقل بالمستشفى وكل حالات الالتهابات سجلت لمرضى مكثوا ثلاثة ايام وما فوق.

الخالصة: اكدت هذه الدراسة ان معدل التهابات جروح العمليات ذا علاقة وثيقة بمدة بقاء المرضى بالمستشفى مما تدعم

وتشجع سياسات جراحة اليوم الواحد ووضع السياسات المستقبلية لترشيد التنويم ومكوث المرضى بعنابر الجراحة.

ABSTRACT

Objectives: The objective of this study to determine the rate of postoperative wound infection in surgical wards at King Faisal hospital (KFH), Makkah, during Hajj period of 1432Hij (2011).

Materials and Methods: From the total of 131 patients admitted to surgical wards at (KFH) during Hajj period of 1431Hij (2010), were studied for wound infection, 102 patients underwent surgical procedure (emergency or elective) and classified as clean, clean contaminated and contaminated. All post operative wounds were scrutinized for signs of infection included in this study by the team of surgical resident, trained infection control nurse and surgeon in charge. 29 patients were excluded either treated conservatively or badly infected open wounds at the time of presentation).

Results: Among the 102 operated patients, there were 8 post-operative wounds that became infected, yielding overall rate of 7.8%. When categorized operation by traditional wound classification, infection occurred in one patients (0.98%) of clean wound and 4 patients (3.94%) of clean contaminated and contaminated wound 3 patients (2.9%). One infection was seen after appendectomy and seven were reported in laparotomies for acute abdomen. In this study no wound infection was reported in any patient whom their stay in hospital less the 3 days revealed rate of wound infections (0%) while all 8 cases reported infected wound their stay more than 3 days and was over fifty years of age.

Conclusion: The incidence of infection was significantly related to period of hospital stay. However, the most obvious use of the present results is in long-term planning. This result may help decision-makers to enhance and support the policy of one day surgery and estimate the need for resources for these different patient groups in the future.

Keywords: *wound infection, Hajj, postoperative, rate.*

INTRODUCTION

Postoperative wound infection have been recognized to be the serious problem throughout the entire history of surgery. It causes significant postoperative morbidity and mortality in surgical wards. Despite of these evolution and elucidation of new techniques that led to better control of surgical infection, postoperative wound infection still remains the problem of major importance and source of illness and a less frequent cause of death in surgical patients¹.

There is considerable variation among infection reported from different studies varied from a 2.5% to 41%²⁻⁶. This discrepancy may be due to many factors such as patient and hospital characteristics, surgical subspecialty, type of surgery, prophylactic antibiotics and pre and postoperative hospital stay. Although the total elimination of wound infection is not possible, a reduction in the infection rate to a minimal level could have significant benefits in terms of both patient comfort and medical resources used⁷.

OBJECTIVE

The objective of this study to determine the rate of postoperative wound infection in King Faisal hospital Makkah, during Hajj period of 1431Hij (2010).

MATERIAL AND METHODS

This cross sectional., study was conducted during the Hajj season of 1432 H., from 1st, Nov.2011 to 15th, Nov.2011. at King Faisal hospital (KFH),Makkah, KSA. It is one of the four Hospitals in Makkah serving pilgrims. It serves as first line hospital and nearest referral center for ritual site during Hajj season. The patients included in this study were all the patients admitted to general surgical wards for surgery, (elective and emergency) during the Hajj period.

One surgical resident and one certified infection control nurse visited daily each postoperative surgical patient and collected all the pertinent data. Surgical wound was inspected at the 2nd. post operative day and daily thereafter till discharge. Wound infection was diagnosed if any one of the criteria were fulfilled for diagnosing infection listed in Table 1. The charts of all discharged patients were reviewed to assure that no relevant data missing. The classical method, that classify surgical wound into one of the four categories according to degree of contamination has been generally used (clean, clean contaminated, contaminated and dirty wounds)⁸. Postoperative wound infection included incision surgical wound infection and deep surgical wound infection. No attempt was made to follow up the patients after discharge unless the patient was readmitted. Contaminated dirty wounds and severely infected diabetic septic cases were excluded from this study.

RESULTS

A total of 131 patients admitted to surgical wards during the 15 days period from 1st. Nov. 2011 to 15th. Nov.2011, through Haj period of 1432 H. were included and studied for postoperative rate of wound infection. Characteristics of enrolled patients are summarized in Table 2.

Out of 131 patient, 102(77.9), patients underwent surgical procedure and classified as clean ,clean contaminated and contaminated were included in this study. 29(22.1%) patients of the total were excluded right from the start (not operated or treated conservatively). Out of 29 patients excluded patients, 18 (62.1%) open infected and dirty wounds either badly infected diabetic wounds infection or unclassified wound infection (ano-rectal conditions), and 11 (37.9%) were treated conservatively Table 4.

Among all operated patients, there were 8 post-operative wounds that became infected, yielding an overall rate of 7.8%. When categorized operation by traditional wound classification infection applied. One patient (0.98%) reported of clean wound and 4 patients (3.9%) of clean-contaminated wound and three patients of contaminated wound (2.94%). Different surgeries performed no infection was seen after thyroidectomies, Laparoscopic cholecystectomies, hernia repairs, breast and testicular and scrotal surgery Table 3. In this study, predominance of wound infection is consistent with the prolonged hospital stay. Out of the 8 cases reported wound infection, none of the patients who were operated within the first three days of admission to the ward had wound infection identified (0%). While all 8 patients reported wound infection (100%) from the group whom stayed more than 3 days Table 2. The incidence of surgical site infection increased with increase in the duration of hospital stay.

When the 102 operations were classified by degree of contamination,52 (50.98%) patients classified clean wound , among them only one patient reported wound infection (12.5%), clean contaminated patients were 36 (35.29%) reported 4 wound infection with rate of (50%) and contaminated wound 14 (13.72%) reported three infected wound with rate of (37.5%).Table 4.

Table 1: Elements of wound infection

No	Clinical findings	Description	Rating and Record				
			1	2	3	4	5
1	Pain / Tenderness	Increased the level of pain, since operation					
2	Erythema	Bright red/ dark red skin immediately adjacent to the wound					
3	Edema	Shiny taut skin or pitting					
4	Heat	Detectable increase in temperature near by or up to 10 cm distance					
5	Serous/ sanguineous exudates	Thin watery or bloody fluids that present on a dry gauze dressing after 1 hr from cleaning					
6	Purulent exudates	Tan ,creamy, yellow or green thick fluids					
7	Discoloration	Pale , dusky or any obvious change in color.					
8	Foul odor	A putrid or distinctively unpleasant smell					
9	Wound breakdown	Small open area in a newly formed epithelial tissue					

Table 2. Characteristics of total admission of (131 patients)

Sex			
Male	67 (51.1%)		
Female	64 (48.9%)		
Total	131 (100%)		
Age Groups			
Yrs Gps ,	Total No. of Pts.&%	Number &% of operated Pts.	No. of infected Wound (%)
< 15	4 (3.8%)	1 (0.98%)	None
16 - 25	16(12.2%)	8 (7.8%)	None
26 - 35	14(10.7%)	21 (20.6%)	None
36 - 45	20(15.3%)	14 (13.7%)	None
46 - 55	28(21.4%)	20 (19.6%)	1(12.5%)
56 - 65	32(24.4%)	26 (25.5%)	6 (75%)
65 - 75	12(9.2%)	10 (9.8%)	None
76 - 85	5(3.8%)	2 (1.96%)	1 (12.5%)
Total	131 (100%)	102 (100%)	8 (100%)
Operated on			
102 (55 Male & 47 Female)			
Not operated			
29 (12 Male & 17 Female)			
Hospital stay			
< 3 days	87 (47 Male & 40 Female)	67 (69%)	None (0%)
> 3 days	44 (20 Male & 24 Female)	35 (72.7%)	8 (100%)

Table 3. types of surgery performed

Operations	Number of patients &%	No of infection & %
Appendicectomy	27 (26.5)	1 (1.1%)
Laparotomy (acute Abdomen)	19 (18.6)	7 (6.7%)
Perforated duodenal ulcer	8 (7.8)	-----
Hernial repair	10 (9.8)	-----
Laparoscopic cholecystectomy	7 (6.9)	-----
Chest tube insertion/lacerations	5 (4.9)	-----
Breast surgery	3 (2.9)	-----
Testicular and scrotal surgery	2 (1.96)	-----

Total	102 (100%)	8 (7.8%)
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Table 4. Infection among total cases based on wound categories

Nature of admission	NO (%)	No of infected cases & (%)
Clean wound	52 (50.98%)	1 (12.5%)
Clean contaminated	36 (35.29%)	4 (50 %)
Contaminated	14 (13.72 %)	3 (37.5%)
Total	102(100)	8 (100%)
Dirty infected from the start	18 (71.8%)	Excluded
Non operated cases	11 (28.2%)	Exclude
Total	29 (100%)	

DISCUSSION

Rate of wound infection reports by many workers revealed considerable variation, ranging from 2.5 to 41.9 %⁹⁻¹¹. This discrepancy may be due to many factors such as patient and hospital characteristics, surgical subspecialty and type of operation.

In the Hajj season, where this study performed we always operate upon the emergency, highly susceptible and most of them of unknown past history. So the infection rate suspected to be higher than in the previous hospital records, Despite of that reasons, the infection rate obtained from this study rather low. In this study, we found that the postoperative wound infection rate in patients underwent surgery is 8 patients (7.84%) which is acceptable when compares with other reported rates.

This accounts for 8 patients out of 102 patients treated surgically during the above mentioned period which compares favorably with other reported rates. In this study none of the patients whom their stay in hospital less the 3 days revealed wound infections while all 8 patients reported infected wounds their stay more than 3 days. This can be achieved by taking proper measures to improve and support the day case surgery.¹²

It has been observed that wound infection rate is influenced by duration of operation^{13,14,15,16}. The findings of the present study are in agreement with the reported literature. With increase in duration of surgery, the rate of infection increased in direct proportion. Surgical site infection delays the recovery of the patient by about one week and in some cases significantly prolong the duration of hospital stay¹⁷.

This finding is clear evidence that prolonged hospital pre/post-operative stay with exposure to hospital environment and its ubiquitous diagnostic procedures, therapies and micro flora have been shown to increase the rate of surgical site infection^{17,18}. Study done at Fauji Foundation Hospital, Rawalpindi most cases of wound infection were noticed by the 6th, postoperative day^{19,20}. Prolonged hospital stay which is a major concern of most of the hospitals, has been evident in patients developing wound infection.

In our study correlation was seen between duration of hospital stay and the development of wound infection. Significant decrease in rate of surgical site infection was found in patients who had less than three days stay in hospital (0%) ,compared with 8 patients (7.8%) who had more than three days stay, which is match with other studies and findings.^{21,22}

CONCLUSIONS

The incidence of infection was significantly related to period of hospital stay. In conclusion, modeling of hospital costs and prediction of length of stay is possible on the basis of preoperative risk scores. However, the most obvious use of the present results is in long-term planning. Risk stratification may help decision-makers to estimate the need for resources for these different patient groups in the future.

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