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Original Article

Early Post Operative Complications following Abdominal Surgery. A Prospective Study in a Tertiary level Hospital

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Abstract

Introduction: *Postoperative complications are a significant source of morbidity and mortality. A major factor affecting hospital cost is complications following surgery.*

Methods: *This observational study was carried out to evaluate the incidence of early Postoperative complications following abdominal surgery, admitted in Rajshahi Medical College Hospital during the period of six months enrolling 96 patients of post abdominal surgery complications above the age of 12 years selected by purposive sampling.*

Results: *In this study a total number of 96 out of 3613 patients with a mean age of 39.44 years (±15.18) and a range of 12-72 years, admitted with postoperative complications were included. The incidence was 2.66%. The age group of most of the patients is 21-30 years (28.1%) among the study population. In this study 26 patients were primarily operated by specialist surgeon (27.08%), 66 by non specialist surgeon (68.75%) and 4 by non doctor (4.16%). Among the complications, following appendicectomy was highest observed 27.1% and next common complication following lower uterine caesarean section (12.5%) and then cholecystectomy (11.5%). Most of the patients referred from private clinics (83.3%) whereas from Govt. hospital only (16.7%). In most of the clinic post operative care conducted by person other than nurse and doctor (44.8%). Missed diagnosed case was 7.3%. Grade llla and Grade lllb (25.0% and 29.2% respectively) complications are more than Grade l and Grade ll (18.8% and 11.5% respectively). About 46.9% patients had a total hospital stay of about two weeks and 13.5% had more than two weeks.*

Conclusion: *When a patient undergone an operation he or she hopes for the most advanced care. Training of the surgeon, hospital volume and learning curve are becoming more important to maximize patient safety.*

Key words: *Postoperative complications, Abdominal surgery, Appendicectomy*

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Introduction

Postoperative complications are a significant source of morbidity and mortality. The rising cost of health care is given increasingly importance worldwide. A major factor affecting hospital cost is complications following surgery.[1] Admitted patients with postoperative complications in the tertiary level hospital are not uncommon in our country. Most of them admitted with early complications.[2] Arrangement of operation theatre complex in hospitals or clinics, proper sterilization and utilization of the surgical equipment, surgical expertise, surgical judgment and operative decision making, the nature and site of the disease for which surgery was performed are also important. The likelihood of developing post-operative complications depends on age, general condition of the patient, presence of other co-morbidity, type and duration of anesthesia, surgical site, and urgency of the procedure and so on. Experience of surgeon is dependent on training, repetitions (learning curve) and on case load of the surgeon and of the hospital. It is established that the incidence of postoperative complications is highest for emergency procedure, intermediate for urgent operations and lowest for elective or planned intervention.[3] The postoperative period can again be divided into three phases; (1) an immediate or post-anesthetic phase; (2) intermediate phase; and (3) a convalescent phase. The first two phases are encompassing the hospitalization period. The convalescent phase is a transition period from the time of hospital discharge to full recovery.[4] The early postoperative period can purposively be defined as the time from awakening after surgery until discharge from hospital.[5] So the early postoperative period encompasses the immediate and intermediate phases of postoperative period. But the highest incidence of post-operative complications is between 1 and 3 days after the operation.[6]

In our perspective various types of abdominal operation are being done in primary and secondary level hospitals and private clinics where there is lack of specialist or trained surgeon and trained anaesthetist. The early postoperative complications following abdominal surgery are potentially life threatening and needs proper management to recovery. To reduce these complications, it is important to establish the risk factors that increase their incidence using multivariate analysis. Due to limitation of resources, appropriate clinical assessment and monitoring in the primary and secondary health care centre to manage these complications they are often admitted into tertiary level hospitals. The aim of this study was to find out the incidence of admission and pattern of postoperative complications. It will give the massage to both the people and health department about the current surgical care status of primary and secondary health care facilities of private and government hospitals in our country.

Materials and Methods

This observational study was conducted over a period of six months on the patients with early postoperative complications following abdominal operation admitted in the surgery department of Rajshahi Medical College Hospital. In this study, we selected 3613 patients admitted during the period of April, 2013 to September, 2013 in the surgery department of RMCH. About 96 patients were admitted with early postoperative complications. Among the admitted patients with both medical and surgical complications developed in early postoperative period discharged or referred from any primary or secondary hospitals or clinics were included.

- Data collection by structured questionnaire containing all the variables of interest.
- Proper history taking.
- Clinical examinations and
- Relevant investigations were done.

A good clinical history and proper physical examination was performed on all the subjects admitted. Clinical history was focused on present complaints and about index operation. Special attention is to be given on preoperative assessment, presence of any co-morbidity, quality of surgeon, level of hospital or clinic, anaesthetic and postoperative care of index operation. Physical examination was started from vital signs and detailed abdominal and systemic examination were carried out and systematically recorded on a proforma. Routine and special investigations were done according to need. All the patients were categorized into 5 groups and classified according to severity. Patients with medical problem were managed with the consultation of relevant discipline. After proper counseling and taking consent, reoperation was done if required for purpose of diagnosis and treatment of all surgical problems. Immediate outcome of management was monitored and recorded. Finally all data obtained were entered into the database and analysis was made by statistical package for social science (SPSS) using appropriate statistical test or method. All the procedure of study was done after taking informed written consent from the patient/legal guardian. Keeping compliance with Helsinki Declaration for medical research involving human subject 1964, patients and legal guardians of the patient were informed verbally about the study, the underlying hypothesis and right for the participant to withdraw from the project at any time, for any reason, what so ever. Written consent was obtained from each subject.

Results

The total admitted patients with postoperative complications and other variables were analyzed. The mean age of the patients was observed 39.44 (± 15.2) with a range of 14-72 years. The incidence of postoperative complications were observed highest among female followed by male patients as 58.75% (n-56) and 41.25% (n-40) respectively (Figure 1).

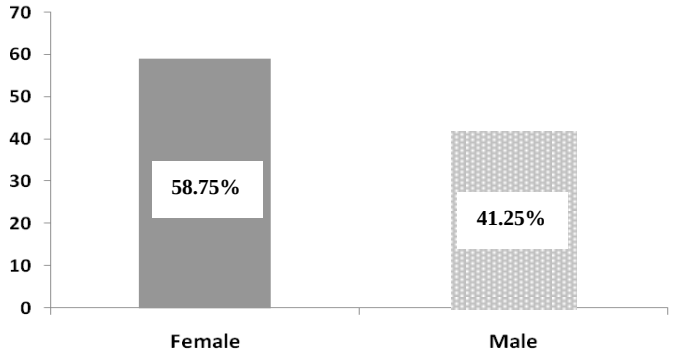

Figure 1: Incidence of the postoperative complications among different sexes

The age group of most of the patients developed complications were 21-30 years (28.1%) among the study population and the second highest were observed within 31-40 years (25.0%) as shown in Table I.

Table I: Age group distribution of the patients

Years	No. of patients	Percentage (%)
12-20	7	7.3
21-30	27	28.1
31-40	24	25
41-50	12	12.5
51-60	13	13.5
61-70	12	12.5
>70	1	1.0
Total	96	100

The admitted patients with complications grading from grade-l, grade II, Grade IIIa, Grade-lllb, grade-lVa, Grade-lVb and Grade-V were seen about 18.8%, 11.5%, 25.0%, 19.2 %, 6.2%, 2.1% and 7.3% respectively (Table II).

Table II: Classification of complications following operations

Grade	Number of cases	Percentage (%)
Grade l	18	18.8
Grade II	11	11.5
Grade IIIa	24	25
Grade IIIb	28	29.2
Grade IVa	6	6.2
Grade IVb	2	2.1
Grade V	**7**	7.3
Total	**96**	**100**

Among the complications following operation of different systems most likely was the wound infection (10.4%) of gastro-intestinal tract, but the pyoperitoneum was (9.4%). On the other hand, pelvic abscess and fecal fistula were 8.3% and 8.3% respectively.

Table III: Complications following operations performed in different hospitals

Types of complications	Number of patient	Percentage (%)
Wound infection	10	10.4
Pyoperitoneum	9	9.4
Pelvic abscess	8	8.3
Fecal fistula	8	8.3
Burst abdomen	7	7.3
Missed diagnosis	7	7.3
Sub-hepatic abscess	6	6.3
Paralytic ileus	6	6.3
Haemoperitoneum	5	5.2
Clot retention	4	4.2
Fecal peritonitis	4	4.2
Biliary peritonitis	3	3.1
Urinary fistula	2	2.1
Renal failure	2	2.1
Aspiration depression	2	2.1
Respiratory depressio	2	2.1
Foreign body	2	2.1
VVF	2	2.1
Peniculitis	1	1
Atelectasis	1	1
Ml	1	1
CCF	1	1
Hypotension	1	1
RVF	1	1
Cardiac arrest	1	1
Total	**96**	**100**

The complications were aroused after performed the different types of index abdominal hepatobilliary, renal and gynaecological operations. The highest complications (27.1%) were observed after appendicectomy followed hepatobilliary operations likely cholecystectomy (Table IV).

Table IV: Incidence of different types of index operations

System	Name of Operation	Number of Cases	Percentage %	Total
GIT	Appendicectomy	26.0	27.1	
	Resection & anastomosis of gut	5.0	5.2	37
	GIT Perforation repair	6.0	6.2	
HB & PS	Cholecystectomy	11.0	11.5	11
Renal	Protatectomy	6.0	6.2	10
	Removal of renal stone	4.0	4.1	
Gynae & Obs	VH	9.0	9.4	31
	TAH	8.0	8.3	
	LUCS	12.0	12.5	
	Tubectomy	2.0	2.1	
Others	Herniotomy & Herniorrhaphy or	5.0	5.2	7
	Plasty	2.0	2.1	
	Multiple operation			
	Total	**96**	**100**	

The postoperative complications developed from both emergency and elective surgical operations were observed about 60% and 40% respectively (Figure 2).

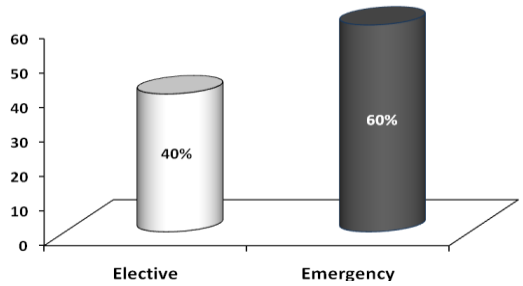

Figure 2: Bar diagram showing the index operations

The operations were performed in the different level of hospitals of the country. Most of the patients (80 cases) were undergone operations in the private clinic or hospitals where as a few cases were done in the government specialized hospitals where (Table V).

Table V: Institutions of index operation

	Level of hospital			
	Tertiary	**Secondary**	**Primary**	**Total**
Govt. Hospital	2	12	2	16
Private clinic or /Hospital	0	14	66	80
Total	**2**	**26**	**68**	**96**

The different types of surgeons were directly involved in the operations in different places of the country. Highly skilled, trained, postgraduate surgeons, medical graduate (MBBS) and medical assistants were played a role in the surgical treatment. The mostly the youngest, medical graduates surgeons were highest in numbers (69.79%) as compared to the specialized surgeons (Figure 3).

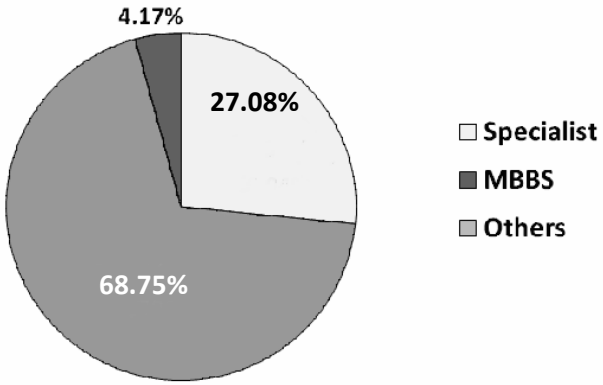

Figure 3: Pie diagram of level of surgeon

The different category of medical staffs were likely doctors, specialized nurses, and medical assistants and others were involved in postoperative complications following different operations (Table VI).

Table VI: Person who conduct the postoperative periods in managing patients

	Number of patients	Percentage (%)
Doctors	30	31.2
Nurses	23	24
Others	43	44.8
Total	**96**	**100**

In this study, the management of the complications, about 79.2% (n-76) patients could be managed in surgery department with the help of specialists likely blood transfusion, anesthesia and medicine. But about 19.8% (n-19) patients were transferred to other discipline likely ICU, nephrology, cardiology and respiratory medicine department and 1.0% (n-1) patient was referred to higher special centre for better management. About 40.6% (n-39) patients were managed conservatively, 59.4% (n-57) patients were needed reoperation, but about 19.8% (n-19) patients had developed further complications. Of the total number of patients, 83 (83.3%) recovered completely, while 9 patients disabled and 7 patients were died (Table VII).

Table VII: Consequences of patient management in RMCH

Consequences of Management	Number of patients	Percentage (%)
Complete recovery	80	83.3
Disabled	9	9.4
Died	7	7.3
Total	96	100

The overall mortality was observed about 7.3%. The patients were undertaken their postoperative management care in the hospitals ranging from within a day to 1 month or more (Table VIII).

Table VIII: Total staying of patients in hospital (RMCH)

Number of Days	Patients	Percentage (%)
1-7	31	32.3
8-15	45	46.9
16-30	13	13.5
>30	7	7.3
Total	**96**	**100**

Discussion

A significant proportion of patients had been admitted in Rajshahi Medical College Hospital with early postoperative complications in every year. They were referred either from surgeon or from private clinics or government hospitals of primary and secondary level. Among the admitted patients in surgery department about 2.66% were with postoperative complications following abdominal surgery. Female were predominant than male and most of the cases were of younger age (about 53.1%). A

total number of 96 out of 3613 patients with a mean age of 39.44 years (±15.18) and a range of 14-72 years admitted with complications. The mean age 39.44 indicates most of the patients are young.[7]

This study revealed that 66 patients were primarily operated by non-specialist surgeon (MBBS), 26 patients by specialist and 4 patients operated by non-doctor respectively. These second and third category surgeons avoid to perform operation of aged patients and patients having co-morbidity. In this study, patients with postoperative complications following appendicectomy was observed about 27.1%. The rate is high and second most common following lower uterine caesarean section (12.5%) then cholecystectomy (11.5%).[8]

Patients admitted into Rajshahi Medical College Hospital with early postoperative complications following abdominal surgery are mainly referred from private clinics (83.3%), where as from government hospital only 16.7%. In a study in Vienna, Coelho JC[8] reported that appendicectomy done in public hospital developed complications about 36%, on the other hand in private hospital developed complications about 22%.

Preoperative management is a very essential tool for the successful outcome of postoperative patients. Faulty care in either sides may produce unsatisfactory results irrespective of the standard of surgery. In this study it was shown that in most of the clinic postoperative care conducted by person other than Nurse and doctor (44.8%).[9]

In this study, we observed pyoperitoneum in 9.4% and haemoperitoneum in 5.2% cases but those were not properly evaluated preoperatively. Missed diagnosis was a problem for postoperative surgical complications. In our study, 7.3% patients were admitted with postoperative complications that were undergone abdominal surgery as missed diagnosed case.[10]

In classification of postoperative complications shown Grade-llla (25%) and Grade lllb (29.2%) respectively were more than Grade-l (18.8%) and Grade-ll (11.5%) respectively. But the mortality rate was 7.3%. In Switzerland, Dindo D et al.[1] studied with 6336 patients where they rescored complications were in Grade I 45%, Grade ll in 25%, Grade llla 4.8%, Grade lllb 24%, Grade IVa 9.7%, Grade IVb 4.2%. The mortality rate of Grade V was 7.3%. That study differ from present study in case of Grade-l and Grade-ll complications as because those types of complications were minor variety and can possible to manage in primary and secondary health care centre. Whereas the mortality of both study was same.[1]

About 46.9% patients had a total hospital stay of about two weeks and 13.5% patients had more than two weeks. This increased length of stay in hospital increases total hospital cost. Nadia AK et al.[11] shown that postoperative complications were associated with substantial increases in total hospital cost and length of stay (LOS), even after adjusting for type of surgery, urgency of surgery, and preoperative patient is comorbid conditions. It was reported increases in hospital costs and LOS with several postoperative complications in a study of 1,008 surgical patients.[12]

In our perspective, many of operations were done by non-specialist surgeons, even some were done by non-doctors personnel like nurse, medical assistant, village doctors, health assistant, and quack etc. These types of personnel are not recommended for doing surgery but they invariably doing so, even some kind of major surgery. As they do not know details about the postoperative complications and their managements, they referred patients to tertiary level hospital like Rajshahi Medical College Hospital.

Conclusion

When a patient undergone an operation, he or she hopes for the most superior care. Patients trust their lives in the hands health care workers, and their expectations should be taken seriously. Specifically, surgeons and other health care providers should ensure that all safeguards are taken before, during and after procedures to prevent any postoperative complications. Training of the junior surgeon, hospital volume and learning curves are becoming more important to maximize patient safety, evaluate surgeon expertise and calculate cost effectiveness. In addition, standar-dization of postoperative care is essential to minimize postoperative complications.

Contribution of the Authors

First author was the principal researcher. Others helped for data collection, computer composing, and statistical analysis.

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