ORIGINAL ARTICLE

Audit of post-operative complications in a general surgical setup

Sameeah Hanif, Muhammad Nawaz, Batool Zehra

Abstract

Introduction: The incidence of complications in post-operative period in general surgery patients ranges from 6 to 44%. Complications in post-operative period not only increase the expenses of patient but also causes prolong hospital stay. The surgeon should be upright regarding complications and should handle complications intelligently.

Objective: To find out post-operative complications during hospital stay in a general surgical unit at a District Headquarter (DHQ) hospital.

Material and Methods: This cross sectional study was carried out at the department of surgery DHQ Abbottabad from 1st January 2021 to 30th April 2021. 360-surgeries data were carried out during study period. Minor surgical procedures were excluded from study. Details of the patient who underwent elective and emergency surgeries were studied for post-operative complications. SPSS 17 used for analysis.

Results: Over this period 360 major surgeries were performed. Mean age of distribution was 30.34±17.11 years. 193(53.6%) patients were male, while 167(46.4%) were female. Most common procedure performed was appendicectomy 111(30.8%). Commonest complication observed was post-operative nausea and vomiting (ponv) in 30(8.3%) patients followed by respiratory tract infection 12(3.3%) and wound infection 10(2.8%). There was no mortality in this study time period in post-operative patients.

Conclusion: Complications can occur after any surgical procedure. They can be minimized by adequate preoperative assessment and treatment of co morbidities, adopting good and safe surgical technique, and meticulous post-operative care.

Keywords: General surgery, post-operative complications after general surgical procedure, audit, post-operative nausea and vomiting

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Introduction:

The incidence of complications in post-operative period in general surgery patients ranges from 6 to 44%. Complications in post operative period not only increase the expenses of patient but also causes prolong hospital stay.[1] Complications can occur after any surgical procedure and are some of them are inevitable. The surgeon should be upright regarding complications and should handle complications intelligently.[2] Post-operative complication can be interpreted as any adverse outcome recognized by either patient or surgeon. It can occur on operating table or in the early post-operative phase and delayed occurring later in recovery period.[3] While recording adverse outcome rate many factors play role in addition to number of complications happening to patients. It includes how one defines complication, how hard one seeks adverse outcomes, the time period in which one looks for adverse effects, and the criteria one uses when diagnosing complications. Identification of complications is enhanced by watching meticulously on regular basis for complications so that the system in hospital runs smoothly. Also time period for assessment of complications in important as

Table 1: Surgeries performed during four month period

operations	Number of patients n=360	percentage
Appendicectomy	111	30.8
cholecystectomy	89	24.7
Hernia repair	74	20.6
Anorectal surgery	35	9.7
Breast surgery	4	1.1
Exploratory laparotomy	2	0.55
Vesicolithotomy	1	0.3
hysterectomy	1	0.3
Renal surgery	4	1.1
Ovarian cystectomy	3	0.8
Parotid surgery	1	0.3
Pilonidal sinus surgery	3	0.8
Stoma reversal	5	1.4
Testicular and scrotal surgery	6	1.7
Varicose vein surgery	4	1.1
Thyroid surgery	1	0.3
Ureterolithotomy	1	0.3
Miscellaneous surgery	15	4.16

Table 2: Complications during study period (1-1-2021 till 30-4-2021)

Complications	Number of patients n=360	percentage
Post operative nausea vomiting (PONV)	30	8.3
Wound infection	10	2.8
fever	4	1.1
Respiratory tract infections	12	3.3
Spinal headache	3	0.8
Paralytic ileus	2	0.6
Covid 19	1	0.3
Pulmonary embolism	1	0.3
DVT	1	0.3
Urinary retention	1	0.3
ileostomy related excoriation	1	0.3
Pleural effusion	1	0.3

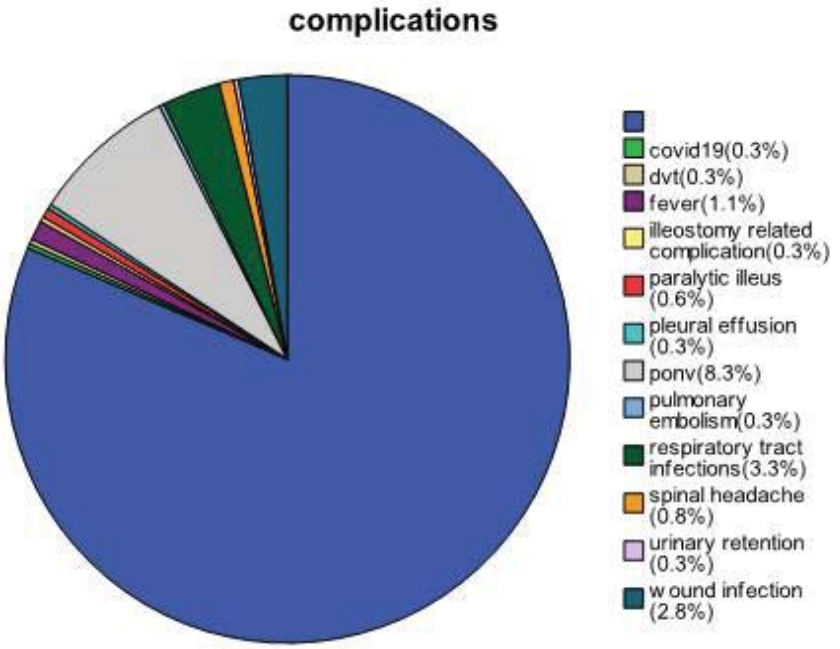
most of the complications occur after discharge. While diagnosing adverse outcome the parameter used is salient feature.[4] Increase in the number of complications is in direct proportion to rate of surgical procedures. Worldwide number of procedures performed per year is 234 million,[2] out of which seven million suffer from complications that can be avoided; hence it is a public health problem. If the number of complications increases mortality increases about 7.2 times. The most important restriction in reporting post operative complications is deficiency of a proper system to categorize complications. Studies that elaborated this problem were restricted to describing complications as "minor", "major", "severe" because of which results can be compared with difficulty in literature altogether and also to plan intervention.[5] The purpose of this study is to evaluate post-operative complications following major surgeries along with prevention and treatment of such adverse incidences.

Material and Methods:

This cross-sectional study was carried out in the department of surgery from 1st January 2021 to 30th April 2021 after approval from ethical board of hospital. Details of the patients who underwent elective and emergency surgeries were studied for post-operative complications. Admitted patients in whom surgery was not performed were excluded from study. Minor surgical procedures were also excluded from study. Demographic detail of patients like age and gender were recorded along with type of surgery performed with complications during post-operative procedure. Data was recorded in Microsoft excel later data was analyzed with SPSS 17. Mean and standard deviation calculated for age. Descriptive statistics of patients were assessed including frequency and percentages of various surgeries performed and post operative complications.

Results:

Over this period 360 major surgeries were performed. Mean age of distribution was 30.34±17.11 years. 193(53.6%) patients were male, while 167(46.4%) were female. Most common procedure performed was appendicectomy 111(30.8%), cholecystectomy was performed in 89(24.7%) patients, hernia repair 74(20.6%), ano-rectal surgeries 35(9.7%). Commonest complication observed was post operative nausea and vomiting (ponv) in 30(8.3%) patients followed by respiratory tract infection 12(3.3%) and wound infection 10(2.8%). One patient developed pulmonary embolism on the first operative day. One patient suffered from DVT. 1 patient developed COVID-19. There was no



mortality in study time period in post- operative patients.

Discussion:

Complications are common in general surgical post-operative patients and occur in 40% of patients. Numerous studies have discussed forecasters of complication development which incorporates measures of general health such as old age, ASA grading, weakness, functional status dependency. Irrespective of reason, complications in the post-operative period are linked to poor post-operative outcome. In case of complication the duration of stay in hospital increases, along with increase expenses and there is increase risk of re-admission.[6] Meticulous post-operative care is as vital as pre-operative care for successful outcome in surgery.[7] The main objective of post-operative care is avoidance of complications, timely and early identification, and treatment of complications in post-operative period. In our study the most common complication observed was post operative nausea and vomiting (ponv) and reason was opioid use and non compliance of patient in early mobilization. Post operative nausea and vomiting is amongst the most frequent complication that occur following surgical procedure and anesthesia.[8] As compared to other complications post operative nausea and vomiting is a mild condition and has slight medical importance, although it can be troublesome for patient. However in certain people it can lead to pulmonary aspiration, wound dehiscence, dehydration. Risk factors for post-operative nausea vomiting include obesity, smoking, conditions causing delayed gastric emptying. Post-operative pain and use of opioids can also cause post-operative nausea and vomiting. It mostly resolves within a day.[9] In our study 8.3% patients developed post-operative nausea and vomiting. Wound infection occurred in 2.8% patient. Mostly occurred in diabetes and contaminated surgeries in our case and were treated with antibiotics and wound care. Wound infection is common in post-operative phase and causes of wound infection include procedure related risk factors hematoma formation, use of drain, improper skin preparation, operating room contamination, and prolong hospital stay. Type of surgical procedure also affects wound hygiene. Wound infection occurs usually within 3 to 7 days in post-operative period.[10] Wound infection rate similar to ours was also found in another study.[11] Another study quoted a higher 33.68% rate of wound infection.[12] In this study fever occurred in 1.1% patients. Post-operative fever is a temperature higher than 38°C on 2-consecutive post-operative days or greater than 39°C on any post-operative day. Fever in the first three days is caused by atelectasis. If untreated can lead to pneumonia. Between 2nd and 5th day thrombophelibitis, urinary tract infection (UTI) can cause fever. After fifth day wound infection and anastomotic leak can cause fever. DVT and pulmonary embolism can cause fever between 7th to 10th post-operative day.[13] Another study showed a higher incidence of post-operative pyrexia up to 10.7%.[14] Respiratory tract infection were found in 3.3 % patients in our study. The incidence of post-operative respiratory infections after major surgery is less than 1 to 23%. Pre-disposing conditions include previous respiratory illness such as asthma, COPD, other co-morbidities, old age, muscle relaxant such as neostigmine, smoking.[15] Spinal headache occurred in 0.8% patients. Post-puncture spinal

headache is a well known adverse effect of spinal anesthesia. It occurs due to dural and arachnoid punctures. Overall incidence varies from 0.1 to 36% after intentional dural puncture. It usually last 5 to 7 days and is self limiting.[16] Paralytic ileus occurred in 0.3% patients. The cause mostly in our cases was hypokalemia and was corrected. Post-operative paralytic ileus is transient gastro-intestinal motility stoppage after surgery due to a non mechanical factor. It usually present with abdominal distention and tenderness. The use of nasogastric tube is not compulsory. Treatment includes mobilization of patients, stoppage of opioids and correction of electrolytes.[17] Pulmonary embolism and DVT occurred in 0.3% patients. In our case one patient developed venous thrombo-embolism due to stasis and decrease mobility as a result of prexisting orthopaedic problem. Both cases were successfully treated with anticoagulant medication. Venous thrombo-embolism in post-operative patients increases the morbidity and mortality, without prophylaxis the incidence of DVT is 10 to 40% in general surgery patients.[18] A study showed that the incidence of pulmonary embolism after abdominal surgery was 0.33-6.6% while thirty day major case fatality rate range between 16.9% and 31%.[19] One patient developed Covid-19 in post-operative period. Contracting Covid-19 infection in post-operative period is hazardous and has increase morbidity and mortality. In addition to pulmonary complications, length of stay in hospital and health care cost increases.[20] Such studies should be carried out for well being of the patient and these help in reducing hospital stay by paying attention to provocative factors. Audit studies are less frequent in developing countries and should be done in routine practice to improve hospital system and performance of hospital staff.

Conclusion:

Complications can occur after any surgical procedure. They can be minimized by adequate pre-operative assessment through detail history, clinical examination and investigations along treatment of co-morbidities, adopting good and safe surgical technique, and meticulous post-operative care. Early mobilization can decrease the incidence of many adverse outcomes like post-operative nausea and vomiting, DVT and pulmonary embolism. Patients should be well informed about all the possible complications from surgery as well as anesthesia.

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Role and contribution of authors:

Sameeah Hanif, wrote initial manuscript, references, and collected the data.

Muhammad Nawaz, critical review and final changes

Batool Zehra, helped in collected the references.

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