Re-Operation after Abdominal Procedures Lessons Learnt from Our Two Years Experience

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Objective: The objective of the study are to audit our experience of the management of cases presenting with operative complications requiring acute re operation and to identify the factors resulting in the first operation failure requiring re–exploration. **Study Design:** A prospective observational/analytical study. **Place and duration:** Acute re-operative abdominal surgery during two years period 2002-2003 in surgical Unit 1 Allied hospital, Faisalabad. **Patient and methods:** All the cases which were re-explored after abdominal surgery admitted in surgical unit 1, Allied hospital, Faisalabad are included in the study. **Results:** The cases fall in three categories, trauma cases (29) 33.71%, non trauma emergency cases (32) 37.25 and elective surgery cases (25) 29.1%. The incidence of our own unit cases subjected to re-operation is 21.9% (24). The presenting pathologies after first operation are in 6 groups; Gastrointestinal fistulas (38 cases) 41.8%, bowel obstruction (7 cases) 8.15%, abdominal abscesses (12 cases) 13.9%, bleeding (18 cases) 20.9%, miscellaneous (biliary and G.U.) (8 cases) 9.35, abdominal wound dehiscence and evisceration (3 cases) 3.6%. Total of 136 complications are in 70 cases. Mortality of 7 cases (8.14) is shared by the semi-trained surgeons, Medical officer operators(6 cases) and the trainee surgeons(1 case).Incidence of mortality in elective surgery cases is 4% in trauma cases 10.34%,non trauma emergency cases 9.4%. Intensive resuscitation including nutritional support, team of senior consultants doing the re-operation, intra-operative and post operative monitoring are the hallmarks of the management. **Conclusion:** Training and retraining (continuous medical education) of surgeons and regionalization of trauma cases are recommended. The facilities for less invasive procedures blessed with low morbidity and very low mortality will shrink this list of re-operations.
Key words: Operative complications, acute re-operation, operation failure.

In our hospitals where record keeping is neglected very little is known about the results of the re-operation done to deal with the complications of an operation performed either hours or days previously especially from the referred hospital.

The re-operations are mostly for bleeding, sepsis, breakdown of anastomosis or any other complication due to technical failure. Whereas these procedures save several lives, these also teach us tremendously. we have conducted a prospective study of such cases and managed them according to a set protocol so that we can draw certain guidelines for the future surgeons and this can help make us wiser too[1].

Management of such cases is a challenge and require acute clinical judgment, right decision and outstanding technical skill. That is why it is recommended that such cases should preferably be handled by masters in well equipped hospital.

Once a complication takes place we first need a thorough assessment of the situation. All required investigations are done, all concerned specialists should be asked for help and an unbiased evaluation is compulsory. Sometime a concomitant pathology which is either missed the first time or appeared later on is the cause of problem e.g.; post-operative cholecystitis, acute pancreatitis, bleeding from an already existing ulcer or torsion of ovarian cyst etc[2].

There are certain problems in this context which are special to our set up. At least two third of major surgery is being performed by half baked surgeons even in the large cities of our country. Teaching hospitals are getting a large load of such cases who need re-operation. It is important to conduct a prospective study of such cases and see what advice we could give to our development planners, professional colleagues and ourselves to reduce the requiring re-operations[3].

Such a study was initiated in surgical unit – I Allied Hospital, Faisalabad since the start of 2002. At the end of the study, audited our experience and present a review of the world literature on this issue.

Patients and methods

All patients , whether they are operated in surgical unit-I Allied Hospital Faisalabad or referred to us from the peripheral hospitals, who have re-operation for the early complications of the first operation or victims of omissions at the time of first operation (missed injuries or left over foreign body like sponges) are included in the study. Minor operative procedures like drainage of wound abscess or secondary closure of wound are excluded.

Once a case has been decided to have re-exploration he is registered for the study and his record is kept properly on the study proforma. The protocol of the study has already been planned. The relevant previous operation record is asked and the operating surgeon's qualifications are also noted.

The clinical assessment is noted and patient is satisfactorily prepared for the 2nd operation and this includes correction of fluids and electrolytes, improvement of nutritional status if time allows.

The decision of the re-operation is made by the ream of senior consultants. After resuscitation thorough

investigations (all is written on the protocol proforma) and lining up the problem list is done.

The objectives of pre-operative management are to achieve good pulmonary function, cardiovascular stability and have near normal functioning CNS, renal, metabolic and hepatic system. In cases of urgency we might have to compromise the protocol standards.

Anesthetist and physicians are to be consulted. Operations are to be performed by two senior consultants assisted by postgraduate residents or senior registrar in the main operation theatre preferably with maximum facilities available. The findings and operative details are recorded properly.

Post-operatively patients are to be kept in the intensive care unit or in the high nursing area with one junior doctor 8 hourly tied to him for administering the treatment and monitoring the parameters mentioned in the study protocol. One senior medical officer is responsible for the post-operative management under the guidance of senior consultants. All the protocol proforma are tabulated and results are shown in the form of tables.

Results

In the study period extending from 2003 to 2004 (two years). We have 86 cases who underwent major operations second time after the catastrophy of the first procedure. Only 18 cases are female. Male to female ratio is 3.8:1.

Ages ranged between 12 years to 75 years with mean age being 32 years (majority falls in the 3rd and 4th decade). 62 cases (72.1%) were referred to us from other hospitals of all descriptions, District Headquarters Hospitals, Tehsil Headquarters Hospitals, private hospitals in town, outside the town. The surgeons who operated them primarily have different qualifications. Twenty four (21.9%) of our own cases also required re-operations for almost the same indications.

A wide spectrum of problems resulted in the 2nd operation. It is mentioned in the table-I, various groups of these complications like gastro-fistulae, bleeding, bowel obstruction, abdominal abscesses, wound dehiscence and certain miscellaneous problems have been further detailed in the form of subgroups in the table-2 (etiology of G.I. fistulae) and table-3 (etiology of bleeding).

Seven cases presented with bowel obstruction, four were due to adhesions each one after elective hysterectomy, small bowel obstruction and right hemicolectomy for tumor. One was due to a knuckle of bowel in the rent of fascial dehiscence after repair of typhoid perforation, another one was secondary to volvulous again after typhoid perforation. One case was secondary to left over sponge after hysterectomy.

Eight cases were having miscellaneous indication of re-operation, two of them were having retained CBD stones after elective cholecystectomy referred from periphery. Out of the remaining six cases, one each was having biliary fistula after extensive liver trauma, after ligation of CBD, iatrogenic biliary tract injury and after biliary ascites due to slipping of ligature, bilateral ureteric ligation and left ureteric ligation after hysterectomy.

In twelve cases there were abdominal abscesses, seven of them were having pelvic abscesses, three were having the sub-phrenic abscesses while in the remaining two cases interloop abscess and the lesser sac pancreatic abscess was found.

Table-1: Pathologies of cases of re-operation

Pathology of cases		=n	%age
G.I. fistula (Peritonitis)		38	41.8
i. Gastro-duodenal. 04			
ii. Small Bowel. 25			
iii. Colonic rectal 09			
Bowel obstruction		7	8.15
Abdominal Abscesses		12	13.9
Bleeding		18	20.9
Miscellaneous:		8	9.3
i. Retained CBD Stone	2		
ii. Biliary fistula	1		
iii. Ligation of ureters	2		
iv. Ligation of CBD	1		
v. Biliary tract iatrogenic injuries	2		
Dehiscence and evisceration		3	3.5
i. Trauma cases	1		
ii. Elective surgery	1		
Emergency, nontraumatic	1		

Table-2: Etiology of GI fistulae

Etiology	=n
Anastomotic break down:	
A. Elective:	
i. Small bowel	2
ii. Large Bowel	3
B. Resection for injuries	
i. Small bowel:	
a. Early cases	3
b. With established peritonitis	5
C. Large Bowel (Primary anastomosis)	
Resection for obstruction	
i. Small Bowel	2
ii. Large Bowel (Primary anastomosis)	
D. Resection for perforation (Typhoid)	3
i. Small Bowel	5
	1
Leak of perforation closure (Typhoid)	
i. Small Bowel	5
Missed G.I. Injuries:	
Gastropancreatic	1
Post-ascending and descending colon	2
Rectal	1
Duodenal (3rd Part)	1
Rest of the small bowel	1
Failure of large Duodenal perforation closure	3

A very interesting feature was the lag period between first and second operation it is in the table-4. the category of the cases for the first operation is also a determinant of the disastrous outcome. We divided the cases of the first operation in 3 groups I. trauma (29 cases), 2 elective

surgery (25 cases) and 3 non-trauma emergency cases (32 cases).

As the spectrum of pathologies facing 2nd operation is very wide so is the variety of procedures required to treat them. Thirty five cases needed mopping out of intra-abdominal abscesses and sepsis while eighteen cases needed either ileostomy or colostomy, five cases needed gut resection and anastomisis, two cases needed duodenal perforation closure and gastrojejunostomy. In three cases we had to do partial gastrectomy + vagotomy and tube duodenostomy. Eight cases needed lysis of adhesions and mass closure of the abdominal wound. One patient was re-operated for removal of left-over sponge and lysis of adhesions. In two cases we had to do pyloroplasty and vagotomy and one case we went for revision of gastrojejunostomy.

Table-3: Etiology of bleeding requiring re-operation (n=18)

Etiology of bleeding	=n
Solid organ injuries (management failure or missed)	
i. Spleen/pancreas	1
ii. Distal pancreas	1
iii. Liver	2
iv. Rt. Kidney (lower ½ crushed)	1
Post-nephrectomy	
i. Elective	1
ii. For trauma	1
Post-prostatectomy (transvesical), all referred cases	5
Anastomotic Bleed	
i. Gastro of jejunosomy	1
ii. Duodenal ulcer (T)	1
Upper G.I. bleed (acute haemorrhagic gastritis) (S)	1
Lower G.I. Bleed	
i. Multiple perforation of colon closed (T)	1
ii. Typhoid ulcers (one perforation previously closed)	1
Cystic artery bleed (our own case)	1

T=case of trauma S=Septic

Table-4: Time between 1st operation and re-operation

	Upto 12 hr	24 hr	3 days	7 days	10 days	14 days
GI fistula	-	-	-	6	17	15
Bleeding	6	8	4	-	-	-
Obstruction	-	-	-	2	5	-
Abscess	-	-	-	-	4	8
Dehiscen. Eviscer	-	-	-	2	1	-
Billiary tract+ ureteric ligation	-	-	-	1	5	2

The procedures performed for biliary tract complications, solid viscera injuries and G.U. tract complications are exploration of CBD for retained stones, exploration of ureters and neocystoureterostomy, splenectomy and distal pancreatectomy, hemostasis of renal hilar vessels and lumber vessels and segmental Debridement of liver in two of each of these cases. While for each one of the remaining cases we had to do repair of CBD, ligation of cystic duct, T-tube insertion for hepatic biliary fistula, hepaticojejunostomy, right partial nephrectomy and hemostasis of cystic artery and gall bladder bed bleed. In five cases we had to do packing of the prostatic cavity. Complications following 2nd operation are listed in table-5.

Table 5: Complication following re-operation

Complications	n=	%age
Wound infection	64	74.42
Upper respiratory infection	23	26.74
Pulmonary atelectasis	18	20.93
Dysphagia due to oesophagitis	7	8.14
Deep vein thrombosis (established)	4	4.65
Decubitus ulcers.	5	5.81
Residual abdominal abscesses	4	4.65
Jaundice (transitory)	4	4.65
Shock	10	11.62
Mortality	7	8.14

Table-6: Incidence of mortality in different subgroups

Incidence	n=	Mortality	%age
Referred cases	62	6	9.67
Our cases (Surgical Unit-I)	24	1	4.16
Elective surgery group	25	1	4.0
Trauma cases.	29	3	10.34
Non trauma emergency cases.	32	3	9.4

We lost 7 patients after the 2nd operation. The different subgroups sharing these cases are listed in the table-6.It reveals certain very genuine determinant responsible for losing these lives.

Discussion

This study of 86 cases of acute re-operation is unique of its type. Several series addressing different post-operative complications requiring re-operations are available in the medical literature. we believe there is no need to compare our experience with others because of large number of variables.

In our study we find several results with significant meaningful conclusions. These 86 cases seem to be a good number but in fact the number of categories is so much that it required a long list of procedures performed and it became difficult to point out prognostic determinants of individual procedure.

Still we can discuss the general management scheme and justify it with reference to our resources and circumstances and retrospect can also highlight the factors that resulted in the situation requiring acute re-operation. When we started talking about the study of re-operation we faced the problems of case exclusion and inclusion criteria. We wondered whether cases if incisional hernias, late post-operative adhesions causing bowel obstruction or many second operation of such kind should be included or not. Dr. Donald E. Fry 1 helped us with his classification into "Acute or Remote Re-operation" and we selected the group of acute re-operation for our study.

In our circumstances where very major surgery is being performed by inadequately or not at all trained surgeons in the poorly equipped hospitals with almost no post operative care facilities it is not surprising to have a large number of referrals to the teaching hospitals 3. 72% (62 cases) of the cases were referred to one out of three surgical units of Allied Hospital in two years time. The local (24 cases) also shared the list. Our 24 cases requiring re-operation are out of 1450 major abdominal cases done in two years in our unit. This is incidence of 1.65%. a very large portion is contributed by the emergency cases of trauma and peritonitis managed by resident postgraduate trainees, situation akin to peripheral hospitals.

Even in Allied Hospital, very difficult and demanding cases are operated by trainee residents almost independently in the emergency. The MCPS and Medical Officers surgeons cases had maximum mortality, 9.67% (6 out of 7 deaths).

Cases sent to us reached us one to 10 days post-operative in very poor clinical condition. Our cases (24 cases) had this benefit of early detection of problem and prompt, aggressive management. This is a major determinant of our 4.16% mortality. After the 1st operation failure, the complications the patients presented with, fall in 6 major groups. Septic complications falling in two major groups (G.I. fistulas, peritonitis, abdominal abscess) are maximum (38 and 12 cases2,4,5). It is because most of the abdominal trauma cases reach the hospital late with already established peritonitis. The semi trained surgeons in the periphery are not well versed with the proper technique of management of abdominal trauma and bowel surgery. Non trauma emergency cases (32 cases) also are mostly septic and required expert handling[9,10].

Mortality of elective surgery groups is nil in our cases while overall mortality of this group is 4%. Third indication of re-operation was haemorrhage 6 (18 cases) 4th group (7 cases) had bowel obstruction due to various reasons. 5th group (8 cases) had biliary tract surgery done or gynaecological procedure.

Last small group (3 cases) had wound dehiscence and evisceration and they were all our own cases. Hypoproteinemia due to liver disease and prolonged starvation was the cause of poor healing and prolonged ileus. Mass closure of the abdominal wound was done. All the cases were prepared properly and lot of credit 'not bad' results goes to this part of management[7, 8].

The group of cases which needed re-operation for unstable hemodynamics is the most interesting. Were they not managed at the time of first operation properly or they rebled. In any case early detection and prompt surgical intervention would have saved the catastrophy 11. It shares 20.9% of all that cases and 11.1% mortality. All the cases were re-operated within 3 days after the first operation. Looking retrospectively almost all of them could have been managed properly by the first exploration they went through and would have saved two lives 6. Adequate and expert assistant, easily and timely available 2nd opinion by senior surgeons, blood transfusion facilities, intra-operative and post-operative monitoring of these cases are the essentials of management[12].

The 2nd operation for the gastro-intestinal fistula deserved discussion. The new trends in the management of such problems require control of sepsis, nutritional support and 4-6 weeks observation expecting most of them to heal spontaneously and this is more so for colonic fistulae[13,14,15]. Going over the list of procedures we did it is clear that most of these patient were operated early, within two weeks.

The anastomotic leaks and multiple bowel perforation of small bowel were treated by ileostomies, parenteral and enteral nutritional support, a relatively easy approach we recommend to adopt 22. Large bowel injuries, including missed injuries, anastomic leaks were treated by proximal colostomies and drainage of paracolonic sepsis. This very large group of 8 cases had only one mortality (2.6%)[16,17,18,21].

Pakistani studies also favour the early surgical interventions to form stomas. Resection and anastomosis usually fail 19, 20. Reclosure of the bowel perforation does not work and results in very high mortality in cases of typhoid perforations. A good number of cases (11 cases) in this group is contributed by the typhoid perforations. Rashid et al reported 7% mortality in this group[23].

Primary closure of colon perforations or primary anastomosis of colon after resection is in vogue to avoid another procedure but it needs to be properly done with all the precautions observed 19, 24. In this series 3 such attempts failed resulting in peritonitis abdominal abscess and fistula. This is a warning for the rushing half baked operators.

The 12 cases presenting with abdominal abscesses were easy and very gratifying. Recent trend is to adopt less invasive procedures including ultrasonic guided aspirations but it becomes difficult when the abscess are deep seated and walled off with loops of bowel[28,29]. Subphrenic abscesses and abdominal abscess with a portion setting against abdominal wall can be easily managed by aspiration but is case of subphrenic abscess the fear of empyema make surgical approach more desirable[25,26,27].

In the miscellaneous group retained stone in the CBD, stricture, biliary fistulas and bile duct injuries were re-explored. Strictures and CBD stones could have been better treated with endoscopic sphincterotomy[30,31,32]. But no such facilities are available in Faisalabad and patients are non affording.

The ureteric ligation was the indication for re-operation in only two cases. This is surprising because with the large number of hysterectomies being done by untrained persons in the peripheral hospitals. The incidence of this complication is expected to be very high. We believe this is not being diagnosed or reported[33].

Post-prostatectomy bleed in 5 referred cases required

re-operation and after bladder neck suturing packing was done. This is a very common operation done in the periphery and it is not uncommon to see this complication being referred to us especially by the medical officer operators and when they trying their luck to remove malignancy. This procedure of transvesical prostatectomy must be now abandoned and replaced by TURP.

Conclusions

8.14% mortality in our cases of re-operative abdominal surgery is low considering the high risk cases we are dealing. It is due to resuscitative measures, multispeciality approach and facilities for monitoring these cases. Our rigid following of the study protocol helped.

1. We need to plan the raising of health care in the periphery with reference to: a). Provision of trained surgeons (FCPS only) b). Health care facilities for less invasive procedures should be made available. If government can not afford private sector should be encouraged and later on controlled costwise. No beaurocratic obstacle should come in their way. c). Reginalization of trauma centers which are well equipped with logistic facilities and intensive care units and transfusion center attached.
2. Periodic refresher courses, clinical seminars and meetings should be made compulsory for the surgeons and health care personnel working the periphery.
3. Casual attitude of the surgeon performing the 1st operation will definitely result in disaster. To know one's limitation is a blessing, to stay within means is a virtue and to go all out to please one's ego are the words written on the coffin of the patient.

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