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Original Article

Retrospective analysis of abdominal surgeries at Nepalgunj Medical College (NGMC), Nepalgunj, Nepal: 2 year's experience

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Abstract
Background: Abdominal surgeries are the commonest major operations that are performed in the department of surgery. **Aim:** To find out the different causes of emergency and elective abdominal surgeries at Nepalgunj Medical College Teaching Hospital (NGMCTH) Nepalgunj, Nepal. **Material and method:** This is a retrospective study conducted in the department of surgery at NGMCTH Nepalgunj, Nepal, over a period of 2 years (2001-2003). The patients included in this study were drawn from Banke, Bardiya, Kailali, Kanchanpur, Surkhet, Dang, Dailake, and Tikapur. They belong to both sexes and different age groups. All the records of these patients under went laparotomy for elective as well as emergency conditions were included in this study. The data were analyzed; tabulated and following results were obtained. **Results:** The commonest cause of emergency laparotomies were peritonitis (peptic ulcer, enteric and appendicular perforations) whereas, the commonest cause of elective laparotomies were chronic cholecystitis with cholelithiasis followed by chronic appendicitis and pyloric obstruction. **Conclusion:** Over all, cholecystectomy for cholecystitis with cholelithiasis was the commonest operation, which was done in last two years. This disease may be because of excessive use of saturated animal fat and vegetable oil. Peritonitis was the 2nd commonest cause of abdominal surgery. Among the causes of peritonitis, peptic ulcer perforations were the frequent followed by enteric and appendicular perforations. Appendicitis was the 3rd commonest cause of abdominal surgery. Nepal, being a Hindu country, people consume excessive amount of meat, and possibly due to this, the disease of the appendix was very high as compared to other Asian countries where people live on bulk cellulose diet.

Key words: Abdominal surgery, Emergency laparotomy, Elective laparotomy, Peritonitis, Intestinal obstruction, Appendicitis.

NGMC is situated in district Banke, of mid western Nepal at Chisapani, which has teaching hospital at Kohalpur and Nepalgunj that receives cases from Banke, Bardiya, Kailali, Kanchanpur, Surkhet, Dang, Dailekh, and Tikapur. These patients are admitted to these hospitals either as emergency or elective cases. Emergency cases include traumatic (accidental) or non-traumatic patients. Whereas, elective cases include benign and malignant diseases of various systems. Abdominal diseases constitute major chunk of these cases and laparotomies are one of the commonest operations that are performed in the department of surgery NGMC, Nepalgunj, Nepal.

The philosophy and tenets of safe abdominal surgery waited the waning years of the 19thcentury to be set forth. The introduction of safe anaesthesia 30-40 years earlier had finally made intra abdominal surgery possible, but until William Stewart Halsted at John Hopkins Hospital elucidated his principles of asepsis, gentleness and haemostasis, surgery remained a tour de force relying on speed and technical virtuosity. Halsted demonstrated, that the long operation does not danger to the patients. Instead, speed and its attendant disregard for the safety of tissue cause significantly more trauma[1].

Surgically treatable diseases are not as important as the great killer of small children in the developing world e.g. malnutrition, pneumonia and diarrhoea. However, survey from rural areas of Bangladesh, India and urban South America indicates that 10% of all deaths and almost 20% of deaths in young adults are result of conditions that would be amenable to surgery in Industrial world. 10-15% of the admission will probably be surgical. Many diseases are common in Industrial world such as appendicitis, diverticulitis, carcinoma colon, haemorrhoids and varicose veins but they are uncommon in developing World.

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The common diseases of developing World are tuberculosis of Chest, Lymph nodes, Abdomen and Bones. But because of fast industrialization and charging habits from roughage to refined food people are developing more appendicitis and haemorrhoid in developing Worlds[2].
Laparotomy is performed for acute and chronic abdominal diseases. Emergency laparotomy is major test for surgical skill of the surgeon for acute abdomen[2].

Generalized Peritonitis is a lethal condition and has a high mortality and morbidity[3]. Peptic ulcer, appendicular, ileal and traumatic perforation constitute the most frequent causes of peritonitis [4]. The diagnosis is not easy every time in spite of various diagnostic measures available [5]. The exact incidence of peritonitis is not known but it is still a major problem in developing countries.

Appendicitis is the most common cause of acute surgical abdomen in United Kingdom. Piper and Kager, in his study from Sweden, estimated a yearly incidence of 1.33 cases of appendicitis per thousand of male population and 0.99 per thousand of the female population. The age of patient ranges from 1 – 89 years with median of 22 years. 27% patients were under 14 years of age and 75% younger than 33 years. Geographically appendicitis is more common in west and it is rare in most of Asia, Central Africa and among the Eskimos. It is undoubtedly much more common among meat eating white races and relatively rare in those races that habitually live on a bulk cellulose diet [6].
Intestinal obstruction is another common abdominal emergency and in some communities it is the most common one. The causes are divided into common, uncommon and rare ones. The common causes are: Incarcerated/irreducible external hernias (inguinal/femoral), volvulus of sigmoid colon, ascariasis, intussusceptions, band and adhesions due to previous peritonitis (perforation, PID) or surgery and abdominal tuberculosis. Uncommon causes are: volvulus of small gut, carcinoma colon, and carcinomatosis of the peritoneum, amoebic granuloma or stenosis. Rare causes are: primary tumor of small gut, congenital bands, crohn's disease, mesenteric vascular occlusion, gallstone ileus, diverticulits and lymphogranuloma. Some patients with simple obstruction resolve spontaneously, for example, Ascarasis and tuberculosis (often) or non-specific adhesion (less often). When these cases are operated, surgeon has to do only division of adhesion or massage of ball of ascaris form a child's ileum on into his colon. But if, the gut is found gangrenous one has to excise and to do anastomosis. One can do anastomosis safely with small gut but not with large gut. The causes of obstruction in developing World are ascariasis, volvulus of sigmoid colon or small intestine, intussusceptions where as in developed World the causes are, adhesion and carcinoma of Colon[2].
Aim: To find out different causes of emergency as well as elective abdominal surgeries.

Material and method
This is a retrospective study conducted in the department of surgery at teaching hospital Nepalgunj, NGMC, Nepal, over a period of 2 years (2001-2003). The patients included in this study were drawn from Banke, Bardiya, Kailali, Kanchanpur, Surkhet, Dang, Dailake, and Tikapur. They belong to both sexes and different age groups. All the records of these patients under went laparotomy for elective as well as emergency causes were included in this study. The data were analyzed; tabulated and following results were obtained.

Result
One hundred and seventy seven (177) cases of laparotomies are included in this study. Out of 177 cases, 100 cases are of elective laparotomies and rest 77 cases are of emergency laparotomies (Table-I)

Table 1. Distribution of laparotomies (Elective and Emergency)

	No of cases	**%**
Elective	100	56.49
Emergency	77	43.50
Total	**177**	**100%**

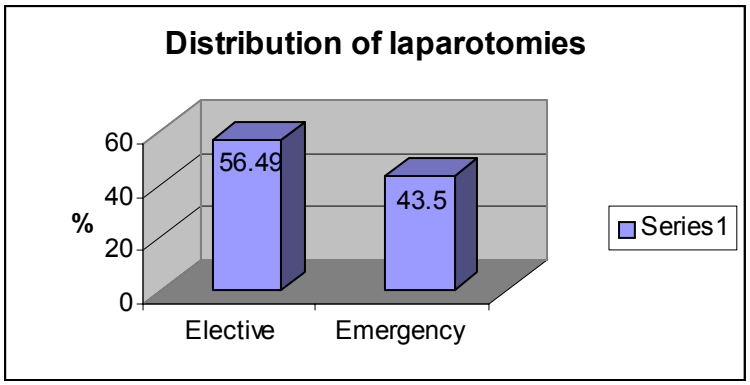

Table 2. Distribution of elective laparotomies

n =100

Disease	Operation	No of cases	%
Chronic cholecystitis	Cholecystectomy (Open and laparoscopic)	59	59
Recurrent appendicitis	Appendicectomy	26	26
Pyloric obstruction	TV + GJ*	04	4
Epigastric hernia	Hernia repair	02	2
Carcinoma head of pancreas	Whipple's operation	01	1
Carcinoma CBD**	Excision and HJ***	01	1
CBD stone	Removal of stone	01	1
Hydatid cyst of liver	Removal of cyst	02	2
Mesenteric tumor	Excision	01	1
Ventral hernia	Mesh repair	02	2
RVF with colostomy	Repair of fistula with colostomy closure	01	1
Total		**100**	**100%**

*TV + GJ = Truncal Vagotomy and Gastro Jejunostomy, **CBD = Common Bile Duct,
***HJ = Hepatico Jejunostomy

Table 2. Shows distribution of cases of elective laparotomies. The most common cause is gall bladder diseases (59%) (chronic cholecystitis with cholelithiasis) followed by diseases of appendix (26%) (chronic appendicitis) and pyloric obstruction (4%).

Table 3. Distribution of emergency laparotomies

n = 76

Disease	Operation	No of cases	%
Acute appendicitis with perforation	Appendicectomy	18	26
Intestinal perforation - Non traumatic - Traumatic	 Repair and RA* Repair	 13 04	 16.8 5.19
Intestinal obstruction	Release of adhesion and RA	15	19.4
Peptic ulcer perforation	Graham's Omental patch	17	22.07
Blunt abdominal injury - Splenic - Pancreas - Bladder	 Splenectomy Conservative Repair	 01 01 01	 1.29 1.29 1.29
Tuberculous peritonitis	Exploratory laparotomy	02	2.59
Duodenal ulcer bleeding	Ligation	02	2.59
Septic Abortion	Exploratory laparotomy	02	2.59
Post delivery intra - abdominal haemorrhage	Exploratory laparotomy	01	1.29
Total		**77**	**100%**

***RA= Resection and anastomosis**

Table 3 shows the distribution of emergency laparotomies. The most frequent cause was acute appendicitis (23.3%) and its complication followed by peptic ulcer perforation (22.07%), intestinal perforation (small and large bowel) (22.7%) and intestinal obstruction (19.4%).

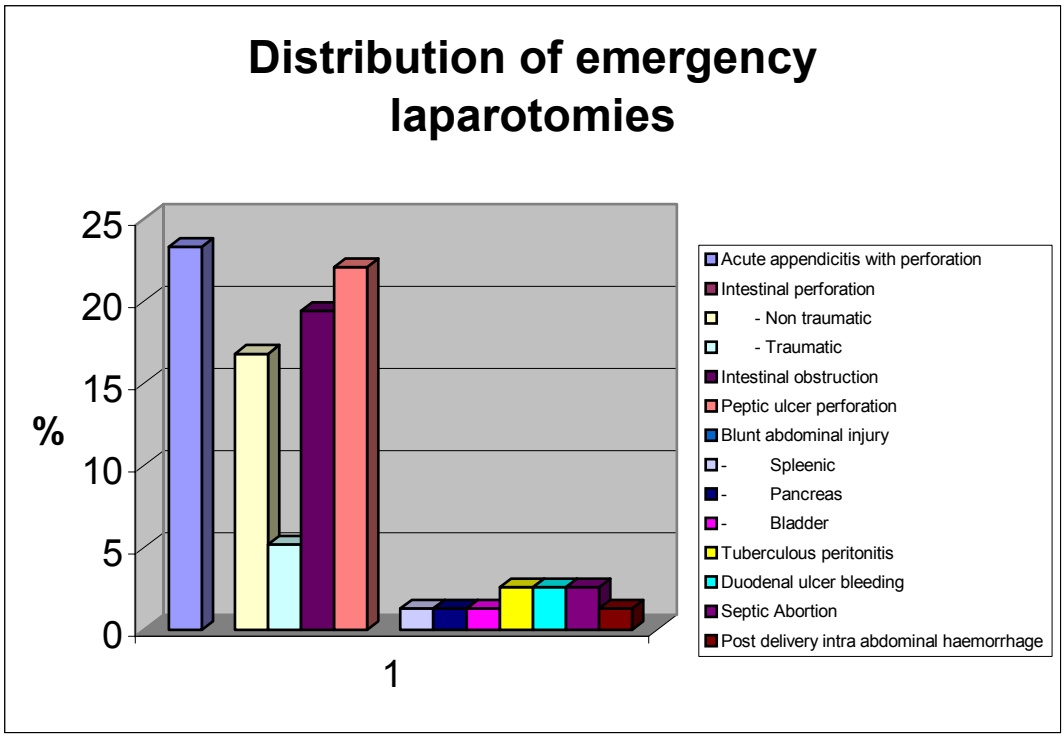

Table 4. Distribution of cases of generalized peritonitis
n = 54

Disease	No of cases	%
Peptic ulcer perforation		
Duodenal ulcer	16	29.62
Gastric ulcer	05	9.25
Small bowel perforation		
Traumatic	04	7.40
Non traumatic		
Non specific	05	9.25
Typhoid	07	12.96
Tuberculous	02	3.70
Appendicular perforation	06	11.11
Large bowel perforation		
Caecal	01	1.85
Ascending colon	–	
Transverse colon	–	
Descending colon	02	3.70
Sigmoid colon	01	1.85
Bladder injury	01	1.85
Tuberculous peritonitis	02	3.70
Septic abortion	02	3.70
Total	**54**	**100%**

Table IV. describes the incidence of causes of peritonitis. The most common cause of peritonitis was peptic ulcer perforation (33.87%) followed by small bowel perforation (33.3%) and appendicular perforation (11.11%).

Table 5. Incidence of age and sex (in cases of peritonitis)
n = 54

Age	Sex		Total	%
	Male	Female		
0 – 10	02	–	2	3.70
10 – 20	04	02	6	11.11
20 – 30	12	03	15	27.77
30 – 40	13	05	18	33.33
40 – 50	08	–	8	14.81
50 – 60	03	–	3	5.55
>60	02	–	2	3.70
Total	**44**	**10**	**54**	**100%**

Table V. shows the incidence of age and sex in cases of peritonitis. The commonest age group was 30-40 years (33.33%) followed by 20-30 years (27.74%). Males (81.48%) were more involved than females (18.51%). The ratio was 4.1:1

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Table 6. Distribution of cases of Intestinal obstruction
n = 15

Disease	No.	%
Small bowel volvulus	04	26.66
Congenital Band with MD	02	13.33
Tuberculosis	05	33.33
Caecal volvulus (congenital)	01	6.66
CA Caecum	01	6.66
Post operative adhesions	02	13.33
Total	**15**	**100%**

Table 7. Incidence of age and sex (in cases of Intestinal obstruction)
n = 15

Age	Sex		Total	%
	Male	Female		
0 – 10	05	–	05	33.33
10 – 20	–	–	–	–
20 – 30	01	00	01	6.66
30 – 40	04	–	04	26.66
40 – 50	01	01	02	13.33
50 – 60	03	–	03	20.00
> 60	–	–	–	–
Total	**14**	**01**	**15**	**100%**

Tables 6 and 7 show distributions of cases of intestinal obstruction. The commonest cause of intestinal obstruction was tuberculous (33.33%) followed by small bowels volvulus (26.6%) and congenital band with Meckel's diverticulum (13.3%). The commonest age group was 0-10 years (33.33%) followed by 30 – 40 years (26.66%). These were not true figures of tuberculous obstructions because most of these obstructions were relieved by conservative treatment. Males (93.33%) were more affected than females (6.66%).

Table 8. Distribution of cases of appendicitis

Type of appendicitis	No of cases	%
Acute appendicitis	12	27.27
Appendicular perforation	06	13.63
Chronic appendicitis	26	59.09
Total	**44**	**100%**

Table 9. Distribution of cases of appendicectomy

Type of appendicectomy	No of cases	%
Emergency appendicectomy	18	40.9
Elective appendicectomy	26	59.1
Total	**44**	**100%**

Table 10. Incidence of age and sex (in cases of appendicitis)

Age groups	Sex		Total	%
	Male	Female		
0-10	01	01	02	4.54
10-20	05	08	13	29.54
20-30	13	04	17	38.63
30-40	03	03	06	13.63
40-60	03	01	04	9.09
>60	02	00	02	4.54
Total	**27**	**17**	**44**	**100%**

Table 11. Incidence of perforation of appendix

	No of cases	%
Appendicitis only	38	86.36
Appendicular perforation	6	13.63
Total	**44**	**100%**

Tables 8, 9, and 10 describe the distribution of cases of appendicitis. The commonest age group was 10-20years (38.63%) followed by 20-30years. Males were more affected than females. The incidence of perforation was 13.63%.

Discussion

Abdominal surgeries are the one of the commonest major surgical operation that is performed in the department of surgery. The commonest cause of emergency laparotomy was acute appendicitis and appendicular perforation (26.00%) followed by peptic ulcer perforation (22.07%) and small bowel perforation (21.97%) and small bowel obstruction (19.4). The most frequent cause of peritonitis was peptic ulcer perforation (38.87%) followed by small bowel (33.3%) and appendicular perforations (11.11%). Similar results were also reported by earlier workers[5,6]. The commonest age of peritonitis was 30-40 years (33.3%). The age ranged from this 4-70years. The median age was 33.74 years. This is comparable to the reports from the same country[5] but contrast to western reports, where maximum reported age incidence was 60-70 years[4]. In the present study males were more affected than females. The ratio male: female was 4.1:1. This result is similar to the report of other developing country[7]. But this is in contrast, to the experience from the western World (USA) where female out number males.[8]

Appendicitis and its complications were another common cause of laparotomy, which accounts for common cause of emergency, and elective laparotomy. It accounts 26.0% of all the laparotomies. The incidence of appendicitis was much higher than other Asian countries[1, 2]. This difference may be because of Nepal, being a Hindu country, majority of the population consume meat. The association of meat consumption and appendicitis was also reported by previous workers[1]. The common age of appendicitis was 20-30 years.

The age ranged from10-62 years. The median age was 27 years. The incidence of appendicular perforation was 13.63.2%. The result is similar to the earlier reports[6].

Intestinal obstruction is third important cause of emergency laparotomy. The most common cause was tuberculosis followed volvulus and postoperative adhesions. The common age of incidence is 30-40years. The age ranged from 3month-54 years. The median age was 29.2 years. This result is contrast to western reports where commonest cause is post-operative adhesion followed by carcinoma[2]. The actual no of cases are much higher than in this report .It is because of majority of cases were relieved by conservative treatment. This result is similar to the earlier reports[2].

Elective abdominal surgeries were also performed for the diseases of gallbladder, appendix, pyloric obstruction, epigastric hernia, carcinoma head of pancreas, common bile duct and mesenteric tumours, hydatid cyst of liver, ventral hernia etc. (Table-II)

Conclusion

We conclude from this study that the commonest cause of emergency abdominal surgeries were

peritonitis (peptic ulcer, enteric and appendicular perforation) followed by acute appendicitis and intestinal obstruction. Whereas, the commonest cause of elective abdominal surgeries were chronic cholecystitis with cholelithiasis followed by recurrent appendicitis. Uncommon causes were, blunt abdominal trauma, mesenteric tumor, Carcinoma head of pancreas (Whipple procedure) and complications of laparoscopic cholecystectomies. But in near future we are expecting more cases of laparotomy due to abdominal trauma as country is passing through a phase of political crisis.

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