

## ORIGINAL ARTICLE

**Surgery in a Rural Private Charitable Hospital – An Early Experience**

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**Abstract:**

*A retrospective study was carried out in Sahera Hasan Memorial Hospital, Garpara, Manikganj, from July 2001 to June 2005 to assess the safety of surgery in a remote rural setting, and to present an audit of the nature and outcome of the surgery and their complications. A total of 3,431 patients were seen in outpatient and 613 different operations were done during the period. Most common operation was open cholecystectomy (42.41%) followed by herniorrhaphy (13.70%), excision of benign skin and subcutaneous lesions (13.38%) and appendicectomy (12.23%). Most of the surgeries were elective (85.48%). General anaesthesia was given in 51.88% cases. Overall complications in open cholecystectomy, appendicectomy and herniorrhaphy were 6.21%. Only two major biliary complications (0.77 %) were observed. Skin and soft tissue infection (SSI) rate in open cholecystectomy, appendicectomy and herniorrhaphy were 1.92%, 2.38% and 5.33% respectively. No mortality was observed. Overall data suggest that surgical care can be given satisfactorily in rural setting with satisfactory results provided appropriate facilities and relevant expertise can be made available.*

**Introduction:**

Surgical health care in Bangladesh is mostly provided by government health facilities and it is limited mostly to urban areas. The services available are not adequate to address the vast majority of rural people. With the purpose of providing health care services to the rural people Sahera Hasan Memorial Hospital (SHMH) was established in a village (Garpara) of Manikganj district in July 2001.

Minimum charge for all the services are taken to meet the maintenance cost of the hospital. Almost all the basic facilities for modern surgery are provided in the hospital. Two full-time medical officers are appointed to provide daily out patient services and to cover emergencies. Patients unmanageable at the hospital are referred to the district hospital. On the first and third Friday the surgery specialist and on the second and fourth Friday Gynaecology and Obstetrics specialist advise the patients. Thus there are two days in a month for specialized surgical care. There is no facility for daily emergency surgical services but emergency cases admitted the day before or on the day of the scheduled surgery are operated.

Almost all the surgeries are attended by a specialist visiting anesthesiologist. A single surgeon and often guest surgeons do the

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surgery. The surgeons also provide outpatient consultation on the scheduled day. The aim of this study was to assess the safety of surgery in a remote rural setting, and to present an audit of nature and outcome of the surgery and their complications.

#### Materials and method:

Data were collected retrospectively from the database maintained in Shahera Hasan Memorial Hospital, Garpara, Manikganj. The study period was July 2001 to June 2006. Patients for surgery were selected from those seen at the outpatient by the consultant and also by medical officers. All the patients were assessed for surgical fitness by consultant anaesthesiologist. A guideline for surgical fitness was maintained. Patients with ASA grade I and II were selected. Patients with predicted high risk were not selected for operation. A few high-risk operations were done as the patients were very poor and gave consent for high-risk surgery. An experienced anaesthesiologist, except those done under local anaesthesia, attended all the operations. Pulse oximeter was available to monitor the patients during anaesthesia.

After surgery, patients' condition was monitored and in the event of any serious post-operative problem operating surgeon usually attended the patients and/or arrangements were made to send the patients to the hospitals with better facilities.

#### Results:

Table-I shows the surgical resources available at SHMH. Four general surgeons and four anaesthesiologists provided services during the study period. Two full-time experienced medical officers were giving 24 hours service. One qualified operation theatre (OT) nurse

and two supporting OT staffs were available. Total bed number in the hospital was 14.

**Table-I:** Resources available at the hospital

Resources	Number
Visiting consultants	04
Visiting anaesthesiologists	04
Medical officers	02
OT nurse	01
Supporting OT staff	02
Ward nurse	01
Operation theater	02
Bed/Cabin	14
OT session	Twice a month
Pulse oximeter	01

Table-II shows the trend of patients seen and operated each year. Highest number of patients (840) were seen during July 2004 – June 2005. The rate of increase in number of outpatient was 25% during July 2003 – June 2004. Number of out patients was less (820) during July 2005 – June 2006, a reduction of 2.38%. Highest number (155) of operations were done during July 2004 – June 2005 and highest increase in rate of operation (64.77%) was during July 2003 – June 2004. Number of operation went down by 11.61% during July 2005 – June 2006. Total 3,431 patients were seen in the outpatient and 613 operations were performed during the study period.

**Table-II:** Patients seen and operated by surgical consultants

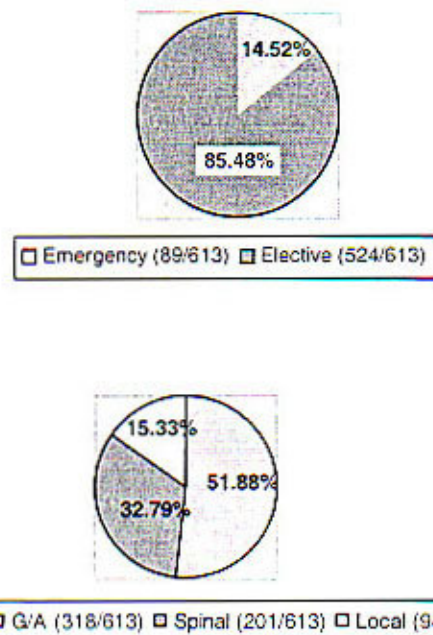
Year	No. of patients seen	Growth each year	No. of patient operated	Growth each year
July 2001 to June 2002 (1 <sup>st</sup> Year)	475		88	
July 2002 to June 2003(2 <sup>nd</sup> year)	576	21.26%	88	0%
July 2003 to June 2004(3 <sup>rd</sup> year)	720	25.00%	145	64.77%
July 2004 to June 2005(4 <sup>th</sup> year)	840	16.67%	155	6.90%
July 2005 to June 2006	820	-2.38%	137	-11.61%
<b>Total</b>	<b>3431</b>		<b>613</b>	

Table-III shows the type of operations done. Most common operation was open cholecystectomy (42.41%, 260/613). It was followed by herniorrhaphy (13.70%, 84/613), excision of benign skin and subcutaneous lesions (13.38%, 82/613) and appendicectomy (12.23%, 75/613). Few high-risk operations like right hemicolectomy (1), Billroth II partial gastrectomy (2), hemithyroidectomy (1) and open cholecystectomy with choledocholithotomy were also done. Most of the surgeries were elective (85.48%, 524/613). General anaesthesia was given in 51.88% (318/613) cases (Fig.-1).

**Table-III:** Operations done during the study period (N=613).

Operation	Number	Percentage (%)
Open cholecystectomy	260	42.41
Herniorrhaphy/Herniotomy	84	13.70
Appendicectomy	75	12.23
Excision biopsy of breast lump	22	3.58
Excision biopsy of benign skin and subcutaneous lesion	82	13.38
Circumcision	18	2.94
Excision and eversion of hydrocoele sac	09	1.47
Incision and drainage of abscess	15	2.45
Vagotomy and gastrojejunostomy	08	1.31
Haemorrhoidectomy	13	2.12
Left lateral sphincterotomy	08	1.31
Fistulectomy	03	0.49
Nephrolithotomy	03	0.49
Others <sup>1</sup>	13	2.12

<sup>1</sup> Rectal polypectomy (2), right hemicolectomy (1), Billroth II partial gastrectomy (2), lumbar sympathectomy (2), excision of pilonidal sinus (1), right hemithyroidectomy (1), orchidectomy (1), colostomy (1), open cholecystectomy with choledocholithotomy (2).



**Fig. -1:** Emergency and elective surgery and type of anaesthesia required (N=613).

Comparison of cost of three common operations in three categories of hospital settings is presented in Table-V. Complications of three common operations like open cholecystectomy, herniorrhaphy and appendicectomy are presented in Table-IV.

**Table - IV:** Complications and mortality after three common operations

	Over all	Cholecystec- tomy	Herniorr- -aphy	Appendicec- tomy
Number of operation(n)		260	84	75
Morbidity				
Surgical site infection (SSI)	2.63% (11/419)	05 (1.92%)	02 (2.38%)	04 (5.33%)
Incisional hernia		01 (0.38%)	-	-
Bile duct injury <sup>1</sup>		01 (0.38%)	-	-
Bile duct stricture <sup>2</sup>		01 (0.38%)	-	-
Reactionary haemorrhage <sup>3</sup>		01 (0.38%)	-	-
Scrotal haematoma		-	02 (2.38%)	-
Testicular atrophy		-	01 (1.19%)	-
Testicular swelling		-	01 (1.19%)	-

	Over all	Cholecystec- tomy	Herniorr- -ahphy	Appendicec- tomy
Recurrant hernia		-	01 (1.19%)	-
Chronic groin pain		-	02 (1.19%)	-
Chest infection		01 (0.38%)	-	-
Ileus		-	-	01 (1.33%)
Discharging sinus		-	-	02 (2.67%)
<b>Total</b>	6.21% (26/419)	10 (3.85%)	09 (10.71%)	07 (9.33%)
<b>Mortality</b>	00	00	00	00

<sup>1</sup> Recognized during operation and treated by hepaticojejunostomy.

<sup>2</sup> Reoperated and treated by hepaticojejunostomy.

<sup>3</sup> Due to clotting disorder needed reoperations.

### Discussion:

There was an increasing trend in number of patients seen and operated each subsequent year except the last year in SHMH. It was because some Friday consultations could not be made available during the later period due to unavoidable circumstances. Analysis of type of operations showed that cholecystectomy topped the list followed by herniorrhaphy and appendicectomy. Surprisingly, rectal cases were less in number. It may be assumed that food habit of rural people plays an important role in reduced incidence of piles and fissures.

Emergency surgery was too less in number in this study as compared to elective cases due to unavailability of emergency services in the hospital. This charitable hospital is passing through its initial phase and regular emergency services could not be made available for obvious reasons. For this reason and as there was one operation day weekly, minor surgical emergencies like abscess was significantly less in number compared to an audit in a Thana Health Complex where abscess topped the list<sup>1</sup>. A reasonable number of cases did not need general anaesthesia (48.12%) as operations like herniorrhaphy and

appendicectomy were done under spinal anaesthesia. Overall skin and soft tissue infection (SSI) rate was 2.63% (11/419) in three common operations. The finding is comparable to other international studies. In fact, it is rather low in comparison to some international studies where it ranges from 5.54% to 26.7%<sup>2,3,4,5,6,7</sup>. The overall complication rate in common operations was 6.21%. Skin and soft tissue infection in open cholecystectomy was 1.92% which is quite low when compared to the study of Indigo *et al*<sup>2</sup>. They have found an infection rate of 30.9% in hepatopancreaticobiliary surgery. Skin and soft tissue infection rate in hernia in this series was 2.38% which was relatively higher in comparison to the study done by Hiersemann *et al*<sup>5</sup> who found a rate only 0.5% in such cases. However, SSI was found in 5.33% cases of appendicectomy, a finding significantly better than those of other studies where it ranges from 9.17% to 15.9%<sup>2,3,4</sup>. In this study, infection rate was less, probably because the operations were done and OT was used once a week and proper aseptic precautions were maintained. As OT was used only once a week, so chances of contamination was less. Two biliary complications occurred. One happened peroperatively and corrected by hepaticojejunostomy, and another presented late postoperatively with features of biliary stricture which was also dealt with by hepaticojejunostomy. The biliary injury rate was 0.77 % which was a little higher in comparison to Roslyn *et al*<sup>8</sup> and Strasberg *et al*<sup>9</sup> who reported 0.2% and 0.3% respectively. The important thing was that those complications were managed successfully. There was no mortality in this series. Absence of mortality was probably because of

appropriate selection of patients, efficient surgical and anaesthesiological intervention and very effective post-operative care.

In Table-V, one can find approximately the difference of cost in common operations in different hospital settings, which suggest how a charitable rural hospital can offer services to rural people complimenting the public facilities. It has to be appreciated that to have low cost services in public facilities it involves many unavoidable limitations including waiting time which is not there in the private charitable hospital where serving the humanity better is the motto.

Surgical care can be given satisfactorily in rural settings with satisfactory results provided appropriate setup and relevant expertise can be made available, and then only the benefit would go to the vast majority of poor people in the rural areas. Therefore, low cost private health facilities in rural areas along with public facilities may serve a huge number of rural people who otherwise would be deprived of minimum health care.

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