



GASTROINTESTINAL FISTULA: A CLINICAL OUTCOME BASED PROSPECTIVE STUDY

General Surgery

Dr. Pankaj Singh	Assistant Professor, Department of General Surgery, KGMU, Lucknow
Prof. (Dr.) Suresh Kumar*	Professor, Department of General Surgery, KGMU, Lucknow *Corresponding Author
Dr. Sanjeev Kumar	Associate Professor, Department of General Surgery, KGMU, Lucknow
Dr. Bhupender Kumar Sharma	Senior Resident, Department of General Surgery, KGMU, Lucknow
Dr. Ajay Kumar Pal	Associate Professor, Department of General Surgery, KGMU, Lucknow

ABSTRACT

Objective: To study the clinical outcome of gastrointestinal fistula in north Indian population.

Methods: This was a longitudinal observational study. Patients with age >16 to <60 years, case of low and high output gastrointestinal fistula and patients giving written informed consent were included in the study. Patients not giving consent and any other serious uncontrolled medical condition (epilepsy, uncontrolled diabetic) were excluded from the study. All patients were clinically evaluated with history and physical examination and were investigated by available tests. Information regarding the primary disease and its nature whether inflammatory, traumatic or neoplastic was collected.

Results: More than one third of patients were <30 years of age (36.8%). Majority of patients belonged to rural area (82.5%). Majority of patients had low blood pressure (87.7%) and afebrile temperature (82.5%). Fair general condition was among 70.2% patients. High fistula output was observed among 73.7% patients. The mortality was found in 28.6% patients.

Conclusion: In this study, the mortality rate is 28.6%. The study does not find any significant association of basic profile of enterocutaneous fistula patients.

KEYWORDS

Enterocutaneous fistula, Mortality, Basic profile

INTRODUCTION

Gastrointestinal fistula (GI) is a morbid condition. It is a major burden on health care system in India.

Fistula is defined as an abnormal communication between two epithelialised surfaces (Ellis, 1989)¹. Intestinal fistulae can be internal or external (enterocutaneous). This differentiation is clinically important because, properly managed, 70% of external fistulae will close spontaneously, whereas internal fistulae seldom do so. Similarly, fistulae can be divided into end or lateral - based on their relation to the viscus from which they arise. Of even greater significance is whether intestinal continuity is maintained. Furthermore external fistulae can be classified as to output. High-output fistulae discharge >500ml/day and low-output less than 500ml/day. In the case of pancreatic fistulae, a high-output fistula is one which produces >200 ml/day. High output fistulae lead to much serious metabolic disturbances as well as have higher mortality rates.

The aetiology of acquired gastrointestinal fistulae is extremely broad (Pickhardt et al, 2002)². The spontaneous disease processes which may result in fistulization, inflammation is the most important. All the standard organ diseases: peptic ulcers, neonatal enterocolitis (Saleem and Saleem, 2003)⁴, appendicitis (Koseoglu et al, 2002)⁵, pancreatitis and late presentation of strangulated inguinal hernia can give rise to fistulae. Radiation is a prominent source.

A wide variety of surgical procedures have been implicated in the development of gastrointestinal fistulae: minimal access approaches and the placement of foreign bodies³ (which carries the greatest risk; surgery for obstruction, GI cancer and inflammatory bowel disease; even herniorrhaphy) (Costa et al, 2004; Losanoff et al, 2002)^{9,10}.

Damage control surgery using the open abdomen technique for trauma and the abdominal compartment syndrome is associated with a 8% risk of fistula formation (Miller et al, 2005; Kriwanek et al, 2000)^{11,12}.

Malnutrition, underlying infection, immunosuppression and advanced age play their role; as does surgeon inexperience.

The social and psychological impact cannot be overlooked due to the

complicated wound care required, malnutrition and disability, patients with fistulas are unlikely to be able to work and lose their employment. More over the psychological impact of a difficult draining foul smelling wound and the major impact on the patient's daily activities of living cannot be underestimated (Stylianios et al, 1989)¹³.

MATERIAL AND METHODS

This was a longitudinal observational study conducted in the Department of General Surgery, King George's Medical University (KGMU), Lucknow, Uttar Pradesh, India. Ethical clearance was approved in Institutional Ethics Committee, KGMU, Lucknow. Patients with age >16 to <60 years, case of low and high output gastrointestinal fistula and patients giving written informed consent were included in the study. Patients not giving consent and any other serious uncontrolled medical condition (epilepsy and uncontrolled diabetic) were excluded from the study.

All patients were clinically evaluated with history and physical examination and were investigated by available tests. Information regarding the primary disease and its nature whether inflammatory, traumatic or neoplastic was collected. At the time of admission, vitals, biochemical parameters and origin of fistula were assessed.

Emphasis was laid on ascertaining temperature, pallor and dehydration. Other parameters assessed were pulse rate, blood pressure, respiratory rate and presence of dyspnoea. Abdominal examination was done with focus on the laparotomy wound. Assessment was made of degree of fistula activity by the abdominal dressings which were usually stained or soaked, presence of intestinal contents, colour/volume of fistula collections in wound managers and the extent of dehiscence of the wound. The rate of exit of the intestinal contents was also noted. The presence of hyperaemic areas around the laparotomy wound was noted as well as the urinary output following catheterisation.

Patients were managed via protocol as: fluid and electrolytes resuscitation (first 48 hours); sepsis control; nutritional state built up by rehydration and electrolyte correction and enteral nutrition; fistula opening covered with stoma bag for skin protection from excoriation;

defining site of fistula, fistulography and a gastrografen contrast study to define the site of the fistula; planning; time of surgery after control of infection foci and nutritionally optimization patients were planned for surgery.

Statistical analysis

Results are presented in frequencies and percentages. The Chi-square test was used for comparisons. The p-value<0.05 was considered significant. All the analysis was carried out on SPSS 16.0 version (Chicago, Inc., USA).

RESULTS

A total of 60 patients were included in the study. Out of these, 3 patients were loss to follow-up. Hence, results are presented for 57 patients.

More than one third of patients were <30 years of age (36.8%). More than half of patients were males (68.4%). Majority of patients belonged to rural area (82.5%). Majority of patients had low blood pressure (87.7%) and afebrile temperature (82.5%). Fair general condition was among 70.2% patients. High fistula output was observed among 73.7% patients (Table-1).

The maximum SBP is 130 and DBP is 84, minimum SBP 80 and DBP 40. It's shows SBP and DBP mean $\pm$ SD i.e. 108.73 $\pm$ 9.29 and 68.60 $\pm$ 10.19 respectively (Table-2).

The mortality was 26.7% in which male has been more mortality than female. Out of all patient 26.7% mortality and 5% were loss of follow up and rest 68.3% were successfully treated in study population (Table-3).

Burst abdomen with bag at drain site comorbid condition was in 28.6% patients at the discharge. Burst abdomen with wound manager comorbid condition was in 43.9% at the discharge (Table-4).

Statistically significant change was observed in hospital stay according to outcome (Table-5).

Gastro intestinal fistulas developed in tubercular (Intestinal tuberculosis) was in 41.6%, Enteric Fever in 10%, Duodenal/gastric perforation in 8.3%, Iatrogenic in 8.3%, Reversal in 13.4%, Trauma in 5.0% and other 13.3% were spontaneous fistulas (advanced GI cancer, abdominal wall abscess drainage, psoas abscess drainage) (Table-6).

The mortality was 75.0% in patients with low BP and was noted in only 25.0% with normal BP. Among patients having normal BP at the time of admission, mortality was 44.4%, 33.3% were successfully treated and 22.2% were lost to follow-up. And among those who had low BP at the time of admission, mortality was 23.6%, 74.5% were successfully treated and rest 1.96 were lost to follow-up (Table-7).

DISCUSSION

Majority of patients belonged to rural area (82.5%). Majority of patients had low blood pressure (87.7%) and afebrile temperature (82.5%). Fair general condition was among 70.2% patients. High fistula output was observed among 73.7% patients. Garale et al (2017)¹⁷ found that 20 patients with high-output fistula as compared to 22 patients with low output fistula.

Kumar et al (2011)¹⁸ found that mortality was 28.6% (n=80). Mortality in the present study was 28.1%. Internationally, mortality rate is markedly variable 5.5% -33% (Gribovskaja-Rupp and Melton, 2016)¹⁹. In previous study which was conducted in India, mortality rate was about 28.8% (Kumar et al, 2011)¹⁸ and in our study mortality rate is 28.6%. Mukadam et al (2014)²² reported mortality rate being 44% which is higher than the present study.

Schein and Decker (1990)²³ found that the number of days spent in the hospital by the patients ranged from 7 days to 85 days. Hospital stay of 52 days in the patients who expired and 73 days in those who survived. Yeddula et al (2018)²⁴ found that mean hospital stay was 35.5 days in the patients who expired and 40.29 days in those who survived. The average hospital stay was 50 days with range of 2-60 days.

CONCLUSION

In this study, the mortality rate is 28.6%. The average hospital stay was 50 days with range of 2-60 days. Fair general condition was among majority of patients. High fistula output was observed among majority

of patients.

Table-1: Basic profile of patients

Basic profile	No. (n=57)	%
Age in years		
<30	21	36.8
30-40	13	22.8
41-50	17	29.8
>50	6	10.5
Gender		
Male	39	68.4
Female	18	31.6
Place of residence		
Rural	47	82.5
Urban	10	17.5
Blood pressure		
Low	50	87.7
Normal	7	12.3
Temperature		
Afebrile	47	82.5
Febrile	10	17.5
General condition		
Fair	40	70.2
Poor	17	29.8
Fistula output		
High output	42	73.7
Low output	15	26.3

Table -2: Descriptive Analysis of vital parameters at the time of admission

Vital parameters	No. of patients	Minimum	Maximum	Mean	Standard deviation
SBP	60	80.00	130.00	108.73	9.29
DBP	60	40.00	84.00	68.6	10.19
Pulse	60	76.00	140.00	91.93	14.27
Saturation	60	90.00	99.00	97.83	1.914
Respiratory Rate	60	18.00	28.00	21.71	2.314

Table 3: Percentage distribution of outcome status on admission in study population

Outcome	No. of patients	Percent
Mortality	16	26.7
Loss of follow up	3	5.0
Successfully treated	41	68.3
Total	60	100.0

Table 4: Patient discharged with some comorbid condition

	Spontaneous closure	Co-morbid conditions			Patients developed incisional hernia
		Burst abdomen with bag at drain site	Burst abdomen with wound manager	Very low output fistula with continue FJ	
Percentage of patient	12.2%	28.6%	43.9%	19.5%	41.5%

Table-5: Mean comparison of duration of hospital stay according to their outcome.

	No. of patients	Mean	Std. Deviation	p-value
Mortality	16	15.68	12.92	<0.001*
Loss of follow up	3	2.66	0.57	
Successfully treated	41	58.17	8.34	
Total	60	44.06	23.09	

*Significant.

Table-6: Primary diseases

	N	Percent
Tubercular (Intestinal tuberculosis)	25	41.6%
Enteric Fever	6	10.0%
Iatrogenic	5	8.3%
Reversal(Stoma Closure)	8	13.4%
Trauma	3	5.0%

Duodenal/gastric perforation (DP/GP)	5	8.3%
Others	8	13.3%
Total	60	100.0

Table- 7: Association of BP status at the time of admission of study population with outcome.

	Outcome			Total
	Mortality	Loss of follow-up	Successfully treated	
Normal	4	2	3	9
% of incidence	44.4%	22.2%	33.3%	15%
% of out come	25.0%	66.7%	7.3%	
Low BP	12	1	38	51
% of incidence	23.6%	2.0%	74.5%	85%
% of out comes	75%	33.3%	92.7%	
Total	16	3	41	60
	100%	100%	100%	100.0%

Chi-square=9.434 p=0.009 (Significant)

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