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A Study on Gastric and Duodenal Perforation Closure Of Size More Than 0.5 Cm And Role Of Feeding Jejunostomy In Improvement In Morbidity And Mortality, Prospective Case Comparative Study

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ABSTRACT
BACKGROUND AND OBJECTIVE
Gastrointestinal perforation is one of a common surgical condition presenting to emergency. Patients with gastric / duodenal perforations presents with varying stages of peritonitis and septicemia. These perforations require timely surgical management mostly by free or live Omental patch/plug closure and peritoneal lavage.
Conventionally patients who are operated for gastric / duodenal perforations with omental patch closure will be kept nil by mouth for about 5-7 days. Many recent randomized control trials regarding the concept of initiation of enteral feeding in case of abdominal surgeries conducted proved that the delayed feeding is of no benefit for the favourable outcome of general condition of the patient.
This study aimed to evaluate the role of Early Enteral Feeding (EEF) by
Feeding Jejunostomy (FJ) and its role in reducing morbidity and mortality.
METHODS
The study will be conducted in 30 patients who underwent surgery with a diagnosis of gastric and duodenal perforation more than 0.5 cm in the department of general surgery in Thanjavur Medical College and Hospital between January 2020 and October 2021. Data were collected and analyzed.
RESULTS
Early enteral feeding has a significantly better outcome in patients who underwent surgery for gastroduodenal perforation through feeding jejunostomy tube. There is not much difference in clinical and biochemical parameters except total leukocyte count. But there is earlier appearance of bowel movements, passage of flatus and removal of Ryle's tube, post operative complications and duration of hospital stay are evidently lower.
Inspite of reduction of morbidity in EEF group, there is no significant reduction in mortality compared to the other group.
CONCLUSION
In any patient with Gastroduodenal perforation starting early enteral feeding via FJ tube is a safer and cost effective option which has direct impact on the morbidity of the patient both in early recovery and in preventing postoperative complications.
KEY WORDS
Gastroduodenal perforation; Feeding Jejunostomy(FJ); Early Enteral Feeding(EEF); morbidity.

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Introduction

Gastrointestinal perforation is one of a common surgical condition presenting to emergency. Patients with gastric / duodenal perforations presents with varying stages of peritonitis and septicemia. These perforations require timely surgical management mostly by free or live Omental patch/plug closure and peritoneal lavage.

Following surgical intervention of the perforation, patients will be under strict observation postoperatively regarding the hemodynamic stability and improvement and return of normal bowel movements and favourable biochemical parameters for planning of introduction of oral feeds.

Previously, it is considered that early introduction of oral feeds may interfere with the healing of perforation site and also may lead to prolongation of post operative ileus and prolong the duration of naso gastric aspirations.

Conventionally patients who are operated for gastric / duodenal perforations with omental patch closure will be kept nil by mouth for about 5-7 days based on the postoperative return of bowel sounds and passage of flatus. This practice of delayed initiation of oral feeds following perforation surgery is questioned in recent times and considered to prolong recovery of the patients due to deficient

nutrition during periods of starvation.

Withholding enteral feeds after a gastrointestinal surgery is based on the hypothesis that this period of "nil by mouth" provides rest to the gastro intestinal tract and promotes healing.

During the period of 'nil by mouth' patients will be provided fluid replacement, calories and electrolytes through intravenous route. This intravenous supplementation requires expertise and to be monitored stringently. These intravenous supplementations are planned according to the biochemical values and general condition of the patient.

Even though supplemented with utmost accuracy, the IV supplements is no way equal to the physiological enteral absorption in correcting biochemical derangements and meeting nutritional demands. During this period of nil per oral, the enteral immunity will be depressed which may delay the outcome of the patient and lead to negative nitrogen balance.

Many recent randomized control trials regarding the concept of initiation of enteral feeding in case of abdominal surgeries conducted proved that the delayed feeding is of no benefit for the favourable outcome of general condition of the patient. Also early feeding found to result in faster recovery of the patients thereby leading to reduced hospital stay.

Early feeding post operatively can be started by many methods. Few examples are through Feeding jejunostomy, feeding gastrostomy, Naso enteral feeding etc. In my study I have adopted the method of Feeding jejunostomywhich is a invasive method of starting feeding. I have adopted this method of early feeding in patients who have undergone surgery for repair of Gastric/ Duodenalperforations.

This method involves the delivery of food directly into jejunum; it is safe for the perforated site in not being delayed from healing and also not considered to increase the duration of nasogastric aspiration.

Pateints treated by surgery for Gastric / Duodenal perforations are categorized into two groups. One group of patients were started with enteral feeding earlier than conventional duration by using feeding jejunostomy tube and the second group of patients were started with routine method of feeding following reappearance of normal bowel movements. Both the groups were compared clinically, biochemically and the recovery of patients was assessed in this study.

AIM OF THE STUDY:

"A STUDY ON GASTRIC AND DUODENAL PERFORATION CLOSURE OF SIZE MORE THAN 0.5 CM AND ROLE OF FEEDING JEJUNOSTOMY IN IMPROVEMENT IN MORBIDITY AND MORTALITY, PROSPECTIVE CASE COMPARATIVE STUDY"

OBJECTIVES OF THE STUDY:

- To study about the incidence of gastric and duodenal perforation more than 0.5 cm
- To study about age distribution
- To study about the difference in post operative outcome between surgical management of large gastric and duodenal perforation with and without feeding jejunostomy tube placement.
- To create awareness among medical community regarding better way to manage large gastric and duodenal perforation.

II. Methodology:

A. Study design: Prospective case comparative study

B. Study setting: The study will be conducted in patients who underwent surgery with a diagnosis of gastric and duodenal perforation more than 0.5 cm in the department of general surgery in TMCH

C. Study subjects: The patients who are admitted in the department of general surgery who have been diagnosed to have gastric and duodenal perforation of size more than 0.5cm.

D. Study duration: January 2020- October 2021

E. Inclusion criteria:

- All patients admitted and operated in TMCH with a diagnosis of gastric and duodenal perforation of size more than 0.5 cm with and without co morbidities

F. Exclusion criteria:

- Age > 70 years
- Patients with gastric and duodenal malignancy
- Patients treated with laparoscopic repair

- Patients with traumatic perforation

G. Sample size:15 patients in each category
H. Parameters analyzed:

In the pre-operative period

i. Age
ii. Duration of symptoms
iii. Presence of Co morbidities
iv. Presence of predisposing factors- alcohol , analgesic abuse, peptic ulcer disease
v. Preoperative shock
vi. Vital signs
vii. Complete blood count
viii. Renal function test
ix. Liver function test
x. Serum electrolytes

In the intra-op period

1. Duration of surgery
2. Size of perforation
3. Site of perforation
4. Placement of feeding jejunostomy tube
5. Mannheim peritonitis index

In the post-op period

1. Vital signs on day 3 and 7
2. Complete blood count on day 3 and 7
3. Renal function test on day 3 and 7
4. Serum electrolytes on day 3 and 7
5. Liver function test on day 7
6. Day of starting feeds through oral and feeding jejunostomy
7. Day of ambulation
8. Return of bowel sounds/ day of passing flatus
9. Day of removal of nasogastric tube
10. Surgical site infection (if any)
11. Other post op complications
12. Duration of hospital stay
13. Outcome – discharged/ expired

Permission from Drug Controller General of India (DCGI): Not applicable
Ethical issues involved in the study: Low risk
Ethical committee approval : obtained
Consent forms part 1 and part 2 in English and in local language are enclosed: Yes

STUDY PROCEDURE:

Patients presenting with gastric/ duodenal perforation of size more than 0.5 cm in TMCH, Thanjavur from January 2020 to October 2021 were recruited in this study.

A total of 30 patients with gastric/duodenal Perforation were included in the study. The 30 patients were randomly divided into two groups, each group consisting of 15 patients. The study group includes patients who underwent feeding jejunostomy intraoperatively and started with enteral feeding on POD 1 to 2. The second group includes patients who were started on oral feeds after appearance of bowel sounds/ passage of flatus which will be around POD 5 to 7.

Following consent, a questionnaire will be filled to record the patient's demographic data, duration of perforation, co morbidities if any, time of medical attention and relevant history. Then the patient's clinical status assessed and vitals recorded. Blood investigations done on admission are recorded.Mannheim Peritonitis Index score calculated for each patients and the severity of presentation evaluated.

All the patients were operated for gastric/ duodenal perforation and omental patch closure done with thorough peritoneal lavage. Patients among the study group underwent feeding jejunostomy procedure with tube of size 14Fr intraoperatively and the patency of the Feeding Jejunostomy (FJ) tube checked directly during the intraoperative period. Patients among the control group underwent omental patch closure of perforation alone and they did not undergo feeding jejunostomy procedure.

Figure 30 showing a patient with duodenal perforation with inserted FJ tube

In the postoperative period patient among study group were started with enteral feeds through the NJ tube on POD 1 to 2. Initially the feeds include 30ml /hr continuous infusion of ORS preparation via FJ tube. Later the feeds were stepped up both in quantity and quality. Usual feeds includes ORS preparations, protein powder dissolved in milk, boiled milk, homemade starch preparations, powered cereals with water or milk, whiteof egg with milk, multivitamin syrups in therapeutic doses etc.

Any patient develops distension; ileus, nausea/ vomiting are withheld from enteral feeds for 24 hrs and then restarted. If intolerance persists IV prokinetics are administered and EN continued. Once the return of bowel movements and passage of flatus and improvement in general condition ryles tube removed and started with oral feeds.

Figure 31 showing FJ tube for insertion to provide enteral feeding

Patientsincontrolgroupwerestartedwithoralfeedsafterpassageofflatus and return of bowel sounds which will be usually on POD 5 to 7. Patients were monitored with vital parameters and biochemical investigationsserially on POD 3 and POD 7. The clinical and investigation datas were recorded and outcomes of both the groups compared.

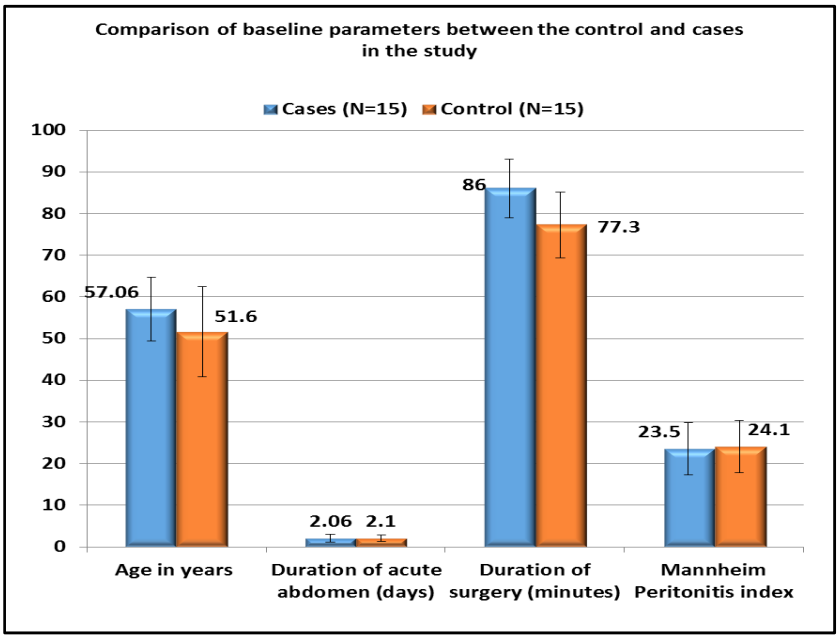
Patients presenting with postop complications were treated accordingly and data regarding the outcome of patients were recorded andcompared.Clinical parameters monitored includes Pulse rate, Blood Pressure, Respiratory rate. Biochemical parameters documented includes Hemoglobin, Total Leukocyte count, Urea, Creatinine, sodium and potassium levels. All there parameters are recorded on the day of admission, on POD 3 and POD 7.

III. Observation And Results

Table 1.Comparison of baseline parameters between the control and cases in the study.

S.No	Parameters	Cases (N=15)		Control (N=15)		T value	df	P value
		Mean	SD	Mean	SD			
1	Age in years	57.06	7.7	51.6	10.8	1.56	28	0.129
2	Duration of acute abdomen (days)	2.06	0.96	2.1	0.74	0.213	28	0.833
3	Duration of surgery (minutes)	86	7.1	77.3	7.9	3.13	28	0.004*
4	Mannheim Peritonitis index	23.5	6.3	24.1	6.29	0.231	28	0.819

Data are expressed as mean with SD.Unpaired 't' test was used to compare the means between the cases and controls.*indicates p<0.05 and considered statistically significant.



In the study undertaken, there is no statistical significance in mean age, duration of acute abdomen, Manheim peritonitis index score between the both groups. The duration of surgery is significantly prolonged in study population when compared to control group.

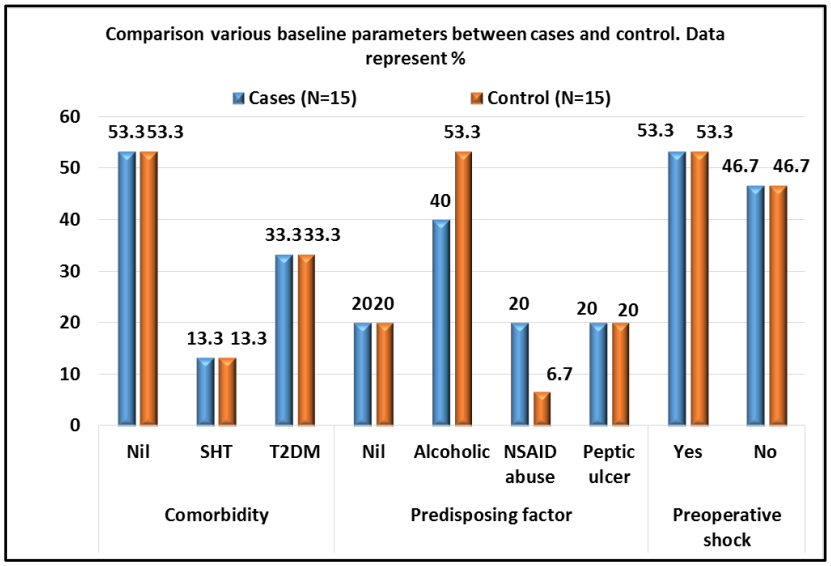
Table 2.Comparison various baseline parameters between cases and control.

S.No	Parameter	Case (N=15)		Control (N=15)		Chi square value	Df	P value
		n	%	n	%			
1	Comorbidity					<0.001	3	>0.999 (NS)
	Nil	8	53.3	8	53.3			
	SHT	2	13.3	2	13.3			
	T2DM	5	33.3	5	33.3			
2	Predisposing factor					1.28	3	0.733 (NS)
	Nil	3	20	3	20			

	Alcoholic	6	40	8	53.3			
	NSAID abuse	3	20	1	6.7			
	Peptic ulcer	3	20	3	20			
3	Preoperative shock							
	Yes	8	53.3	8	53.3	<0.001	1	>0.999 (NS)
	No	7	46.7	7	46.7			
4	Diagnosis							
	Duodenal perforation	11	73.3	13	86.7	2.96	2	0.227 (NS)
	Gastric Perforation	4	26.7	1	6.7			
	Gastric antral perforation	0	0	1	6.7			
5	Size of perforation							
	0.75 X 0.75 cm	5	33.3	7	46.7	0.556	2	0.757 (NS)
	1 X 1 cm	5	33.3	4	26.7			
	1.5 X 1.5 cm	5	33.3	4	26.7			

Data are expressed as n with %. Fisher's exact test was used to compare the frequency between the groups. NS = Not significant.

When cases are compared to controls, there is no statistically significant difference in terms of comorbidities, predisposing factors, pre operative shock, site of perforation and size of perforation



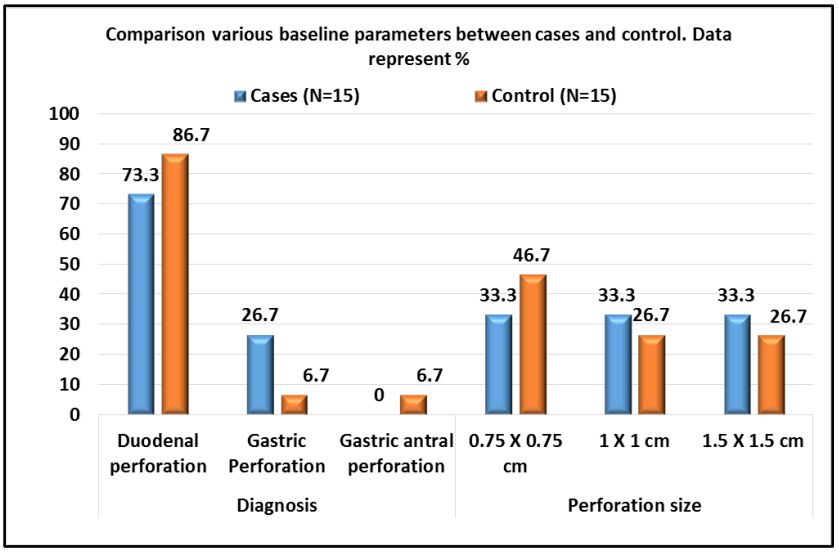


Table 3. Comparison of albumin level between cases and controls in the study.

S.No	Parameters	Cases			Controls			T value	df	P value
		n	Mean	SD	n	Mean	SD			
1	Albumin at day 0 (g/dL)	15	3.54	0.32	15	3.57	0.31	0.285	28	0.777 (NS)
2	Albumin at day 7 (g/dL)	13	3.57	0.42	12	3.14	0.34	2.75	23	0.011*

Data are expressed as mean with SD. Unpaired 't' test was used to compare the means between the cases and controls. *indicates p<0.05 and considered statistically significant. NS = Not significant.

In patients where early enteral nutrition was initiated showed statistically significant improvement in serum albumin levels. (p value < 0.011)

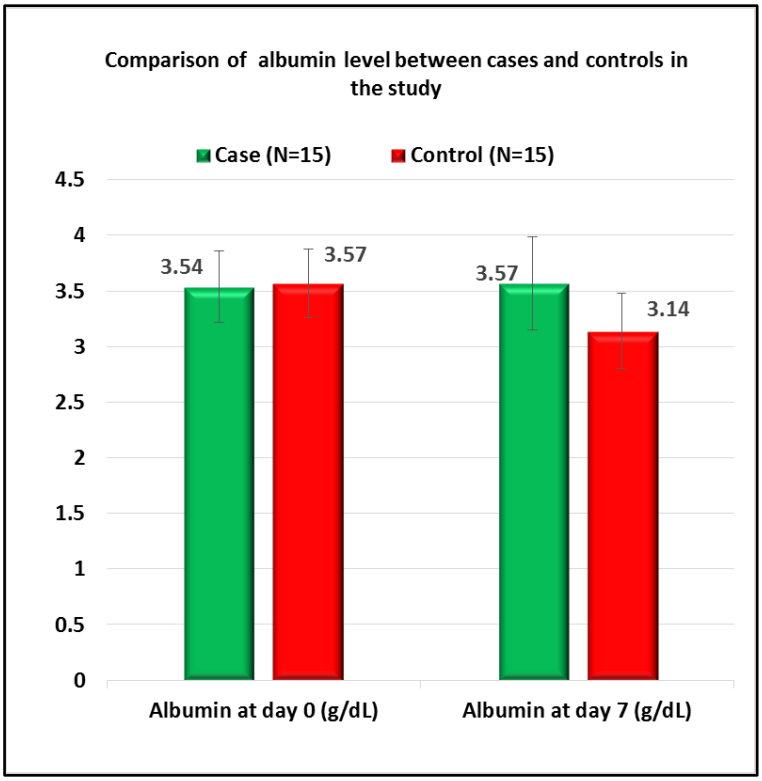
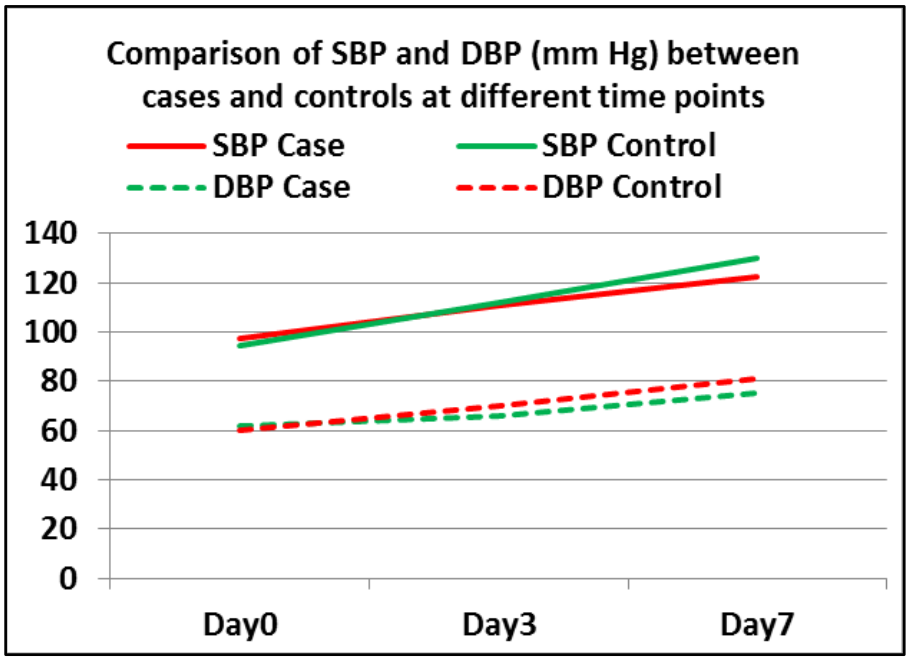


Table 4. Comparison of various vital parameters at various time points between cases and controls in the study.

S.No	Parameters	Cases			Controls			T value	df	P value
		n	Mean	SD	n	Mean	SD			
1	PR at day0	15	108	20	15	109	22	0.169	28	0.867 (NS)
2	PR at day3	15	84	36	15	77	41	0.494	28	0.625 (NS)
3	PR at day7	15	75	31	15	69	37	0.453	28	0.654 (NS)
4	SBP at day0	15	97.3	17.1	15	94.6	19.5	0.397	28	0.694 (NS)
5	SBP at day3	13	110.7	10.3	12	111.6	13.3	0.188	23	0.852 (NS)
6	SBP at day7	13	122.3	14.8	12	130	15.9	1.25	23	0.224 (NS)
7	DBP at day0	15	62	12.6	15	60	14.6	0.401	28	0.692 (NS)
8	DBP at day3	13	66.1	6.5	12	70	8.5	1.27	23	0.215 (NS)
9	DBP at day7	13	75.3	8.7	12	80.8	9	1.53	23	0.139 (NS)
10	RR at day0	15	28.8	6.17	15	31.4	5.9	1.2	28	0.241 (NS)
11	RR at day3	13	21.1	2.7	12	25.2	6.6	2.04	23	0.053 (NS)
12	RR at day7	13	16.3	3.1	12	20.6	5.6	2.41	23	0.025*

Data are expressed as mean with SD. Unpaired 't' test was used to compare the means between the cases and controls. *indicates p<0.05 and considered statistically significant. NS = Not significant.

The above table depicts comparison of vital parameters on admission, postoperative day 3 and 7.When compared to control group, cases found to have statistically significant improvement in respiratory function with not much difference in other vital signs.



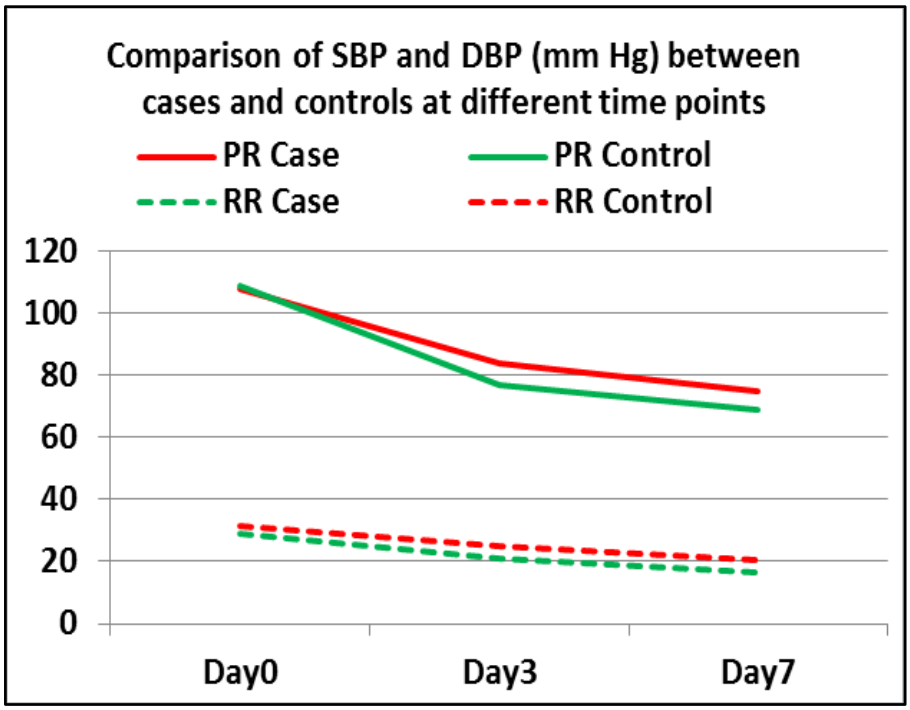


Table 5. Comparison of haemoglobin (g/dL) and WBC count (1000 cells/cc)between cases and controls in the study.

S.No	Parameters	Cases			Controls			T value	Df	P value
		n	Mean	SD	n	Mean	SD			
1	HB at day0	15	10.2	1.5	15	9.7	1.4	0.776	28	0.444 (NS)
2	Hb at day3	13	10.2	1.3	12	9.6	0.85	1.37	23	0.184 (NS)
3	Hb at day7	13	10.3	1.3	12	9.6	0.8	1.74	23	0.094 (NS)

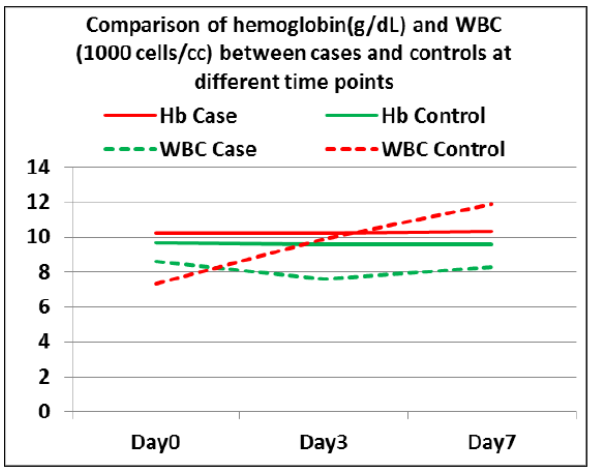
4	WBC at day0	15	8.6	5.4	15	7.3	5.1	0.684	28	0.499 (NS)
5	WBC at day3	13	7.6	1.6	12	9.9	3.2	2.22	23	0.036*
6	WBC at day7	13	8.3	1.9	12	11.9	3.5	3.16	23	0.004*

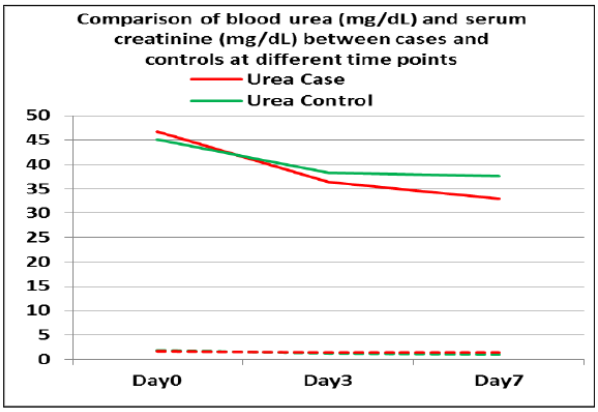
Data are expressed as n with %. Unpaired 't' test was used to compare the means between the cases and controls. *indicates $p<0.05$ and considered statistically significant. NS = Not significant.

Table 6. Comparison of blood urea (mg/dL) and serum creatinine (mg/dL)between cases and controls in the study.

S.No	Parameters	Cases			Controls			T value	df	P value
		n	Mean	SD	n	Mean	SD			
1	Urea at day0	15	46.7	12.6	15	45.1	11.9	0.371	28	0.714 (NS)
2	Urea at day3	13	36.4	7.7	12	38.3	11.1	0.512	23	0.613 (NS)
3	Urea at day7	13	33	4.7	12	37.6	11.5	1.34	23	0.191 (NS)
4	Creatinine at day0	15	1.83	0.61	15	1.63	0.49	0.993	28	0.329 (NS)
5	Creatinine at day3	13	1.2	0.24	12	1.37	0.45	1.15	23	0.261(NS)
6	Creatinine at day7	13	1.01	0.23	12	1.27	0.41	1.96	23	0.062(NS)

Data are expressed as mean with SD. Unpaired 't' test was used to compare the means between the cases and controls. NS = Not significant.





The above table depicts comparison of complete hemogram of two groups here, total leucocyte count has decreased drastically indicating control of sepsis andreduced post operative infections. In this representation, it shows urea levels reduce more when compared to creatinine levels on POD 7

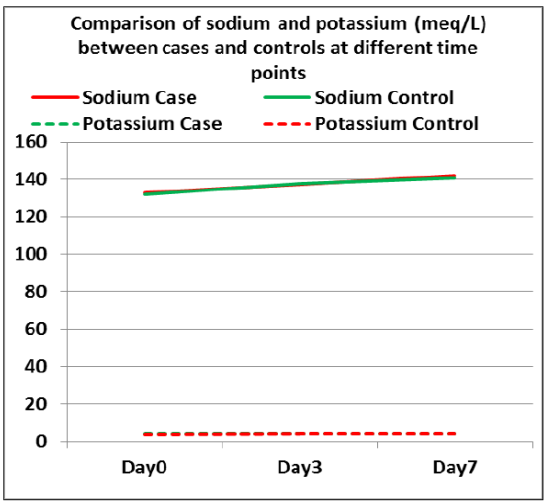


Table 7. Comparison of serum electrolyte levels between cases and controls in the study.

S.No	Parameters	Cases			Controls			T value	df	P value
		n	Mean	SD	n	Mean	SD			
1	Sodium at day0	15	133	8.4	15	132	3.8	0.346	28	0.732 (NS)
2	Sodium at day3	13	137.5	2.2	12	138	3.8	0.783	23	0.441 (NS)
3	Sodium at day7	13	142	2.7	12	141	3.5	0.198	23	0.845 (NS)
4	Potassium at day0	15	3.89	0.41	15	3.59	0.41	2.006	28	0.055 (NS)
5	Potassium at day3	13	4.1	0.22	12	4.01	0.29	0.954	23	0.351 (NS)
6	Potassium at day7	13	4.17	0.17	12	4.22	0.32	0.463	23	0.647 (NS)

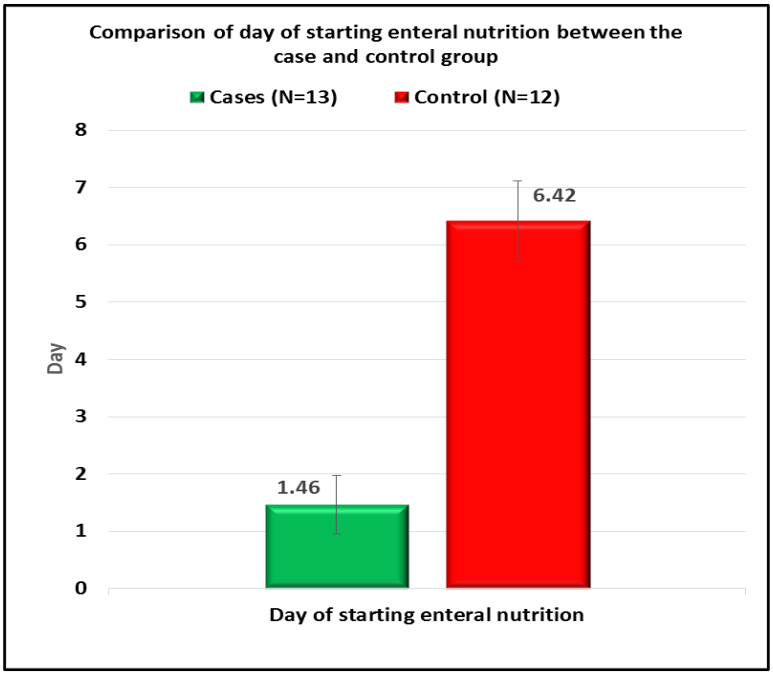
Data are expressed as mean with SD.Unpaired 't' test was used to compare the means between the cases and controls. NS = Not significant.

In these representation, it shows both the cases and control have maintained electrolyte balance without much difference.

Table 8.Comparison of day of starting enteral nutrition between the case and control group.

S.No	Parameters	Cases (N=13)		Control (N=12)		T value	Df	P value
		Mean	SD	Mean	SD			
1	Day of starting enteral nutrition	1.46	0.51	6.42	0.669	20.7	23	<0.0001*

Data are expressed as mean with SD. Unpaired 't' test was used to compare the means between the cases and controls. *indicates $p<0.05$ and considered statistically significant.

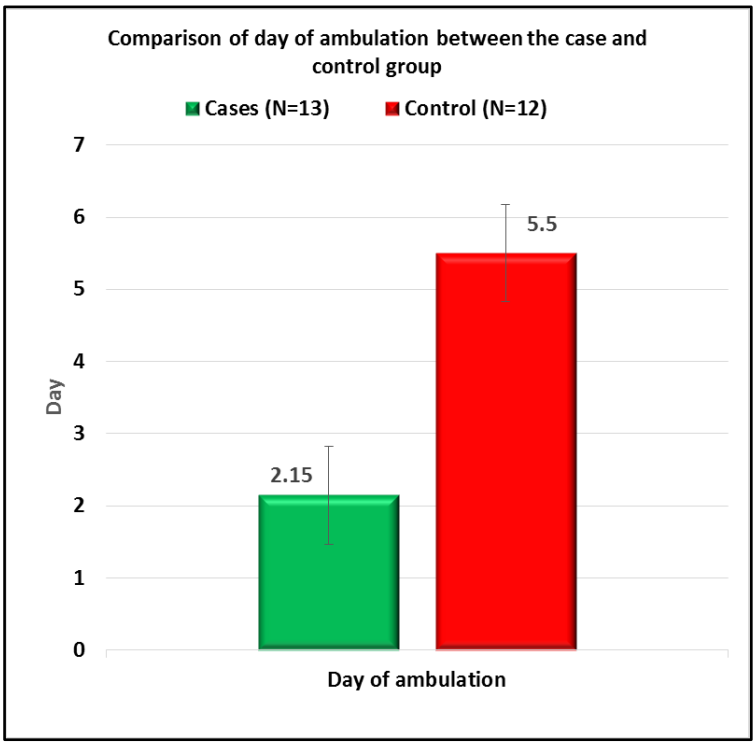


As the above table and bar diagram shows, the main advantage of this intervention is starting enteral feeds at 1.46 days after surgery when compare to 6.42 days in control group where we need to wait till the patient passes flatus / appearance of bowel sounds.

Table 9.Comparison of day of ambulation between the case and control group.

S.No	Parameters	Cases (N=13)		Control (N=12)		T value	df	P value
		Mean	SD	Mean	SD			
1	Day of ambulation	2.15	0.68	5.5	0.67	12.5	23	<0.0001*

Data are expressed as mean with SD. Unpaired 't' test was used to compare the means between the cases and controls. *indicates $p<0.05$ and considered statistically significant.



This clearly shows that the cases started to ambulate on 2.15 days after surgery whereas the control group ambulates on 5.5. days after surgery($p<0.0001$). Control group is confined to bed 3 days more than cases which increases morbidity.

Table 10.Comparison of day of removing Ryle's tube between the case and control group.

S.No	Parameters	Cases (N=13)		Control (N=12)		T value	df	P value
		Mean	SD	Mean	SD			
1	Day of removing Ryle's tube	3.69	0.75	6.42	0.67	9.54	23	<0.0001*

Data are expressed as mean with SD. Unpaired 't' test was used to compare the means between the cases and controls. *indicates $p<0.05$ and considered statistically significant.

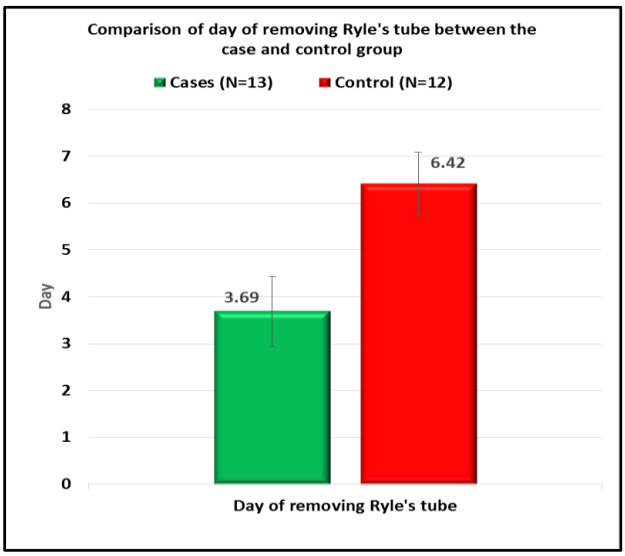
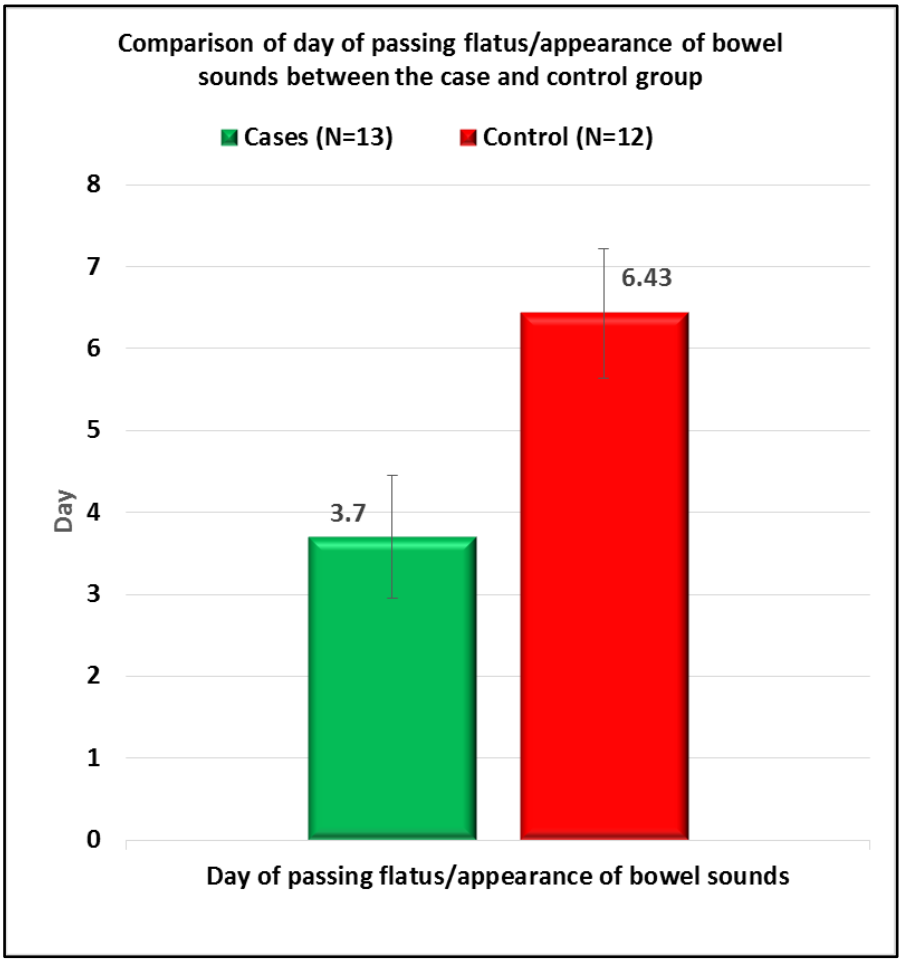


Table 11.Comparison of day of passing flatus/appearance of bowel sound between the case and control group.

S.No	Parameters	Cases (N=13)		Control (N=12)		T value	df	P value
		Mean	SD	Mean	SD			
1	Day of passing flatus/appearance of bowel sounds	3.7	0.75	6.43	0.79	8.82	23	<0.0001*

Data are expressed as mean with SD. Unpaired 't' test was used to compare the means between the cases and controls. *indicates p<0.05 and considered statistically significant.

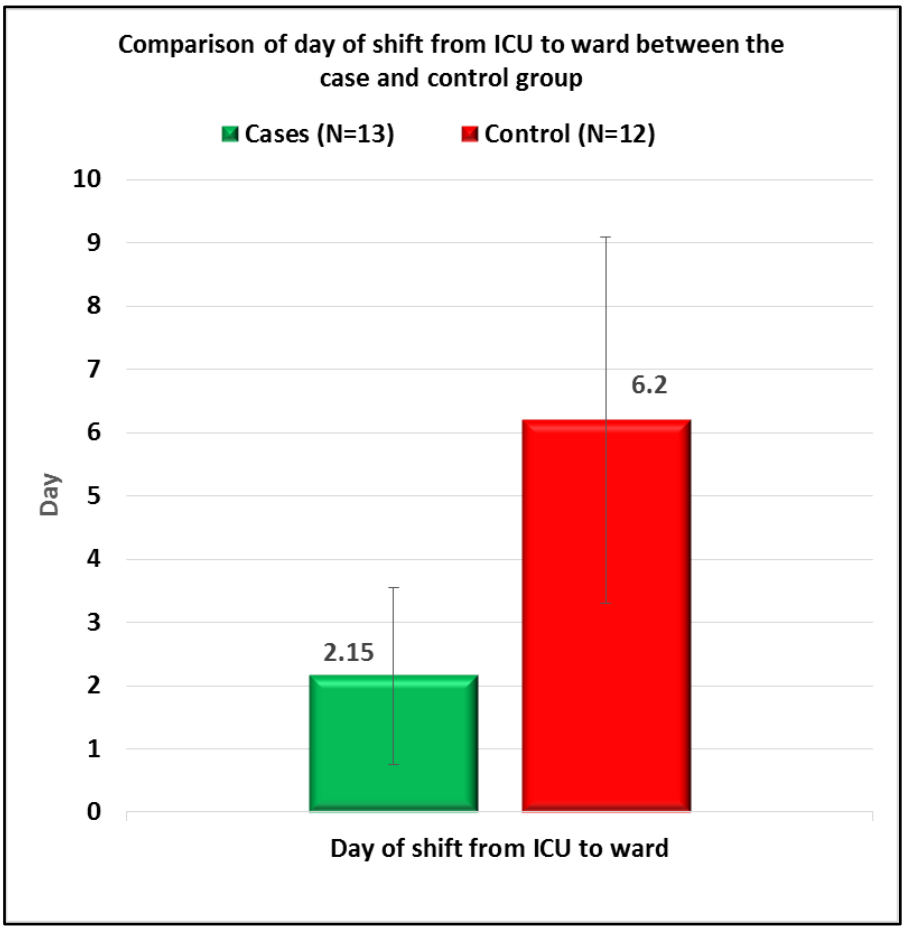


Bowel sounds appearance, Ryle's tube removal, Passage of flatus on an average in the study group is 3.5 days prior to control group(p<0.0001).

Table 12.Comparison of day of shift from ICU to ward between the case and control group.

S.No	Parameters	Cases (N=13)		Control (N=12)		T value	df	P value
		Mean	SD	Mean	SD			
1	Day of shift from ICU to ward	2.15	1.4	6.2	2.9	4.41	23	<0.0001*

Data are expressed as mean with SD. Unpaired 't' test was used to compare the means between the cases and controls. *indicates p<0.05 and considered statistically significant.

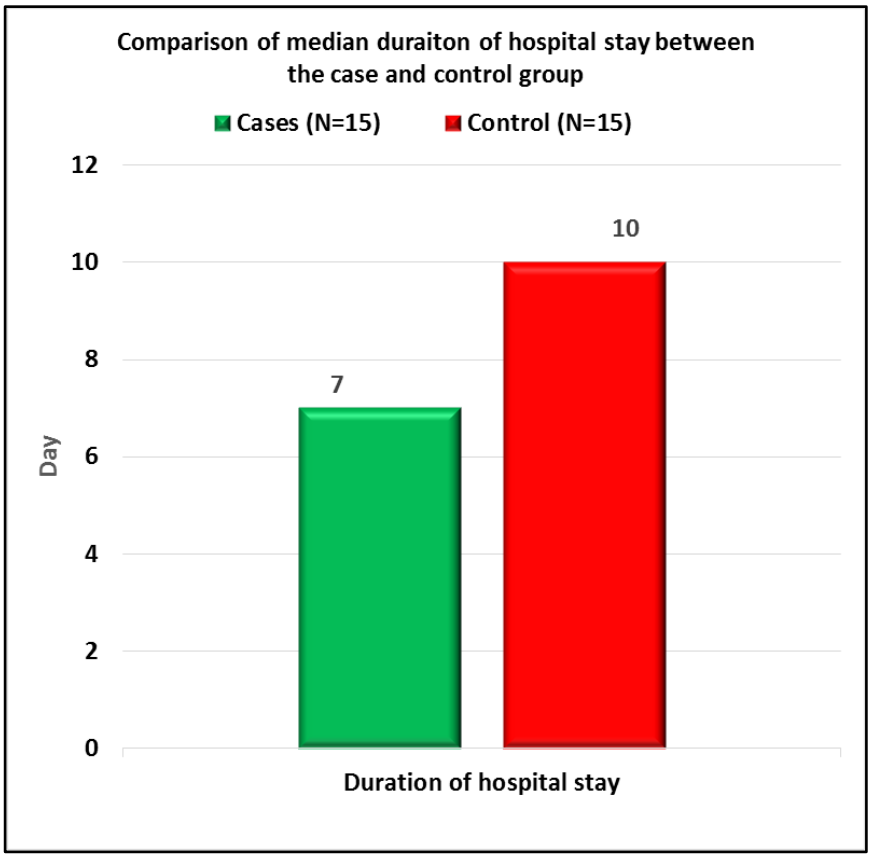


The patients among the study group are shifted from ICU to general ward on an average four days prior to patients among the control group($p < 0.0001$)

Table 13.Comparison of duration of hospital stay between the case and control group.

S.No	Parameters	Cases (N=15)		Control (N=15)		Mann Whitney U	Sum of ranks	P value
		Median	IQR	Median	IQR			
1	Duration of hospital stay	7	7 - 10	10	9 - 16	65	185, 280	0.046*

Data are expressed as mean with SD. Mann Whitney U test was used to compare the median between the cases and controls. *indicates $p<0.05$ and considered statistically significant.



Based on the research findings, patients from study group is discharged three days prior to control group.(p <0.046)

Table 14.Comparison of complications between cases and controls.

S.No	Complications	Case (N=15)		Control (N=15)		Chi square value	df	P value
		n	%	n	%			
1	Nil	8	53.3	3	20	5.1	6	0.533 (NS)
2	Complete wound dehiscence	1	6.7	1	6.7			
3	Partial wound dehiscence	1	6.7	2	13.3			
4	Pneumonia	0	0	2	13.3			
5	Respiratory failure	1	6.7	1	6.7			
6	Septicemia	1	6.7	2	13.3			
7	Surgical site infection	3	20	4	26.7			

Data are expressed as n with %. Fisher's exact test was used to compare the frequency between the groups. NS = Not significant.

Based on the above bar diagram, pneumonia and surgical site complications are much less compared to control group. Incidence of patients without any complications are significantly higher in cases (53.3%) when compared to controls(20%).

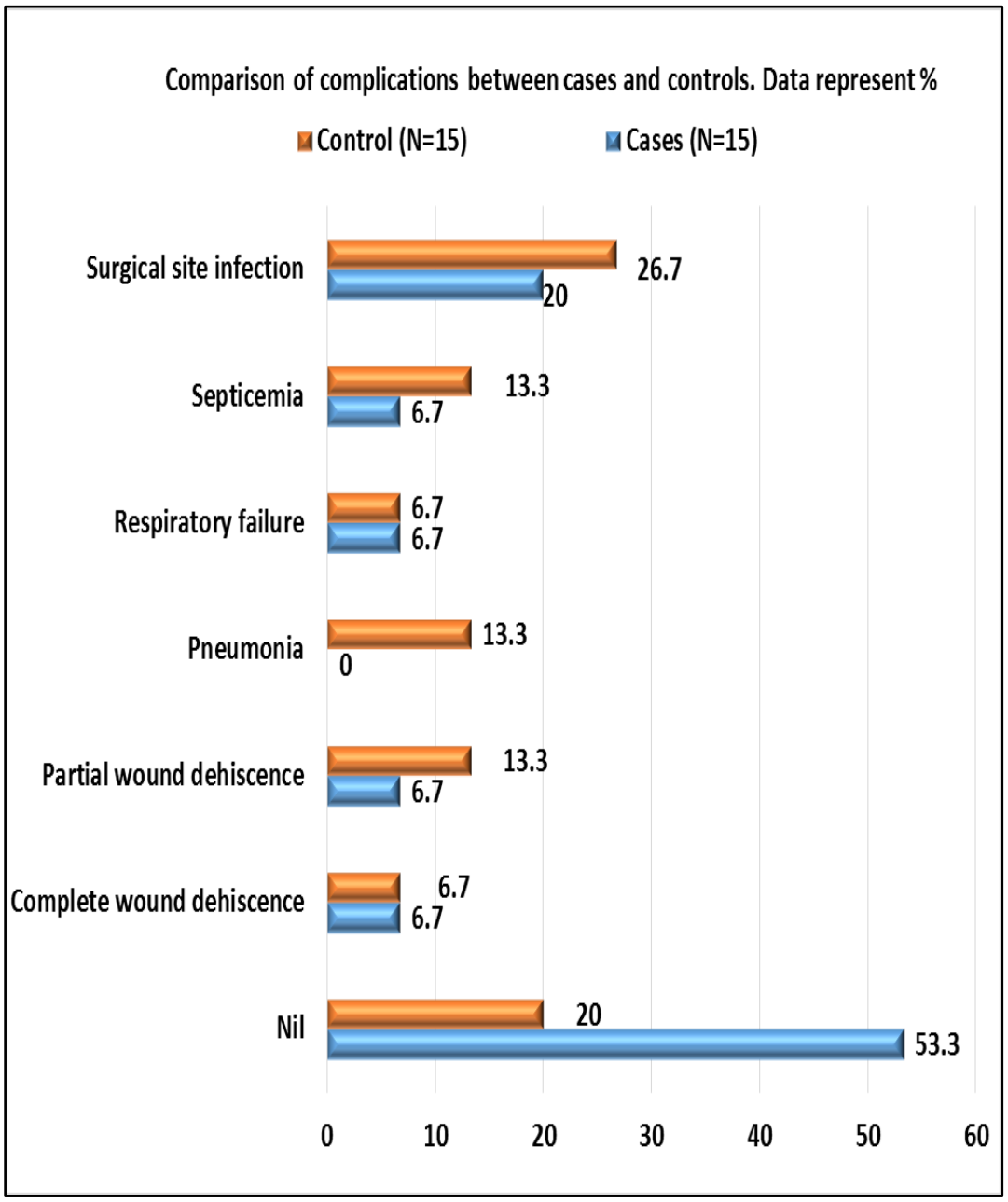
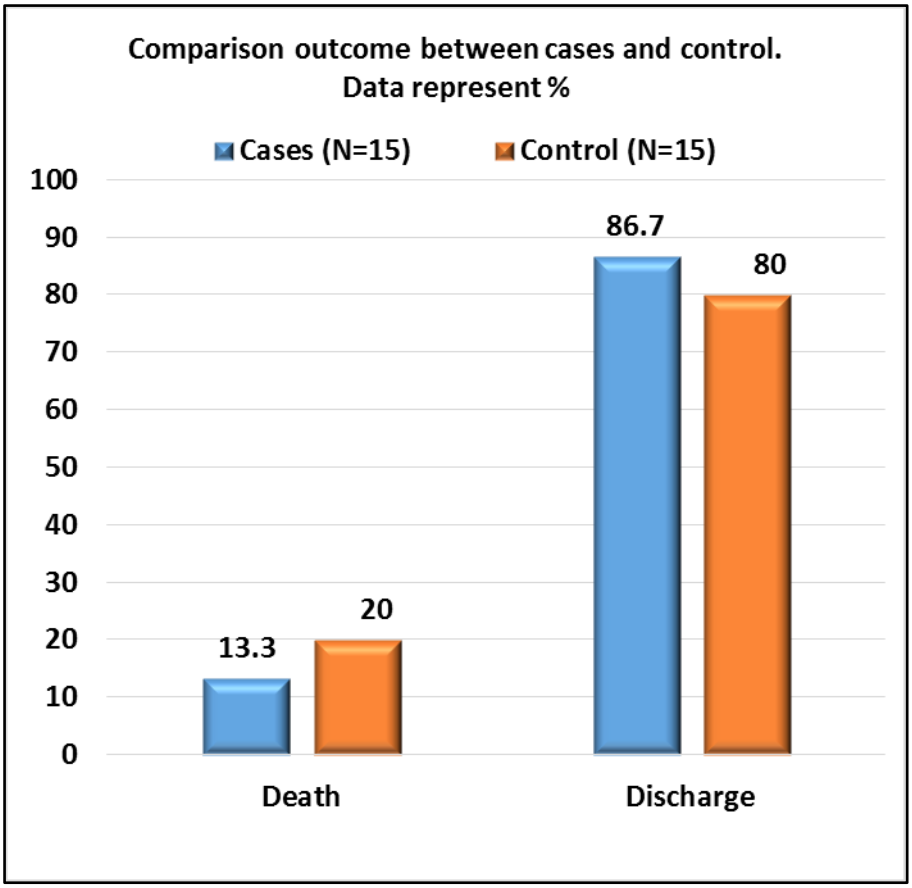


Table 15.Comparison of outcome between cases and controls.

S.No	Outcome	Case (N=15)		Control (N=15)		Chi square value	df	P value
		n	%	n	%			
1	Death	2	13.3	3	20	0.241	1	0.999 (NS)
2	Discharge	13	86.7	12	80			

Data are expressed as n with %. Fisher's exact test was used to compare the frequency between the groups. NS = Not significant.



Here, there not much difference in mortality among case and control groups.

IV. Discussion

Hollow viscous perforation, mainly gastroduodenal perforation is a most common cause of acute abdomen presenting in the emergency department and the definitive modality treatment is surgical management. Universally Omental patch repair is the most common procedure for Gastroduodenal perforation. Even after proper medical care, complications like septicemia, organ failure and mortality are high for perforation peritonitis. In our setup Gastro duodenal perforation is commonly encountered and treated. Hence this study of Early Enteral Feeding (EEF) using feeding jejunostomy tube in Gastic/ Duodenal perforation is carried out and its outcomes are observed.

Initiation of early enteral feeding has definitely found to be a safe and cost effective method of providing adequate nutrition to patients who undergo emergency GI surgeries. Lee HS, Shim H, Jang JY, et al. study in 2014 concluded that in patients without severe shock or bowel anastomosis instability, early feeding within 48 hours after emergency GI surgery may be feasible (1). Singh G, Ram RP, Khanna SK. et al study in 1998 reported that in patients with perforative peritonitis, immediate postoperative feeding through the feeding jejunostomy is feasible (2). In our study none of the patients developed intolerant features of EEF and hence it is well tolerated in Gastro Duoedenal perforations.

Early Enteral Feeding (EEF) aids in optimisation of the vital parameters and

the biochemical abnormalities of the post op patients earlier than the LEF patients. The ICU free days, Ventilator free days, infectious and septicemic complications, pulmonary complications are evidently reduced in EEF group of patients. Hyung soon Lee et al., study conducted in 2013 also reported in support of the above observation (3).

When compared to LEF, the patients who received EEF recovered earlier as observed by means of appearance of bowel sounds, passage of flatus, removal of Ryle's tube and shift from ICU to general ward. Moore et al., study conducted on 1999 reported in favour of the above observation.(5).

When compared to LEF group of patients, the length of hospital stay is significantly reduced among the patients under EEF group. Lewis SJ et al., study in 2009 reported in favour of the above observation.(6)

In the study conducted, there is no significant difference in the mortality rate among the study group and the control group. Malhotra et al., study conducted in 2003 is in favour of the results of our study. The

observations of our study reveals that the patients with early enteral feeding who underwent emergency surgery for Gastro Duodenal perforations were benefited in recovery and also in cost effectiveness than the LEF patients who underwent similar surgery for Gastro Duodenal perforations.

V. Conclusion

Early Enteral feeding is a safe and cost effective intervention among Gastro/ Duodenal perforation patients following surgical repair of the perforation. It aids in avoiding post surgical malnutrition of the patients. Feeding jejunostomy tube placement can be done conveniently on same setting of omental patch closure. It is a easy and relatively safe method for administering enteral feeds in post operative patients.

Early enteral feeding has a significantly better outcome in patients who underwent surgery for gastroduodenal perforation than conventional feeding of postoperative patients. Patients who were fed early through feeding jejunostomy tube showed not much difference in both clinical and biochemical parameters except total WBC count than the other group of patients who were fed only after appearance of bowel sounds / passing flatus on POD 5-7

Early enteral fed group showed appearance of bowel movements, passage of flatus and removal of Ryle's tube earlier than the other group. The need for ICU care is shortened in Early Enteral fed group.

In EEF group, majority of patients developed no complications compared to the LEF group. The duration of hospital stay is lower in the early enteral feeding group and hence discharged early . Hence the cost of medical expenses is grossly reduced among enteral fed group both directly and indirectly. Inspite of reduction of morbidity in EEF group, there is no significant reduction in mortality compared to the other group.

In any patient with Gastroduodenal perforation starting early enteral feeding via FJ tube is a safer and cost effective option which has direct impact on the morbidity of the patient both in early recovery and in preventing postoperative complications.

As the study contains a sample size of only 30, more chances of sampling error are present. So further studies which include large scale of population from different geography and a longer follow up period are recommended.

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