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FREQUENCY OF SPONTANEOUS CLOSURE OF POST-OPERATIVE ENTEROCUTANEOUS FISTULA.

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ABSTRACT… Objectives: To determine the frequency of spontaneous closure of post-operative enterocutaneous fistula at a tertiary care hospital. **Study Design:** Descriptive Case Series. **Setting:** Department of General Surgery Unit-I, Nishtar Medical University/ Hospital, Multan. **Period:** Nine months 1/4/2018 to 31/12/2018. **Material & Methods:** Non-probability consecutive sampling. **Results:** From 80 patients, 34 (42.5%) were male and 46 (57.5%) were female. Mean age of our patients was 40.31 ± 10.58 years. Most of our patients i.e. 55 (68.8%) belonged to poor families. Mean body mass index of our patients was 24.67 ± 3.39 kg/m^2 and obesity was present in only 14 (17.5%) patients. Initial surgery was elective in 53 (66.2%) and emergency surgery in 27 (33.8%) patients. Site of origin of ECFs was gastric in 17 (21.3%), duodenum in 22 (27.5%), Jejunum in 14 (17.4%), Ilium was involved in 17(21.3%) and colorectal in 10(12.5%). Mean disease duration was 3.21 ± 2.09 weeks and mean duration of surgery was noted to be 4.71 ± 2.13 hours and 73.8% underwent surgical procedure for up to 5 hours. Mean hospital stay was noted to be 13.58 ± 7.41 days while 73.8% stayed in hospital for more than 7 days. Spontaneous closure of post-operative enterocutaneous fistula was noted in 25 (31.3%) of our patients. **Conclusion:** Spontaneous closure of post-operative enterocutaneous fistula without any surgical intervention is quite common.

Key words: Enterocutaneous Fistula, Frequency, Spontaneous Closure.

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INTRODUCTION

The Latin word fistula means pipe, tube, cane or ulcer.[1] In medical terminology Fistula means "an abnormal communication between two epithelial-lined organs". Enterocutaneous fistulas (ECF) are abnormal communication between the gastrointestinal tract to the skin.[2,3] The majority (85%) of ECFs develops after abdominal surgery for diseases like gastro-intestinal tract malignancy, recurrent explorations, pelvic surgery, after extensive adhenolysis and abdominal trauma. The remaining 15% are secondary to radiation enteritis, IBD, intra-abdominal sepsis, diverticular disease and perforated malignancy. ECF is one of the most devastating complications of abdominal surgery.[1] The common sites of ECFs are small bowel, colon, stomach, and duodenum in decreasing order.[4,5] The management of Enterocutaneous fistula (ECF) is complex with significant morbidity and up to 65% mortality. With the improvement in resusetation, nutritional support, imaging, effective antibiotics and wound care mortality reduces nearly 20%.[3,6,7] Management of the enterocutaneous fistula is difficult and it requires coordination of different medical departments for successful outcome. Enterocutaneous fistula may heal spontaneousl y with conservative management within 4 weeks after its development. Definitive treatment is surgical and ideal results can be achieved with resection of the bowel containing the fistula and end to end anastomosis with the healthy bowel.[8] Martinenz et al[9] reported 37% spontaneous closure of postoperative enterocutaneous fistulae while Visschers et al[10] reported 29% spontaneous closure and Njeze et al[11] reported 31.7% spontaneous closure of ECFs.

OBJECTIVE

To determine the frequency of spontaneous

closure of post-operative enterocutaneous fistula at a tertiary care hospital.

MATERIAL & METHODS

This is a descriptive Case Series conducted at Surgical Unit-I, Nishtar Medical University/ Hospital, Multan for Nine months 1/4/2017 to 31/12/2017 from The sample size was 80 Patients with postoperative enterocutaneous fistula and the Sampling Technique used was Non-probability consecutive sampling.

Inclusion Criteria
Both male and female patients with enterocutaneous fistula, Age from 20 to 60 years.

Exclusion Criteria
Patients with history of multiple fistulae and recurrent cases of Enterocutaneous fistulae.

A specialized proforma has been developed to record the findings. Consecutive 80 cases were enrolled. Prior permission was taken from institutional ethical committee to conduct this study. Informed consent was taken from each patient. Once registered detailed history and physical examination, investigations was done and relevant information like diagnosis, type of surgery, duration of surgery, type of initial surgery and days taken from surgery to the development of fistula were noted in the proforma. These patients were managed conservatively for two weeks to see spontaneous closure of the ECFs. Those who did not recover spontaneously were managed by surgical treatment as per hospital protocols.

All the data was entered and analyzed using SPSS-18. Mean and standard deviation for quantitative variables like age, duration of surgery, disease duration and hospital stay were calculated. Frequencies and percentages were calculated for the qualitative variables like gender, age groups, type of initial surgery, site of origin, obesity, socioeconomic status, spontaneous closure. Effect modifiers like age, type of initial surgery, duration of surgery, site if origin of ECFs, hospital stays, socioeconomic status, gender and obesity were controlled by making stratified tables. Post stratification chi-square test was applied to see its effect on outcome. P value > 0.05 was considered as significant.

RESULTS

Of these 80 patients, 34 (42.5%) were male and 46 (57.5%) were female. Mean age of our patients were 40.31 ± 10.58 years (with minimum age was 20 years while maximum age was 60 years). Mean age of the male patients was noted to be 42.21 ± 13.77 years while that of female patients was noted to be 38.91 ± 8.03 years (p = 0.170). Our study results have indicated that majority of our patients i.e. 52 (65 %) were aged less than 40 years of age. Most of our patients i.e. 55 (68.8%) belonged to poor families. Mean body mass index of patients were 24.67 ± 3.39 kg/m^2 and obesity was present in 14 (17.5%). Initial surgery was elective in 53 (66.2%) and emergency surgery in 27 (33.8%) patients. Site of ECF origin was gastric in 17 (21.3%), duodenum in 22 (27.5%), Jejunum in 14 (17.4%), Ilium was involved in 21.3% and colorectal in 12.5%. (Table-I)

Mean disease duration was 3.21 ± 2.09 weeks and 81.2% (65) had duration of illness for 2 – 4 weeks, while 18.8% (15) has more than 4 weeks duration. Mean duration of surgery was noted to be 4.71 ± 2.13 hours and 73.8% underwent surgical procedure for up to 5 hours. Mean hospital stay was noted to be 13.58 ± 7.41 days while 73.8% stayed in hospital for more than 7 days. Spontaneous closure of post-operative enterocutaneous fistula with conservative management was noted in 25 (31.3%) of our study population Table-II.

Spontaneous closure of ECF was stratified with regards to gender, which shows P value of 0.001. It means spontaneous closure of ECF is more common in males than in females as shown in (Table-III). Regarding are groups i.e. 20-40 years and 41-60 years, statistically there is no difference of Spontaneous closure of ECF as P value is 0.454. Regarding socioeconomic status, statistically there is no difference in Spontaneous

closure of ECF as P value is 0.068. Statistically type of initial surgery shows significant difference in Spontaneous closure of ECF as P value is 0.000 (Table-IV) in elective and Emergency surgeries. Site of origin of fistula with the spontaneous closure of ECF statistically shows significant difference as P value is 0.000 (Table-V). Regarding duration of disease, there is no statistically difference either patients present between 2-4 weeks or more than 4 weeks as the P value is 0.766. Duration of surgery has statistically no difference as P value is 0.184. Regarding Hospital stay it shows statistical difference as P value is 0.000 (Table-VI).

Site of Origin	No. of Patients	Percentage
Gastric	17	21.3
Duodenum	22	27.5
Jejunum	14	17.4
Ilium	17	21.3
Colorectal	10	12.5
Total	80	100

Table-I. Distribution of patients by Site of origin. (n= 80)

Spontaneous Closure	No. of Patients	Percentage
Yes	25	31.3
No	55	68.7
Total	80	100

Table-II. Distribution of patients with spontaneous closure of Post-operative Entero-cutaneous fistula. (n= 80)

Gender	Spontaneous Closure		P-Value
	Yes (n=25)	No (n=55)	
Male (n =34)	18	16	0.001
Female (n =46)	07	39	
Total	80		

Table-III. Stratification of spontaneous closure of post-operative Entero-cutaneous fistula with regards to gender. (n = 80)

Initial Surgery	Spontaneous Closure		P-Value
	Yes (n=25)	No (n=55)	
Elective (n=53)	03	50	0.000
Emergency (n=27)	22	05	
Total	80		

Table-IV. Stratification of spontaneous closure of post-operative Entero-cutaneous fistula with regards to type of initial surgery. (n = 80)

Site of Origin	Spontaneous Closure		P-Value
	Yes (n=25)	No (n=55)	
Gastric (n=17)	00	17	0.000
Duodenum (n=22)	07	15	
Jejunum (n=14)	11	03	
Ilium (n=17)	07	10	
Colorectal (n=10)	00	10	
Total	80		

Table-V. Stratification of spontaneous closure of post-operative Entero-cutaneous fistula with regards to site of origin. (n = 80)

Hospital stay	Spontaneous Closure		P-Value
	Yes (n=25)	No (n=55)	
7 to 14 days (n=21)	21	00	0.000
More than 14 days (n=59)	04	55	
Total	80		

Table-VI. Stratification of spontaneous closure of post-operative Entero-cutaneous fistula with regards to hospital stay. (n = 80)

DISCUSSION

Enterocutaneous (EC) fistula is an abnormal communication between the gastrointestinal (GI) tract and skin. Surgery is the major cause of EC fistulas. About one third of fistulas close spontaneously with conservative management. Surgical treatment should be reserved for those ECF which has not close spontaneously after sufficient time has passed from the previous surgery. The successful management of GI fistula requires a multi-disciplinary team approach. With this coordinated approach, EC fistula can be controlled with acceptable morbidity and mortality. In surgical textbooks, enterocutaneous (EC) fistulas are described as surgical tragedies, catastrophes or disasters. Patients with EC fistula are faced with the burden of overcoming septic complications resulting from early infection, intra-abdominal abscesses, fluid and electrolyte imbalance and malnutrition.[12] The new recommendations of EC fistula management are 4Rs. A step-by-step approach is recommended to achieve these goals. First R is the Resuscitation for fluid and electrolytes imbalance as the patient is dehydrated and electrolytes depleted.

Second R is Restitution, which is usually known as "SNAP" which stands for care of Skin and control of Sepsis, Nutritional support, defining the fistula Anatomy and proposing the Procedure to address the fistula. Third R is Reconstruction means definitive operative intervention. Fourth R is Rehabilitation of the patient and family. Favorable EC fistulas include esophageal, duodenal stump, pancreaticobiliary, jejunal and ileal fistulas with small enteric defects (<1 cm) and long tracts (> 2 cm). In contrast, gastric, colorectal fistulas are less likely to close spontaneously[12], as in our study 25/56 (44%) cases shown in the Table-V.

Out of these 80 study patients, 34 (42.5%) were male and 46 (57.5%) were female patients. Khan et al[13] from Karachi also reported female gender predominance over male patients having enterocutaneous fistula, Owen et al[2] also reported female gender predominance with 51.6%, Njeze et al[11] also reported 51.3% female patients which is in compliance with our study results. This is because benign and malignant pelvic surgery is more common in females leading to ECF.

Mean age of our patients was 40.31 ± 10.58 years. Our study results have indicated that majority of our patients i.e. 52 (65%) were aged less than 40 years of age. In this age group trauma is more common in male and caesarean section and pelvic malignancy is more common in female. Similar results have been reported by Khan et al[13] from Karachi, Moosa et al[14] from Karachi also reported 33.9 ± 2.5 years mean age. Njeze et al[11] also reported similar results which are in accordance with our findings.

Initial surgery was elective in 53 (66.2%) and emergency surgery in 27 (33.8%). Statistically this shows significance as P value is 0.000. It is because in elective surgery there are more cases of malignancy and difficult pelvic surgery leading to ECF. In emergency cases most of the patients are due to trauma and these patients are physical fit and normal just before trauma.

Site of origin of ECF is shown in Table-V Similar results have been reported by Jamil et al[15], Njeze et al[11] and Owen et al.[2] Spontaneous closure of ECEs are statistically significant in cases of duodenum, jejunum and ileum showing P-value of 0.000. This means there are more chances of spontaneous closure of ECF if it arises from these sites.

Statistically mean disease duration 3.21 ± 2.09 weeks and mean duration of surgery 4.71 ± 2.13 hours does not affect the spontaneous closure of ECF. Mean hospital stay was noted to be 13.58 ± 7.41 days. Statistically P value 0.000 is significant in those patients who admitted for 7 to 14 days, in which closure of ECF occurs spontaneously as shown in Table-VI This shows that spontaneous closure of ECF occurs within 7 to 14 days of admission in which cases it has to occur; otherwise it will not close spontaneously. You have to intervene if it does not close after 14 days of admission. Now a days best time of intervene is 6-12 weeks after resusetation and restitution.

Spontaneous closure of post-operative enterocutaneous fistula was noted in 25 (31.3%) of our patients. Martinenz et al[9] reported 37% spontaneous closure of postoperative enterocutaneous fistulae, Visschers et al[10] reported 29% and Njeze et al[11] reported 31.7%, which is similar to our study findings.

CONCLUSION

Spontaneous closure of post-operative enterocutaneous fistula without any surgical intervention is quite common and it was significantly associated with male gender, site of origin and type of initial surgery.

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4	Uzma Rasheed	Collect the data.	
5	Shafiq Ullah	Analysis of data.	
6	Muhammad Sabir	Review the literature.