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CLINICAL STUDY OF ENTEROCUTANEOUS FISTULA

General Surgery

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ABSTRACT

Objective: To Study Cause, Anatomical Location, Output, Complications, Outcome Of 22 Consecutive Case Enterocutaneous Fistula(ecf) Managed From 2014 To 2019.

Method: This Descriptive Study Was Conducted Prospectively To Study Cause, Anatomical Location, Output, Complications,outcome Of 22 Case Of Enterocutaneuos Fistula(ecf).patients Whom Develop Ecf After Surgery Were Included In This Study While Patients With Esophageal,biliary,pancreatic And Perianal Fistula Were Excluded.fistula Output Was Quantified By Direct Measurment,in Presence Of Drain Or By Calculating Number Of Dressing Soaked Per Day.

Result: A Total Of 22 Patients Were Included In Study, Of Which 13 Male And 9 Female And Male To Female Ratio Is 3:2. Most Of Patients With Ecf Were Aged 35-55 Year.of The 42 Patients, 16 Had Small Bowel Fistula;2 Duodenal,6 Jejunal,8 Ileal And Remaining 6 Had Colonic Fistula.12 Patients Had Low Output Fistula And 10 Patient Had High Output Fistula.mortality Was Significanty Higher In Patients With Age > 55 Year,males,mesentric Ischemia As Underlying Pathology,re-surgery,serum Albumin <2.5 G/dl.

Conclusion: Early Diagnosis And Stabilization Form Key Aspects Of Management Of Ecf As Most Patients Are Managed Conservatively.prompt Nutritional Suppleiments Alters Outcome Of This Disease.high Output Fistulae Required Mostly Surgical Management And Had High Mortality And Morbidity.

KEYWORDS

INTRODUCTION

An Enterocutaneous Fistula (ecf) Is An Abnormal Communication Between Stomach, Small Or Large Bowel And The Skin Allowing The Gastrointestinal Contents To Flow Onto The Skin. It Occurs As A Result Of Many Factors: Surgical Misadventure Is The Most Common Cause, Malignancy, Inflammatory Bowel Disease, Distal Obstruction, Iatrogenic Or Spontaneous Bowel Injury, Complicated Intra-abdominal Infections Such As Tuberculosis, Amoebiasis, And Typhoid, Or Diverticular Disease Post Radiation Therapy For Malignancy. Enterocutaneous Fistulas (ecf) May Be Difficult To Manage Due To The Large Volume Of Fluid Losses, That May Result In Electrolyte Imbalances, Severe Dehydration, Malnutrition And Sepsis. It Is Important That This Group Of Patients Receive Adequate Nutrition Because Sepsis And Malnutrition Are The Leading Cause Of Death. Ecf Treatment Is Complex And Treatment Can Be Conservative Management Or Surgical. Priorities In The Management Of Gi Fistulas Include Correction Of Fluid, Electrolyte Imbalance, And Acid-base Imbalances; Control Of Infection And Sepsis With Appropriate Antibiotics And Drainage Of Abscesses; Initiation Of Gi Tract Rest Including Secretory Inhibition And Nasogastric Tube Insertion, Control And Collection Of Fistula Drainage With Protection Of The Surrounding Skin, And Provision Of Optimal Nutrition By Total Parenteral Nutrition Or Enteral Nutrition Or Both. The Role Of Nutrition Support In The Management Of Enterocutaneous Fistulas As Either Total Parenteral Nutrition Or Eneteral Nutrition Is Primarily One Of Supportive Care To Prevent Malnutrition, Thereby Obviating Further Deterioration Of An Already Debilitated Patient. Majority Of The Ecf Are Managed Conservatively With Bowel Rest, Nutritional And Fluid Support, Antibiotics And Monitoring. Increasing Fistula Output, Inability To Provide Adequate Nutrition, Sign Of Generalised Peritonitis And Sepsis Are Indications For Surgical Intervention. However, Surgery Should Be Delayed Until The Intra-abdominal And Systemic Conditions Of The Patient Are Conducive To Major Surgery. Non-healing Enterocutaneous Fistulas Are Associated With A Foreign Body, Radiation, Inflammatory Bowel Disease, Epithelization Of The Fistula Tract, Infection, Neoplasms And Distal Obstructions. The Aims Of Surgery For Enterocutaneous Fistulas Are: Re-functionalization Of The Entire Bowel, Resection Of The Fistula With End-to-end Anastomosis Of The Bowel And Secure Abdominal Wall Closure. Once Surgery Is Planned, Care Should Be Taken Not To Injure The Adjacent Bowels While Opening The Abdomen. The Fistula Tract Is Detected By Staining With Methylene Blue. After Identifying The Fistula Opening In The Bowel, Resection Of The Diseased Bowel And End-to-end Anastomosis Is The Preferred Method Compared To Over-sewing The Fistula Opening Of The Bowel, As Recurrent Fistula Is More Likely After Over-sewing (36%) Than Resection (16%). To Facilitate Early Feeding And Decompression Of The Proximal Bowel, Selected Cases Require Gastrostomy, Diverting Ileostomy Or Jejunostomy.

METHODS

This Descriptive Study Was Conducted Prospectively In All 22 Consecutive Patients, Who Developed Or Presented With Ecf In The Post-operative Setting During The Study Period Were Included In The Study. Patients With Esophageal, Biliary, Pancreatic, And Perianal Fistulas Were Excluded From This Study. A Diagnosis Of Ecf Was Made Clinically On Detection Of Intestinal Or Fecal Effluent From The Drain Site Or Abdominal Incision Site. Radiological Evaluation In The Form Of Contrast Enhanced Was Used To Identify The Origin Of The Fistula. Parameters Of Study Includes Patients Demographic Profile, Fistula Output, Biochemical Parameters And Outcome. The Description Of Fistula Included Cause, Anatomical Location, Fistula Output, Complications, And Outcome. Fistula Output Was Quantified By Direct Measurement, In The Presence Of Drain Or By Calculating Number Of Dressing Pads Soaked Per Day. A Fistula Output Of 500 Ml/day Was Taken As The Cutoff Between High And Low Output Fistulas.

RESULTS

A Total 22 Patients Were Included In Study, Of Which 13 Were Males And 9 Were Females And Male To Female Ratio Is 3:2.most Of Patient With Ecf Were Aged Between 35-55 Year.

Table No 1. Age Distribution Of Patients.

AGE (YEARS)	NO. OF PATIENTS
15-35	5
35-55	13
55-75	3
>75	1

Out Of 22 Patients, Emergency Laprotomy Performed In 16 Patients And Elective Surgery In Remaning 6 Patients Prior To Formation Of Ecf.the Surgeries Performed For Mesentric Vascular Ischemia Were More Prone To Develop Ecf As Compare To Other Etiology Such As Tb, Malignancy, Diverticulitis, Trauma.mesentric Vascular Ischemia Was The Most Common Underlying Surgical Pathology Amongest

Patients Developing Ecf After Emergency Surgery.while Tb Were Common Underlying Pathology In Elective Setting.

Table No 2. Etiological Distribution Of Ecf In Elective And Emergency Settings

ETIOLOGY	ELECTIVE (6)	EMERGENCY (16)
Mesentric Vascular Ischemia	2	9
Tuberculosis	3	3
Malignancy	1	2
Diverticulitis	0	1
Trauma	0	1

Out Of 22 Patients, 16 Patients Had Small Bowel Fistula; 2 Had Duodenal, 6 Had Jejunal, 8 Had Ileal With Mesetric Vascular Ischemia Being The Commonest Underlying Pathology And Remaining 6 Had Colonic Fistula With Diverticulitis Being Most Common Cause.

Table No 3: Site Of Ecf

SITE OF FISTULA	NO. OF PATIENTS
SMALL BOWEL	16
DUODENUM	2
JEJUNUM	6
ILEUM	8
LARGE BOWEL	6

Table No 4. Predictors Of Mortality In Ecf

PREDICTOTRS	DIED	SURVIVED
MALE	5	8
AGE >55 YEAR	2	2
MESENTRIC VASCULAR ISCHEMIA	4	7
JEJUNAL FISTULA	3	3
RE-SURGERY	2	2
ALBUMIN (<2.5 G/DL)	3	5
HIGH OUTPUT FISTULA	4	6

There Were 10 Patients With Highoutput Fistulas Compared To 12 Patients With Low Output Fistula.duedenal And Jejunal Fistula Accounted For 80% Of High Output Fistula.colonic Fistula Were More Likely To Have Low Output Fistula.

18 Patients Were Managed Conservatively While 4 Patients Needed Re-surgery. Males, Underlying Pathology Being Mesetric Ischemia, High Out Jejunal Fistulae And Emergency Surgery Were Significant Predictor Of Re-surgery.

Serum Albumin Was Less Than 2.5g/dl In 8 Patients With Mortality Of 37.5 % And There Was Significant Association With Mortality When Albumin Was Less Than 2.5mg/dl.

Total Parenteral Nutrition Was Used In 6 Patients, While 16 Patients Were Managed With Exclusive Enteral Nutrition. Oral Route (n=14) Was The Predominant Route Of Administration Of Enteral Nutrition While Jejunostomy Was Used In 2 Patients Commonly In Duodenal Fistulae.

Mortality In The Present Study Was 27.27% (n=6), With Males Having Higher Mortality (n=5). The Significant Predictors Of Mortality In The Present Study Were Male Sex, Age >60 Years, Ecf Following Emergency Surgery, Mesenteric Vascular Ischemia As The Underlying Pathology, Serum Albumin <2.5g/dl Requirement Of Re-surgery, High Output Fistulae And Jejunal Fistulae.

DISCUSSION

The Incidence Of Ecfs Were More Common In Males Than Females (13 Versus 9), Incidence Of Ecfs Were Common In 35-55 Years Of Age, Which Also Corresponds To The Common Age For Mesenteric Ischemia. However Mortality Was Higher In Patients Greater Than 55 Year Of Age Compared To Those Lesser Than 55 With A Significant Association With Mortality.

Ecf Following Emergency Laparotomy Were Commoner Than Elective Laparotomy Which Could Be Explained By The Presence Of Significant Inflammation, Contamination And Poorly Stabilized Patients In The Emergency Setup Giving Rise To Poor Wound Healing And Chances For Inadvertent Enterotomies.

With Respect To The Underlying Surgical Pathology For Which Surgery Was Performed Mesenteric Ischemia (n=11) Was The Most Common Etiology Predisposing To Ecf Due To Ongoing Ischemia And Poor Wound Healing Associated With The Same. Other Etiologies Identified In Study Were Malignancy, Tuberculosis, Diverticulitis And Trauma. Tuberculosis Was The Most Common Underlying Pathology In The Elective Setup While Mesenteric Ischemia Was Most Common In The Emergency Setup. Ecfs Originating From Small Intestine Were Commoner Than Large Intestine, This Was Due To The Common Underlying Pathology Of Mesenteric Ischemia Which Affects Small Intestine More Than Large Intestine. Amongst Small Intestine Ileum (n=8) Was The Most Common Site Of Origin Of Ecf Followed By Jejunum (n=6) And Duodenum Being The Least Common Site And Jejunal Origin Having Higher Mortality Than Others. The Site Of Origin Correlates Closely With The Nature Of Output As More Distal Fistulae Have Low Output In Comparison With Proximal Fistulae.

Conservative Management Was Used For Most Of The Patients (81.81%) With Rest Requiring Re-surgery. Most Of The Patients Required Emergency Re-surgery With Male Sex, Jejuna Fistulae, High Output, Previous Emergency Surgery And Mesenteric Ischemia As Underlying Pathology Were Significant Predictors For The Need Of Re-surgery With Re-surgery Increasing The Risk Of Morbidity And Mortality.

Serum Albumin Was Measured In All Patients Of Ecf And Levels Lower Than 2.5g/dl Were Associated With Significant Chance Of Mortality, However Low Serum Albumin Levels Were Not Significantly Associated With The Need For Re-surgery. This Emphasizes The Need For Early Supplemental Nutrition And Maintenance Of Serum Albumin Levels For Prompt Wound Healing And Quick Recovery.

With Regards To Nutrition, Enteral Nutrition Was The Most Common Route Preferred In 72.73% Patients. Total Parenteral Nutrition Was Used In 27.27% Of Patients. Amongst The Enterally Fed Patients Oral Route Was The Preferred One With Tube Feeding Resorted To Patients Not Tolerating Enteral Feeds. Duodenal Fistulae Have The Peculiar Need For Tube Jejunostomy Feeding Due To The Inability To Use The Upper Gastrointestinal Tract. As Previously Mentioned Early And Adequate Nutritional Supplementation Mitigates The Stress Response, The Route Of Supplementation Also Provides Advantage. The Preferred Route Being Enteral With Its Preservation Of Mucosal Integrity Over Parenteral Route Due To The Inherent Risks Associated With Obtaining Access And Provision Of Parenteral Nutrition.

Mortality In The Present Study Was 27.27% (n=6). The Significant Predictors Of Mortality In Our Study Were Male Sex, Age >60 Years, Ecf Following Emergency Surgery, Mesenteric Vascular Ischemia As The Underlying Pathology, High Output Fistulae, Jejunal Fistulae, Serum Albumin <2.5g/d And Requirement Of Re-surgery.

CONCLUSION

Thus, Early Diagnosis And Stabilization Form Key Aspects Of Management Of Ecf As Most Patients Are Managed Conservatively. prompt Nutritional Suppleiments Alters Outcome Of This Disease.high Output Fistulae Required Mostly Surgical Management And High Morbidity And Mortality.

The Treatment Of Ecf Needs A Multidisciplinary Team Comprising Of The Surgeon, Intensivist, Nutritional Therapist, Physiotherapist And Staff Nurses For Effective Functioning And Expediting The Recovery.

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