MACROJOURNALS

The Journal of **Macro**Trends in
Health and Medicine

Nursing care and patient education in enterocutaneous fistulas

Asiye Gul*, Isil Isik Andsoy, Birgul Ozkaya*****

*Istanbul University, Faculty of Health Science, Istanbul/Turkey
**Karabuk University, School of Health, Istanbul/Turkey
***Bakirkoy Dr.Sadi Konuk Research and Teaching Hospital

Abstract

Aim: A fistula is a communication between two or more organs or structures. In this study, we address the problems and nursing care and education in patients with enterocutaneous fistulas.

Introduction: Enterocutaneus fistulas most frequently occur postoperative period The aims of therapy for an enterocutaneous fistulas effective management plan must achieve the following goals: skin protection, patient comfort and mobility, containment of drainage and odor, correct metabolic and nutritional deficits, close the fistula, and reestablish continuity of the gastrointestinal tract.

Discussion: The main objective is to provide healing of the wound. Skin protection and prevention is key components in wound care. Control of the fistula drainage is important for skin integrity. Skin discomfort can seriously affect the patient if the proper management technique is not used. Various materials such as: skin barriers, adhesives, dressing and pouches, can be used to protect the skin. The skin around a fistula must be clean and dry for effective pouch adherence. Odor control is best controlled with the use of a pouch. Adequate protein and calories, vitamins and trace elements should be added to enteral formulas and parenteral formulas to prevent nutritional deficiencies. Adequate nutritional support is essential in the postoperative process. The prevention fluid and electrolyte imbalance is required for wound care. Carefully monitored replacement of the losses fluids is essential and is often paired with central venous monitoring to accurately estimate fluid deficits.

Conclusion: Successful management of patients with enterocutaneous fistulas, especially nurses, multidisciplinary team such as; dieticians, pharmacists, physicians, surgeons etc. play important roles.

Keywords: *care, education, enterocutaneous fistulas, nursing,*

1. Introduction

A fistula is an abnormal communications between two or more organs or structures (Kozell & Martins, 2003; Dumlu & Karakan, 2004; Lloyd et al., 2006; Taggarshe et al., 2010; Pratin & Siriluck, 2011). Fistulas can be internally and/ or externally (Dumlu & Karakan, 2004; Thompson & Epanomeritakis, 2008). Fistulas from the bowel to skin or to a wound are called enterocutaneous fistulae (ECF) (Parrish, 2014). ECF fistulas can be divided into two type: spontaneous and postoperative (Thompson & Epanomeritakis, 2008; Parrish, 2014) (Table 1). Spontaneous fistulae account for 15–25% (Thompson & Epanomeritakis, 2008).

Table 1. Enterocutaneous fistulas causes

Surgical fistulas	**Spontaneous fistulas**
• Lysis of adhesions/enterotomies	• Inflammatory bowel disease
• Bowel resection for cancer	• Diverticular disease
• Surgery on radiated bowel	• Ischemic bowel
• Unprepared bowel	• Perforated ulcerations
• Bowel injury	• Appendicitis
• Anastomotic leakage	• Trauma
• Complicated suture techniques	• Gynecologic malignancies
• Infections	

(Parrish, 2014; Hoedema & Suryadevara, 2010)

Most ECF occur after surgery (Dumlu & Karakan, 2004; Taggarshe et al., 2010). It is estimated that 70-90% of ECF arise after surgical procedures as a result of bowel injury, inadvertent enterotomy and / or anastomotic leakage as a result of a foreign body close to the suture line, tension on the suture line, complicated suture techniques, distal obstruction, hematoma, abscess formation at the anastomotic site, or tumor (Kozell & Martins, 2003; Dumlu & Karakan, 2004; Lloyd et al., 2006).

ECF has been associated with prolonged hospital stays and high morbidity and mortality (Taggarshe et al., 2010). High-output fistula and the presence of complication increase the mortality rate (Lloyd et al., 2006). ECF with patients often have malnutrition, wound infection and coexisting sepsis (Taggarshe et al., 2010). The majority of deaths are due to fluid or electrolyte imbalance, malnutrition and sepsis (Kozell & Martins, 2003).

2. Aim

The objective of this study was drawn to important situation, the management of ECF and nursing interventions. Management of patients with EC fistulas is considerable challenges to medical and nursing staff.

3. Management of enterocutaneous fistulas

Management of ECF should initialy focus on correction of fluid and electrolyte imbalance, treatment of sepsis and control of fistula output (Lloyd et al., 2006). The enterostomal therapist nurse should establish the wound care management plan which included: maintenance of fistula drainage and accurate measurement of fluid balance, protection of the skin, provision of nutritional support, enhanced patient comfort, mobility and odour control, optimised patient satisfaction and quality of life (Pratin & Siriluck, 2011).

4. Diagnosis

Post-operative fistulas occur postoperatively on day seven to 10. (Kozell & Martins, 2003; Kayaalp et al., 2006; Parrish, 2014). Onset may be uncertain (Kayaalp et al., 2006).The first symptoms are abdominal pain and tenderness, high white blood cell count, fever, erythema, and cellulitis (Parrish, 2014). Postoperative septic shock and acidosis is associated with peritonitis signs (Kayaalp et al., 2006). The drainage begins around erythema within 24 to 48 hours (Kayaalp et al., 2006; Parrish, 2014). Physiologic classified fistulae as: 1.High output: >500ml/day 2.Moderate output: 200–500ml/day 3.Low output: <200 ml/day (Kozell & Martins, 2003; Kayaalp et al., 2006; Thompson & Epanomeritakis, 2008).

Intra-abdominal fluid detected by imaging methods (Kayaalp et al., 2006). Assessment of the anatomical features of the fistula is accomplished through radiography (Kozell & Martins, 2003). Computed tomography, cystoscopy, intravenous pyelogram and ultrasound can be used to aid identification of the fistula (Kozell & Martins, 2003; Dumlu & Karakan, 2004).

5. Treatment

Concervative treatment: The overall objective of the therapy helps the patient's physical and psychological well-being (Kozell & Martins, 2003). The principles of nursing management for ECF involve maintenance of skin integrity, promotion of wound healing, recording accurate intake/output ensuring adequate nutrition and providing psychological care and support (Thompson & Epanomeritakis, 2008). Total parenteral nutrition (TPN), somatostatin analogues (octreotide), vacuum-assisted closure (VAC) and fibrin glue have been used to decrease the output and help in spontaneous closure (Taggarshe et al., 2010). Taggarshe et al. (2010) found that conservative management was more successful in low output fistulae (75%) than high output fistulae (43%). Somatostatin is a peptide hormone that has an inhibitory effect on gastrointestinal secretion and octreotide is used most commonly in the treatment of gastrointestinal fistula (Lloyd et al., 2006). Octreotide reduces the secretion of a range of gastrointestinal hormones (gastrin and cholecystokinin) and reduce splanchnic blood flow, reduces the rate of gastric emptying and inhibits gallbladder contraction (Lloyd et al., 2006).

Somatostatin and octreotide inhibit the secretion of both insülin and glucagon, and treatment with these agents may be associated with increased blood glucose concentrations (Lloyd et al., 2006).

Nutritional supplements: The patient need to be kept on nil by mouth (NBM) when the fistula was active (Kozell & Martins, 2003; Thompson & Epanomeritakis, 2008). It is suggested that total parenteral nutrition (TPN) reduces the enteric secretions and fistula output thus it closes spontaneously (Taggarshe et al., 2010). A gastrointestinal secretion is reduced by 30–50% in patients receiving TPN, which helps the fistula closure (Thompson & Epanomeritakis, 2008). However, the use of central venous catheter for TPN carries with it the risks of sepsis, venous thrombosis and pneumothorax (Lloyd et al., 2006). Adequate nutrition influences many aspects of care (Lloyd et al., 2006; Thompson & Epanomeritakis, 2008). Nutritional support is a key factor in reducing the mortality rate (Thompson & Epanomeritakis, 2008). Adequate nutritional support, ensuring positive nitrogen balance, adequate minerals, vitamins calories and protein requirements helps spontaneous closure of the fistula (Kozell & Martins, 2003).

The most important task of nutritional support (enteral or paranteral) is the prevention of malnutrition (Lloyd et al., 2006). Malnutrition impairs wound healing and increases the risk of postoperative infection (Kozell & Martins, 2003; Lloyd et al., 2006). There are multiple factors that constribute to malnutrition in patients with enterocutaneous fistulas (Lloyd et al., 2006). Caloric requirements are adequately replaced (37-45 calories/ kg/24 hours), protein needs is between 1.5 to 1.75 g/kg in a 24-hour period (Kozell & Martins, 2003).

Fluid and electrolyte balance: The gastrointestinal tract secretes five to nine litres of sodium, potassium, chloride and bicarbonate daily (Kozell & Martins, 2003). A patient with a high-output fistula can develop fluid and electrolyte imbalance in a short period of time (Kozell & Martins, 2003; Lloyd et al., 2006; Pratin & Siriluck, 2011). Electrolytes and fluid deficiency threatens the overall circulatory system (Kozell & Martins, 2003). There may be significant loss of potassium, chloride and bicarbonate ions, depending on the exact site of origin of the fistula (Lloyd et al., 2006).

Skin Protection: Reduction in the volume of irritant effluent facilitates scin care (Lloyd et al., 2006). The effects of continuous moisture from the ECF can damage the surrounding skin (Lloyd et al., 2006; Hoedema & Suryadevara, 2010). Skin barriers (wafers, powder, paste, and sealants) protect the skin around the fistula (Hoedema & Suryadevara, 2010) (Figure 1). Effective skin care can be achieved with a combination of appliances and barrier products (Lloyd et al., 2006). Dressing material and adhesives absorb and retain caustic secretions, thereby contributing to the healing of ECF (Hoedema & Suryadevara, 2010). Fibrin glue has been used as a sealant to aid fistula closure (Taggarshe et al., 2010). The location of the fistula within the bowel determines the corrosiveness of the effluent on the skin (Thompson & Epanomeritakis, 2008). Gastric secretions can be reduced using H_2 receptor antagonist or proton pump inhibitors thereby alleviate the skin irritation (Kayaalp et al., 2006; Lloyd et al., 2006). Therefore, stoma or VAC can be applied to protect the skin (Hoedema & Suryadevara, 2010) (Figure 2).

Figure 1. Skin barrier

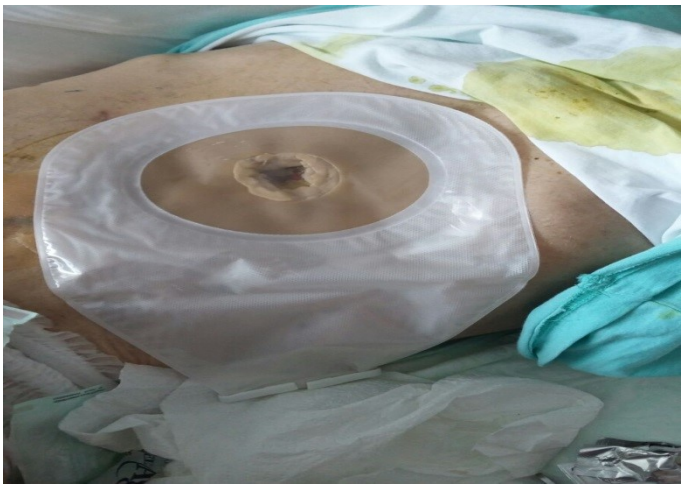

Figure 2. Stoma

Infection control: Sepsis is common in patients with enterocutaneous fistula and rapid and aggressive treatment is required (Lloyd et al., 2006). Local and systemic sepsis must be treated with appropriate drainage and appropriate antibiotics (Kozell & Martins, 2003). Infection may be due to ongoing anastomotic leakage, to effects of the fistula effluent or to complications of treatment, such as central venous catheter infection, (Lloyd et al., 2006).

Surgical Approach: The goal is fistula closure with minimal morbidity and mortality (Lloyd et al., 2006). The rates of spontaneous fistula closure range from 19% to 70% (Parrish, 2014 Kayaalp et al., 2006). If the fistula does not close spontaneously, surgical intervention is performed (Kayaalp et al., 2006; Parrish, 2014). Taggarshe et al., (2010) found that surgery was successful 80% in patients.

Patient comfort and mobility: Patients with enterocutaneous fistula have usually undergone majör surgery and suffered a significant complication (Lloyd et al., 2006). Several factors that require consideration when managing fistula for patients; extended hospital stay, skin integrity, compromised nutritional status, altered body image, pain/discomfort and immobility (Lloyd et al., 2006; Thompson & Epanomeritakis, 2008). Persistent odor from the ECF can be a source of anxiety and social concern for these patients. Odor control may be controlled by a suitable pouch and deodorants (tablet, liquid, or powder forms) (Hoedema & Suryadevara, 2010). Therefore psychological care and support is great importance for patients' family and members (Kayaalp et al., 2006; Lloyd et al., 2006; Thompson & Epanomeritakis, 2008). Maintaining mobility and independence is fundamental for the patient (Thompson & Epanomeritakis, 2008).

6. Conclusion

Successful management of patients with enterocutaneous fistulas, especially nurses, multidisciplinary team such as; dieticians, pharmacists, physicians, surgeons etc. play important roles. The patient and family's physical and psychological health is essential for the health-care team.

Reference

Dumlu, G.Ş. & Karakan, T. (2004). Gastrointestinal fistüller. *Güncel Gastroenteroloji*, 8 (1): 40-48.

Hoedema, R.E. & Suryadevara, S. (2010). Enterostomal therapy and wound care of the enterocutaneous fistula patient. *Clinics in Colon and Rectal Surgery*, 23 (3): 161–168.

Lloyd, D.A.J., Gabe, S.M., & Windsor, A.C.J. (2006). Nutrition and management of enterocutaneus fistula. *British Journal of Surgery*, 93: 1045-1055.

Kayaalp, C., Aydın, C. & Neşşar, G. (2006). Enterokütan crohn hastalığında cerrahi tedavi. *Güncel gastroenteroloji*, 10 (1): 45-52.

Kozell, K. & Martins, L. (2003). Managing the challenges of enterocutaneous fistulas. *Wound Care Canada,* 1:(1): 10-14.

Parrish, C.R. (2010). The Art of fistuloclysis: nutritional management of enterocutaneous fistulas. *Nutrition Issues in Gastroenterology, Practical Gastroenterology*, 4, (87): 47-56.

Pratin, C. & Siriluck, S. (2011). The management of a patient with enterocutaneous fistula: a complex case study. *Wound Practice and Research*, 19 (3): 122-125.

Taggarshe, D., Bakston, D., Jacobs, M., McKendrick, A., Mittal, V.K. (2010). Management of enterocutaneous fistulae: A 10 years experience. *World Joournal of Gastrointestinal Surgery,* 2 (7): 242-246.

Thompson, M.J. & Epanomeritakis, E. (2008). An accountable fistula management treatment plan. *British Journal of Nursing*, 17 (7): 434-440.