Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 13486 – 13496
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.6325

Safety Protocols in Nursing: Best Practices for Documenting Nutritional Assessments and Dermatological Treatments in Laboratory Settings

Ali Barjas Alshubromi[1], Ahmed Mohamed Darbashi[2], Saad Abdullah Saud Alsharari[3], Ahmad Salem A Alzahrani[4], Musallam Mohammed M Alsharari[5], Seham Fahad Al-Mutairi[6], Nader Nasser Nader Alshaibani[7], Nawal Mohammed Saleh Almobaraki[8], Salma Hulel Alotaibi[9], Seham Mohammad Abdu Awaji[10], Kholud Mohammed Alsaud[11], Fatmah Mohammad Alkaabi[12], Zakiah Kirallah Brick Alrashedi[13], Ahmed Aziz Muthaffar[14], Wadia Ali Ahmad Masmali[15]

Abstract

Enterocutaneous fistulas (ECFs) present significant challenges in clinical management, often leading to malnutrition and increased morbidity. Effective nutritional support is crucial for patient recovery, particularly in post-surgical settings.This review systematically examines best practices for documenting nutritional assessments and dermatological treatments for patients with ECF in laboratory environments. A comprehensive literature search was conducted across multiple databases, including PubMed, MEDLINE, and Scopus, focusing on studies published from 2019 to 2023 that address nutritional management and care protocols for ECF patients.The findings highlight the importance of a multidisciplinary approach involving surgeons, nutritionists, and nursing staff in managing ECF. Nutritional assessments using standardized tools such as the ASPEN/FELANPE guidelines are essential for identifying malnutrition. The review also emphasizes the role of parenteral nutrition (PN) as a critical component of care, particularly in patients with high-output ECF, while monitoring fluid and electrolyte balance remains paramount.Implementing robust documentation practices and effective nutritional support strategies is vital for improving outcomes in patients with ECF. The integration of evidence-based guidelines into routine clinical practice can enhance interdisciplinary communication and optimize patient care.

Keywords: *Enterocutaneous Fistula, Nutritional Assessment, Parenteral Nutrition, Multidisciplinary Approach, Patient Care.*

Introduction

An enterocutaneous fistula (ECF) is an unnatural and unintended link between the gastrointestinal system and the dermis. The main causes of ECF are anastomotic leaks resulting from previous intestinal surgery as well as inflammatory bowel illness. It manifests as a complication in one percent of all planned and urgent abdominal surgeries and is linked to significant morbidity [1, 2]. The advent of parenteral food (PN) represented a significant advancement in the treatment of ECF by directly targeting malnutrition, a primary contributor to mortality. Prior to the extensive use of parenteral nutrition, historical fatality rates for enteral feeding complications were 50%. [3, 4]. The use of parenteral "hyperalimentation" and the widespread

[1] Ksa, Ministry of Health, Riyadh
[2] Ksa, Ministry of Health, Samtah General Hospital.
[3] Ksa, Ministry of Health, Al-Jouf Health Pool.
[4] Ksa, Ministry of Health, Health Control Centers in King Abdulaziz International Airport In Jeddah.
[5] Ksa, Ministry of Health, Qurayyat General Hospital
[6] Ksa, Ministry of Health, Aldrayah Hospital
[7] Ksa, Ministry of Health, Alamal Complex for Mental Health – Riyadh
[8] Ksa, Ministry of Health, King Saud Medical City
[9] Ksa, MinistryoOf Health, King Saud Medical City
[10] Ksa, Ministry of Health, King Saud Medical City
[11] Ksa, Ministry of Health, King Saud Medical City
[12] Ksa, Ministry of Health, King Saud Medical City
[13] Ksa, MinistryoOf Health, King Saud Medical City
[14] Ksa, Ministry of Health, Jazan General Hospital
[15] Ksa, Ministry of Health, Jazan General Hospital

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adoption of stringent bowel rest resulted in a reduction in reported death rates to 25% [5-7].In the twenty-first century, the focus has switched to prioritizing the gastrointestinal tract wherever feasible, allowing many patients with enterocutaneous fistulae (ECF) to transition from parenteral nourishment (PN) to enteral nourishment (EN) or an oral diet. The death rate has declined to around 10% [8, 9].

An exceptionally grim variant of enteric fistula complications is the enteroatmospheric fistula (EAF), which arises during damage control surgery, resulting in a postoperative open abdomen for the patient. In contrast to an ECF, an EAF lacks soft tissue (including peritoneum, fascia, muscle, or subcutaneous fat) among the intestinal opening and the atmosphere, making source control of contamination far more challenging. The mortality rate linked to EAF is high at 30% [10].

Managing patients with ECF presents considerable hurdles for doctors. A multidisciplinary approach is necessary, including doctors, advanced practice providers, nutritionists, pharmacists specializing in ECF management, and nurses proficient in wound and stoma care. Clinical trials on parenteral nutrition therapy in patients with enterocutaneous fistulas are few, and recommendations tend to be ambiguous, mostly depending on specific institutional or clinical expertise [11]. Due to the complex nature of this illness among a diverse population, randomized controlled trials were found to substantiate just one of the seven recommendation claims. In the absence of data, doctors must depend on expert agreement and established nutritional concepts to inform their practice. This study aims to evaluate the nutritional assistance for individuals with ECF, with a specific focus on the appropriate use of PN.

Immediate Management: Enhancing Nutrition and Hydration

The effective treatment of ECF may be categorized into stages of care, with the early phase including recognition and stabilization [12]. In this phase, it is essential to achieve source control, either by surgical procedures or percutaneous methods. Based on the rate of ECF development post-surgery, it may be feasible to reenter the abdomen before it becomes "hostile" and "frozen" to pursue direct fistula repair, divert the gastrointestinal tract proximal to the fistula, exteriorize the fistula to create a stoma or insert surgical drains to direct fluid flow. If the opportunity for surgical entrance into the peritoneal cavity has elapsed, it may still be feasible to redirect the ECF pathway away from the midline, depending upon the volume of subcutaneous tissue above the fascia. Should this also be unfeasible, percutaneous drainage of fluid collections and abscesses, facilitated by interventional radiology, may be necessary for source control.

Immediate objectives in the early phase of ECF management are identifying the ECF site, quantifying ECF outflow, attaining fluid and electrolyte equilibrium, and excluding distal blockage [11]. Imaging modalities used to ascertain gastrointestinal tract architecture consist of computed tomography (CT) and fluoroscopic examinations, including upper gastrointestinal series with small-bowel follow-up, fistulogram (contrast injection straight into the fistula), as well as contrast enema. The physician should at least ascertain the approximate origin of the ECF within the gastrointestinal system. In addition to this fundamental description, pertinent information derived from imaging studies includes the length of small intestine proximal to the fistula, the length of small intestine distal to the fistula, the approximate percentage of gastrointestinal tract effluent exiting the enteric fistula compared to that flowing into the distal intestine, the period of transit from the pylorus to the enteric fistula, the presence or absence of multiple enteric fistulas potentially merging into a single exit pathway to the skin, and the presence or absence of distal obstructions. The aforementioned facts, together with the inherent quality of the existing bowel and the existence or lack of colon-in-continuity, might assist in forecasting the probability of success with different nutritional routes (i.e., oral, enteral, and parenteral). A patient with a solitary ileal fistula, where just 25% of contrast extravasates from the fistula, may likely sustain sufficient nourishment with an oral diet due to the presence of enough gut for absorption and the capacity to regulate fistula outflow. Conversely, a patient with a proximal jejunal fistula that is internally fistulized to the transverse colon is unable to sustain enough nutrition on an oral diet due to the restricted gut continuity available for absorption [13].

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Evaluation of Nutritional Status

The evaluation of the diet at the time of ECF diagnosis is a crucial component in formulating a nutrition treatment strategy. Regrettably, there are no malnutrition screening or evaluation instruments particularly designed or validated for individuals with ECF. The ASPEN/FELANPE clinical recommendations for ECF recommend diagnosing malnutrition by nutritional history, which includes assessing accidental weight loss, estimating energy and nutrient consumption, and conducting a physical examination [11]. This may be most effectively diagnosed and recorded using established standardized nutrition assessment instruments, such as the National Academy of Nourishment and Dietetics–ASPEN Indicators of Malnutrition (AAIM) for adult patients or the Global Leadership Initiative on Malnutrition (GLIM) criteria [14]. The Academy of Nutrition and Dietetics–AAIM tool necessitates the identification of two or more of the following six characteristics for diagnosing adult malnutrition: inadequate energy intake, weight loss, muscle mass depletion, reduction of subcutaneous fat, localized or generalized fluid retention, and impaired functional status as assessed by handgrip strength [13]. Since handgrip strength is not consistently a reliable indicator of physical function, other validated performance measures should be utilized when accessible.

All patients with ECF should be regarded as susceptible to malnutrition because of the potential for nutritional malabsorption, significant fluid and electrolyte losses, and chronic inflammation [11]. Consequently, even in the absence of malnutrition at baseline, regular reevaluation of nutritional status is necessary. Many people with ECF are also overweight or obese. The Sustain registry, which gathered data on adult patients on home parenteral nutrition (HPN), indicated that 43% of patients receiving HPN due to enterocutaneous fistula (ECF) were classified as overweight or obese [15]. A significant number of these individuals exhibit or are predisposed to sarcopenic obesity due to extended stays in critical care units or lengthy periods of bed rest. Sarcopenic obesity is characterized by an expedited reduction in muscle mass and a deterioration in functional ability, which correlates with inadequate recovery and worse quality of life [16]. A comprehensive history of energy and food consumption, inadvertent weight reduction, and functional ability are essential metrics to gather from all patients with ECF, even those with a high body mass index (BMI), defined as weight (kg) divided by height squared (m^2).

Serum protein levels have traditionally served as a factor in nutritional evaluation for patients with ECF, however, they are recognized to be affected by acute inflammation. Consequently, it lacks precision for diagnosing malnutrition. Nonetheless, research indicates that low blood protein levels may have prognostic importance for these individuals. A retrospective analysis of 53 patients with gastrointestinal cancer who acquired postoperative enteric fistulas and were receiving parenteral nutrition revealed that an increase in blood albumin concentration was an independent prognostic factor for spontaneous fistula closure [17]. While serum albumin monitoring did not predict clinical outcomes in a retrospective study of 79 individuals with ECF, a rise in serum transferrin (from baseline to week 3) was identified as a predictor of spontaneous closure [18]. Moreover, decreased levels of serum transferrin, retinol-binding protein, and prealbumin were identified as predictors of death risk. The ASPEN/FELANPE clinical recommendations for ECF advise measuring blood protein levels before and throughout nutrition treatment in adult patients with ECF to serve as a predictive predictor of outcomes [11].

Establishing Nutritional Pathway and Need for Intestinal Rest

The majority of patients with enterocutaneous fistula (ECF) are eligible for varying levels of nutritional therapy and/or enteral nutrition (EN), however it is generally advisable to implement strict bowel rest at first presentation. This procedure will facilitate the stability of fluid and electrolyte equilibrium and enable the measurement of baseline extracellular fluid outflow without gastrointestinal tract stimulation. The cephalic phase of digestion serves as a potent catalyst for gastrointestinal tract secretions, and even little oral intake may lead to a substantial rise in the volume of fistula output [19, 20].

For patients demonstrating a significant reduction in ECF output with strict bowel rest, it may be advisable to maintain bowel rest while implementing additional medical treatments aimed at transforming the ECF output from liquid to solid and facilitating spontaneous fistula closure [21, 22]. These therapies include vigorous stomach acid suppression (administration of intravenous proton pump inhibitors), octreotide,

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antidiarrheal medicines, and thickening substances [23, 24]. Despite the lack of high-level data supporting these therapies, they possess a very advantageous risk profile, and the therapeutic benefit is often observable within a few days. A pilot trial of teduglutide conducted among individuals with low-output enterocutaneous fistula showed potential; however, the sample size was very limited, and the medicine lacks Food and Medicine Administration (FDA) approval for this use [25].

Depending on the location of the enteric fistula and the amount of output, some patients encounter challenges in regulating the fistula output and ensuring sufficient skin defense at the wound site. This denotes an additional group of patients who could benefit from at least temporary full bowel rest, irrespective of the probability of spontaneous closure with medicinal treatments. Persistent leaking and interaction among succus and skin may lead to epithelial denudation and severe localized skin irritation. Denuded wound tissue corresponds to a second-degree (partial thickness) burn, resulting in a wet and slippery epithelial surface that hinders the adhesion of wound management products and adjuvant powders and lotions. A temporary total bowel rest will facilitate a reduction in fistula output, providing time for the adjacent epithelium to regenerate and for the management of the fistula at the skin level to be restored.

The ASPEN/FELANPE clinical recommendations for ECF treatment indicate that "oral diet or EN may be viable and well-tolerated in patients with low-output (<500 mL/d) ECF." [11]. If fistula output remains mostly unchanged by oral nutritional consumption and there is effective management of external fluid drainage at the dermal level, an oral diet may provide considerable patient comfort and psychological advantages. Despite increased ECF output, oral intake may be suitable in some instances for non-nutritional advantages, including preserving gut mucosal viability and supporting healthy gut flora. Oral rehydration products may provide a more effective hydration source that is more tolerated than hypotonic or sugar-laden drinks due to improved absorption. If oral nutritional intake is intolerable, enteral nutrition may be viable. In some instances, administering nutrition proximal to the fistula and using a fundamental or semi-elemental enteral formula may effectively provide substantial nutrition while little elevating fistula output. For patients with a substantial segment of residual intestine distal to the enteric fistula, it is prudent to seek enteral access distal to the fistula, either directly via the fistula or at a new site using an open, endoscopic, or percutaneous method. Administering enteral nutrition distally via the fistula (fistuloclysis) and reinfusing intestinal secretions (fistula refeeding) facilitates nutrient absorption in the segment of the intestine that would otherwise develop disuse atrophy. Fistuloclysis has been linked to the cessation of parenteral nutrition, enhancement of liver transaminases, expedited postoperative gastrointestinal recovery, and reduced hospital duration [26-29].

If nutritional objectives cannot be met exclusively with oral nutrition and/or enteral nutrition, adjunctive treatment with additional parenteral nutrition may be warranted. The ASPEN clinical recommendations on ECF care state that "individuals with high-output ECF (>500 ml/d) may necessitate PN to fulfill fluid, electrolyte, and nutrient needs to facilitate spontaneous or surgical completion of the ECF."11 In a comprehensive analysis including 34 studies and 2197 patients, it was revealed that 62% of hospitalized patients with ECF used PN either alone or in conjunction with oral nutrition and/or EN, irrespective of the therapeutic strategy employed [30]. Despite increased ECF output from oral food, parenteral nutrition and/or extra intravenous fluids may be administered to maintain euvolemia. The advantages of permitting ad libitum oral intake on patient condition and drive are significant and, based on the author's experience, can often determine whether a patient opts to persist with comprehensive aggressive therapy aimed at cure or shifts to hospice-oriented care.

Commencement of Parenteral Nutrition

The commencement of parenteral nutrition in the early stages of enteral feeding management necessitates the assessment of suitable fluid, energy, protein, as well as micronutrient needs. While several elements in formulating an effective PN protocol for a patient with ECF adhere to established principles of PN treatment, some factors need considerations unique to patients with ECF.

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Energy and Protein Needs

There is a deficiency in the accessibility of energy expenditure measures and nitrogen balance studies among individuals with ECF. Furthermore, there is a lack of research assessing clinical outcomes in relation to particular protein or energy consumption. Observational studies conducted on individuals with ECF indicate a target energy intake of 25–30 kcal/kg/day and a target protein intake of 1.5 g/kg/day [31-33]. Nevertheless, the investigations failed to disclose the actual consumption attained or its correlation with the specified end measures.

The use of indirect calorimetry to quantify energy expenditure is advised by the European Society for Medical Nutrition and Metabolism's (ESPEN) clinical recommendations for the treatment of acute intestinal failure, which includes patients with high-output ECF [34]. In the absence of indirect calorimetry, the ESPEN recommendations advise a caloric intake of 25–35 kcal/kg of ideal body weight per day and a protein intake of up to 1.5 g/kg of actual body weight per day. The ASPEN/FELANPE clinical recommendations for ECF treatment advocate for an energy intake that aligns with the patient's energy needs as determined by nutritional evaluation, and a protein intake of 1.5–2 g/kg/day, up to 2.5 g/kg/day for those with EAF [11]. As previously mentioned, approximately fifty percent of patients with ECF are obese, which may confound weight-based prediction models. The ASPEN–Society of Critical Care Medicine (SCCM) adult emergency room nutrition recommendations are recommended for establishing initial energy and protein needs in patients with ECF and obesity [35]. The recommended calorie intake is 11–14 kcal/kg of actual body weight per day for those with a BMI of 30–50, and 22–25 kcal/kg of ideal body weight for those with a BMI more than 50. The recommended protein intake is 2 g/kg of ideal body weight per day for individuals with a BMI of 30–40, and 2.5 g/kg of ideal body weight per day for those with a BMI more than 40.

The elevated protein demand in this patient demographic is associated with the extent of protein-rich effluent discharges and the need for continuous wound healing. Restoring protein deficits and maintaining an adequate level of nitrogen is crucial due to its significance in facilitating wound healing [36]. While these predicted weight-based suggestions are beneficial, they fail to include the unpredictability and daily fluctuations in protein loss across and within individuals. Several review publications estimate the loss of protein in patients with high-output enteric fistulae at 75 g daily from effluent loss.36 Individuals with EAF are advised to consume an extra 15–30 g of protein for each liter of effluent loss [37]. While lacking empirical validation, one alternative to evaluate protein needs in a patient with enterocutaneous fistula (ECF) is to submit samples of fistula fluid to the laboratory for protein assessment. This methodology parallels the analysis of other body fluids, like urine, pleural effusion, or ascites. Assessing protein concentration (g/dl) and quantifying daily extracellular fluid production helps elucidate protein losses and enhance the clinician's comprehension of real protein needs. If the ECF fluid has a concentration of 3 g/dl and the outflow is 600 ml per day, the patient consumes 18 g of protein daily from the fistula. A nitrogen balance study, conducted by a 24-hour urine urea nitrogen collection, may assist in determining protein needs, albeit it necessitates accounting for gastrointestinal nitrogen losses [38].

While assessing energy needs in patients with ECF, it is essential to consider different parameters specific to this group while formulating a safe PN regimen. Hyperglycemia is a prevalent complication linked to parenteral nutrition and individuals with obesity. Patients indicated for parenteral nutrition, those with a history of diabetes, or critically unwell individuals have an elevated risk of hyperglycemia [39, 40]. A multitude of these warning signs is seen in patients with ECF. Moreover, individuals on octreotide for high extracellular fluid output may have alterations in the equilibrium of insulin, glucagon, and growth hormone, resulting in both hypoglycemia and hyperglycemia [41]. The reported prevalence of hyperglycemia is 16%–27%, whereas the prevalence of hypoglycemia is 3%–4% [41]. Hyperglycemia correlates with more severe clinical outcomes, such as increased infection complications, prolonged hospital stays, and elevated death rates [35].

Insulin therapy and/or adjustment of the dextrose dosage in parenteral nutrition may be necessary to achieve glycemic regulation in patients with extracellular fluid retention. Historically, higher dosages of dextrose were frequently employed to sustain reduced doses of lipid-injected emulsion (ILE), which

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DOI: https://doi.org/10.62754/joe.v3i8.6325

consisted only of soybean oil and were recognized for their proinflammatory characteristics. The recommended allocation of nonprotein calories was 70%–85% dextrose and 15%–30% fat [42]. The present accessibility of less-inflammatory ILE sources, which also include medium-chain triglycerides, olive oil, and fish oil, has facilitated the safe administration of elevated ILE doses and reduced dextrose dosages in PN. This dosage technique may be particularly effective in fulfilling energy needs among individuals with ECF.

Fluid and Electrolyte Need

Patients with extracellular fluid (ECF) abnormalities are at significant risk for dehydration, electrolyte imbalances such as hyponatremia, hypernatremia, hypokalemia, and hypomagnesemia, as well as acid-base abnormalities including metabolic acidosis and metabolic alkalosis. Intravenous replacement fluids are advised to replenish the fluids and electrolytes lost by fistula output, particularly during the first phase of extracellular fluid control when fistula output is erratic. The choice of the first fistula replacement fluid must account for the origin of the fistula and the anticipated electrolyte composition of the effluent. A gastrocutaneous fistula is often characterized by elevated hydrochloric acid levels; hence, a chloride-rich solution such as 0.9% saline (commonly referred to as 'normal' saline) would be a suitable first fluid selection. A proximal jejunal fistula is probable to have elevated bicarbonate levels due to its closeness to the ampulla of Vater, which secretes pancreatic juice; hence, an appropriate crystalloid solution containing a base, such as Lactated Ringer solution, may be more suitable. A recommended approach for giving fistula replenishment fluid is to substitute the fistula output with an equivalent volume of IV fluid at a ratio of 0.5:1 or 1:1 (fluid:fistula) every 4 to 6 hours. Alternative techniques for giving intravenous replacement fluids may also be evaluated according to specific practice patterns. Upon achieving euvolemia and stabilization of intravenous fluid requirements, it is prudent to transfer the hydration volume into the parenteral nutrition formulation, considering the water and electrolyte composition of the substitution fluid (within the constraints of parenteral nutrition stability and compatibility), to streamline management.

Requirements For Vitamins and Trace Elements

The micronutrient needs, such as vitamins and trace minerals, in individuals with enterocutaneous fistulas are affected by their underlying diseases, gastrointestinal architecture, and the volume of enteric output. These criteria must be evaluated and considered when formulating an initial parenteral nutrition regimen and when assessing the need for adjustments in micronutrient intake over the duration of parenteral nutrition treatment. For individuals sustaining a certain level of oral nutrition and/or enteral nutrition intake, the existing gastrointestinal architecture may inform the degree of expected micronutrient absorption as well as malabsorption. Patients with high-output enteric fistulas should be regarded as having an elevated risk of micronutrient deficits due to augmented losses of micronutrients via gastrointestinal output. Micronutrient deficits are particularly concerning in this patient group as they might result in inadequate wound healing and may hinder spontaneous ECF closure.

While readily accessible parenteral multivitamin, as well as multitrace element formulations, aim to satisfy the micronutrient requirements of most patients undergoing PN, they may not adequately address situations like ECF that lead to heightened micronutrient demand and significant micronutrient losses. Consequently, baseline and frequent monitoring of micronutrients is advised for patients with ECF. The existence of inflammation, particularly in the early stages of ECF treatment, undermines the accuracy of micronutrient plasma levels and the assessment of micronutrient deficit. Chronic inflammation may endure in several people with ECF and will not abate till corrective surgery takes place. The concurrent assessment of C-reactive protein (CRP), an indicative biomarker of inflammation, is thus suggested and may assist in the analysis of micronutrient plasma levels. Baseline laboratory assessments of vitamin D, zinc, copper, selenium, and an iron panel are advised, with CRP monitoring [36]. Laboratory assessment of additional vitamin levels (A, B1, B6, C, E, and B12) may be beneficial; however, findings may be artificially elevated if oral or intravenous vitamin treatment is not stopped for a minimum of 12 hours prior to blood specimen collection [36].

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Zinc is a significant problem in people with ECF because to its primary excretion via feces. Patients experiencing diarrheal stools as well as intestinal fluid loss have been shown to need 12–17 mg of zinc per liter of intestinal fluid production to sustain a positive zinc balance [43]. Given that the injectable multitrace element formulation provides just 3 mg of zinc per suggested daily dosage, it is prudent to augment the parenteral nutrition with supplementary zinc. At baseline, accurately evaluating zinc status is likely challenging due to the normally increased levels of CRP. Consequently, serum zinc levels may be inaccurately reduced. Upon commencing parenteral nutrition in patients with high-output enteric fluid losses, it may be advisable to experimentally augment the multitrace element formulation with an additional 5–10 mg of zinc via the specific injectable zinc sulfate formulation. Serum zinc levels are to be assessed once CRP stabilizes and followed every 3 to 6 months throughout ECF therapy.

Chronic Management: Relocation To Residence

Patients with ECF often need extended hospitalization due to the bacterial, metabolic, and nutritional problems associated with this clinical disease. Resolution of the inflammatory reaction and spontaneous healing of the ECF, or preparation for final surgical intervention, frequently requires a lengthy duration. A collaborative strategy for a long-term treatment plan should be formulated under the supervision of a surgeon and a seasoned multidisciplinary intestinal failure program. Upon achieving medical stability, patients should be evaluated for release to their home environment. HPN provides patients the opportunity to get PN in non-hospital or institutional environments, enabling patients and their families to engage more actively in their treatment. Multiple registries indicate that patients with ECF constitute a primary indication for HPN, accounting for 19% to 36% of all individuals getting HPN [44]. In the Sustain registration, 48% of patients with ECF got HPN as their only source of nutrition [15].

Prospective Candidates for HPN

The ASPEN/FELANPE medical recommendations for ECF management recommend contemplating HPN when a patient is clinically stable, the fistula output is controllable, and surgical intervention is not currently indicated.11 Criteria for controllable fistula discharge include the capacity to maintain normal electrolyte and fluid balance and provide sufficient skin protection. Patients may be permitted to ingest an oral diet or enteral nutrition if the criteria for regulating fistula output can be maintained, as elaborated below. Complications and the risk of hospital readmission may arise when the oral diet is limited during hospitalization and then loosened by the patient upon release. The oral diet plan must include collaborative decision-making among the medical team and the patient, as well as the patient's understanding of the influence of the oral diet on fistula output. The home oral feeding and/or enteral nutrition plan must be started before discharge, providing sufficient time to monitor and maintain fluid and electrolyte equilibrium while ensuring skin safety at the wound site.

After establishing the clinical suitability for HPN, more parameters must be evaluated to confirm suitability. This must include an assessment of the individual's health status and functional capacity, the presence of caregiver assistance if the patient cannot operate autonomously at home, and the educational attainment or learning capability of the patient and/or caregiver. Patients may gain from a duration of residential therapy to enhance their functional condition prior to release home. The presence of an ECF is anticipated to need a high degree of care, and not all patients or caregivers are capable of delivering this standard of care in a home environment. These individuals are unsuitable for home release and are more appropriately sent to long-term critical care or qualified nursing facilities.

Instruction for Patients And/Or Caregivers

Training for patients and/or caregivers is crucial for minimizing the risk of consequences and enhancing patient security in the home environment [45]. This must include both HPN and wound treatment training and be executed with sufficient time prior to release to enable the patient and/or caregiver to exhibit proficiency in independently completing at least the fundamental tasks. Training must include the appropriate techniques for HPN administration and catheter maintenance, as well as the essential self-monitoring values that should be accessed and communicated. In comparison to other patients who

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demand HPN, those with an ECF often need a more rigorous self-monitoring protocol because of the potential infectious and metabolic problems associated with the ECF. A customized self-monitoring strategy should be established to address the unique requirements of each patient, accompanied by comprehensive instructions for the patient and/or caregiver [46].

HPN Therapeutic Regimen

The formulation of a Home Parenteral Nutrition (HPN) treatment plan must be tailored to each patient prior to discharge and encompass: the evaluation of a suitable central vein access device (CVAD), establishment of target weight, a strategy for outpatient tracking and follow-up, and specification of the treatment endpoint or objective. ASPEN advises the insertion of a tunneled central venous access device (CVAD) in patients expected to need long-term daily parenteral nutrition (PN) infusion. This is based on research indicating reduced incidence of central line-associated bloodstream infection (CLABSI) with the application of a tunneled central venous access device (CVAD) in comparison to a nontunneled CVAD, such as a peripherally inserted central catheter (PICC). Despite insufficient data, several centers choose to use a PICC rather than a tunneled CVAD in patients with ECF due to the presumed elevated incidence of CLABSI (even with tunneled devices) and the added difficulty associated with changing a tunneled CVAD. The selection of an effective CVAD should be customized to the expertise of each facility and the individual requirements of the patient [47].

Conclusion

The management of enterocutaneous fistulas (ECFs) is a complex clinical challenge that necessitates a comprehensive and interdisciplinary approach. This review underscores the critical importance of effective nutritional support in optimizing patient outcomes. Given the high risk of malnutrition associated with ECFs, establishing a robust nutritional assessment protocol is essential. Utilizing standardized tools, such as the ASPEN/FELANPE guidelines, allows healthcare providers to accurately identify malnutrition and tailor interventions accordingly.

Parenteral nutrition (PN) emerges as a cornerstone of nutritional management, especially in patients with high-output ECFs who may not be able to sustain adequate nutrition through oral or enteral means. The findings indicate that while PN is vital for addressing immediate nutritional needs, it must be administered with careful monitoring of fluid and electrolyte balance to prevent complications such as hyperglycemia and dehydration. This dual focus on nutrition and hydration is critical in supporting the healing process and improving the likelihood of spontaneous fistula closure.

Furthermore, the integration of dermatological care into the management of ECFs cannot be overstated. The skin surrounding the fistula is often subject to irritation and breakdown due to the effluent, necessitating diligent wound care practices. Training and education for nursing staff in both nutritional and dermatological protocols are essential for enhancing patient safety and care quality.

In conclusion, the effective management of ECFs requires not only adherence to best practices in nutritional assessment and documentation but also a commitment to interdisciplinary collaboration. By fostering communication among surgeons, dietitians, and nursing staff, healthcare systems can create a more cohesive approach to patient care. Future research should focus on developing standardized protocols for nutritional and dermatological management in ECF patients, ultimately contributing to improved health outcomes and quality of life for this vulnerable population.

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Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 13486 – 13496
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.6325

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Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 13486 – 13496
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.6325

بروتوكولات السلامة في التمريض: أفضل الممارسات لتوثيق التقييمات الغذائية والعلاجات الجلدية في البيئات المختبرية

الملخص

الخلفية :تمثل الناسور المعوي الجلدي (**ECF**) تحديات كبيرة في الإدارة السريرية، مما يؤدي غالبًا إلى سوء التغذية وزيادة معدلات الاعتلال. يُعد الدعم الغذائي الفعّال أمرًا أساسيًا لتعافي المرضى، خاصة في الفترات ما بعد الجراحة.

المنهجية :تستعرض هذه المراجعة أفضل الممارسات لتوثيق **التقييمات الغذائية والعلاجات الجلدية** للمرضى الذين يعانون من **ECF** في البيئات المختبرية. تم إجراء بحث شامل في قواعد بيانات متعددة، بما في ذلك **PubMed**، **MEDLINE**، و**Scopus**، مع التركيز على الدراسات المنشورة بين عامي **2019**و**2023** التي تتناول استراتيجيات التغذية وبروتوكولات الرعاية لمرضى **ECF**.

النتائج :تؤكد النتائج على أهمية النهج متعدد التخصصات الذي يشمل **الجراحين وأخصائيي التغذية وفريق التمريض** في إدارة **ECF**. تُعد التقييمات الغذائية باستخدام أدوات موحدة مثل **إرشادات ASPEN/FELANPE** ضرورية لتحديد حالات سوء التغذية. كما تسلط المراجعة الضوء على دور **التغذية الوريدية (PN)** كعنصر أساسي في رعاية المرضى الذين يعانون من **ECF عالي الإنتاج**، مع ضرورة المراقبة الدقيقة لتوازن السوائل والكهارل.

الاستنتاج :يُعد تطبيق ممارسات توثيق قوية واستراتيجيات دعم غذائي فعّالة أمرًا ضروريًا لتحسين نتائج مرضى **ECF**. كما أن دمج الإرشادات المستندة إلى الأدلة في الممارسات السريرية الروتينية يعزز التواصل بين التخصصات ويحسّن جودة الرعاية المقدمة للمرضى.

الكلمات المفتاحية :الناسور المعوي الجلدي، التقييم الغذائي، التغذية الوريدية، النهج متعدد التخصصات، رعاية المرضى.