Fistuloclysis: Cost Effective Nutrition for Patients with Enterocutaneous Fistulae

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Citation

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Abstract

This manuscript highlights the financial benefits derived from fistuloclysis when used for nutrient delivery in patients with enterocutaneous fistulae.

INTRODUCTION

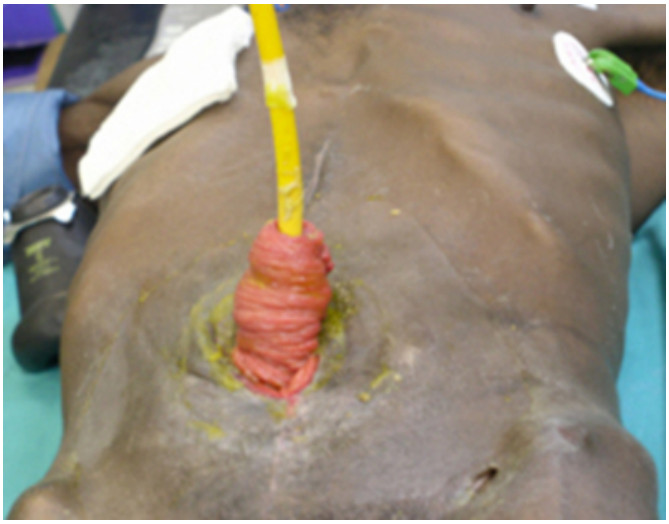
Enterocutaneous Fistulae (ECF) may be challenging to manage because large volume fistula losses may result in severe dehydration, electrolyte imbalances, malnutrition and sepsis ([1]). Recognizing and correcting these complications are prerequisites to successful ECF management.

Nutritional support is especially important because malnutrition is an independent predictor of post-operative morbidity and mortality regardless of age, cardiorespiratory function or operation type ([2,3]). Central vein parenteral nutrition (PN) is used liberally while awaiting spontaneous ECF closure or optimizing patients for operation ([1,4]). But it carries the risk of electrolyte derangements, metabolic disturbances, catheter related complications and sepsis ([5,6]). Moreover, the cost of prolonged PN may limit its availability in Developing Countries.

Fistuloclysis is a viable alternative in select patients, thereby avoiding PN and its attendant complications ([4,7]). The technique was initially described by Teubner et al who delivered enteral feeds directly into a balloon retention gastrostomy tube passed 5cm into the distal limb of an ECF ([4]). In their report, fistuloclysis successfully replaced PN in 11 of 12 patients within 28 days of commencement ([4]).

Figure 1

Figure 1: The fistuloclysis apparatus consists of a 24Fr Foley catheter introduced into the distal fistula limb and fixated with 2/0 silk purse string sutures.



Several advantages of fistuloclysis have since been reported. Nutrient delivery directly into the distal intestine maintains motility, prevents mucosal atrophy and preserves immune function ([4,7,8]). Nutrient absorption can also be optimized by enriching the enteral solutions with glutamine that promotes enterocyte nitrogen transport ([2,9]) and medium-chain triglycerides that are absorbed in the small intestine independent of pancreatico-biliary secretions ([4,10,11]).

We recently reported a modified technique of fistuloclysis in a patient with a difficult ECF ([7]). However, cost containment is an important aspect of this technique that was under emphasized and deserves to be highlighted.

In our previous report, we described 56Kg man with a high

output ECF after emergency laparotomy. He required nutritional support with estimated daily energy requirements of 1,950Kcal and 95 grams of protein daily according to American Society for Parenteral and Enteral Nutrition guidelines ([12]). The caloric goals were met by central vein PN, using 4.25% Aminosyn-II® with electrolytes in 25% Dextrose with Calcium (136Kcal, 4.25gm proteins and 25gm Dextrose per 100mls: Hospira Inc., USA).

After three days, financial constraints prompted us to employ fistuloclysis using polymeric feeds (Jevity®, 1Kcal/ml, 300mOsm/Kg, containing medium chain triglycerides: Colombus, Abbott Laboratories, USA) administered at a rate of 160mls hourly for 12 hours per day to meet caloric goals. Fistuloclysis successfully supported this patient nutritionally and he went on to have definitive repair of the ECF after 50 days.

In order to evaluate the cost of nutritional support in this patient we estimated the cost of each feeding solution at the retail sale price from local commercial distributors (Cari-Med Ltd, Kgn 5, Jamaica). This patient required 1.5L of 4.25% Aminosyn-II® daily that is sold at a retail price of $83.58 US ($5,516.28 Jamaican dollars). On the other hand, he required 1,950 mls of Jevity® daily that is sold at a retail price of $19.29 US ($1,273.14 Jamaican dollars) - approximately 23% the cost of PN solutions. Using fistuloclysis, we delivered adequate nutrition to this patient with savings of $64.29 US daily or $3,214.50 US for the 50 day supplementation period.

Although we did not consider the cost of equipment, we expect them to be greater for PN because fistuloclysis can be carried out with simple equipment that is easily available on any hospital ward, in our case a urinary Foley catheter and intravenous fluid delivery set. The additional costs associated with central line placement are abolished with fistuloclysis. And the complicated sterile procedures that are required to prepare PN solutions can be avoided since appropriate elemental feeding solutions are readily available commercially.

The ability of fistuloclysis to effectively meet nutritional demands in patients with ECF coupled with the cost containment is important. This has significant implications in Caribbean Countries where health care delivery is often limited by financial constraints. We feel that surgeons managing any patient with ECF should consider this route of nutrient delivery in appropriate patients.

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