Short Communication

Can't we just let them eat? Defining and addressing under-use of the oral route in a post-surgical ward

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Early postoperative nutrition improves outcomes. However, postoperative fasting is a tradition that persists in some areas of surgical practice. This retrospective audit was performed to benchmark current nutrition support practices on a mixed specialty surgical ward in a large tertiary-referral teaching hospital. Thirty-eight consecutive patients, who were undergoing gynaecological or urological surgical procedures between November 2010 and May 2011, had data collected including demographics, nutritional status, details of surgery performed, postoperative complications, modes of nutrition support and time taken to progress to solid oral diet. Energy and protein provision and adequacy was estimated for the first week postoperatively. Sixteen patients commenced parenteral nutrition postoperatively without any trial of oral or enteral nutrition. Reasons for using parenteral nutrition included observed or expected gut dysmotility and lack of enteral access for feeding. These patients did demonstrate longer length of stay and higher rates of postoperative complications. Given the proportion of patients initiated immediately on parenteral nutrition and maintained on it alone, it can be argued that these patients are not able to demonstrate tolerance and receive the benefits of early enteral feeding predicted by studies within these patient groups. None of the patients met their energy and protein requirements in the first week postoperatively. Despite support in the literature, it can be challenging to implement early postoperative nutrition support after pelvic surgery. It may be necessary to employ a variety of strategies to change this aspect of practice and promote earlier introduction of an oral diet or the use of enteral nutrition.

Key Words: gynecological surgery, ileus, nutritional support, parenteral nutrition, urological surgery

INTRODUCTION

Within surgical wards, the role of the dietitian in advocating for prioritisation of nutrition support to patients postoperatively can be challenging. Communicating the less tangible benefits of early and adequate nutrition, such as improved wound healing, immune function and gastrointestinal motility[1-3] is often overshadowed by perceptions of an increased risk associated with early oral or enteral nutrition (EN). Despite recognition of malnutrition as a major risk factor for postoperative complications and increased length of stay, routine nutrition screening and perioperative nutrition support is still poorly implemented.[4] Fear of anastomotic leaks and post operative ileus are still reasons cited for delays in commencement of EN and oral diet, despite substantial evidence refuting these concerns.[5,6]

Enhanced Recovery After Surgery (ERAS) programs are paving the way to establishing consistent perioperative use of nutrition support, especially in colorectal and upper gastrointestinal surgery. Improvements in patient outcomes have been demonstrated in several studies[7,8] and there is growing evidence for early oral [9,10] or enteral feeding [11,12] after colorectal surgeries.

In specialist surgical areas, such as urology and gynaecology, ERAS is an emerging topic.[13,14] A review[15] identified urology as an area characterised by quite slow implementation of ERAS programs, attributing the difficulties in establishing evidence-based care to 'traditional concepts, teaching and attitudes.' Carter and Philp (2011), while noting the slow incorporation of these programs in gynaecology surgery, were able to demonstrate improvements in patient outcomes and decreased length of stay after implementation of a fast track program in their patients, with no increase in rates of post operative complications or readmission.[16] This reluctance to change surgical practice continues despite current evidence pointing to the efficacy and safety of early oral or EN after gynaecology and urology gastrointestinal surgeries.[17-19] The aim of this study was to examine current practice in a large urology and gynaecology specialty surgical ward. A retrospective chart audit was conducted, focusing on the provision of postoperative nutrition and identifying factors influencing nutritional management decisions.

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MATERIALS AND METHODS

The audit included 38 consecutive patients in a single large tertiary-referral teaching hospital, identified over a six-month period (November 2010 to May 2011), that had undergone urological or gynaecological surgeries and were either transferred immediately, or after a short intensive care stay, for postoperative ward-based care.

Data collected included patient demographics, medical history, clinical data (including type of surgery, postoperative gastrointestinal symptoms and postoperative complications), dietary data (including weight and weight history, nutritional status by Subjective Global Assessment (SGA), and diet progression) and data regarding initiation, provision and adequacy of nutrition support.

Estimated requirements for all patients were based on current body weight using the Schofield equation[20] with an activity factor of 1.1 and an injury factor of 1.25. Estimated protein requirements were calculated using post surgical recommendations of 1.2-1.5g protein/kg body weight.[21] For patients with a BMI >30 kg/m^2 an adjusted weight figure was used in estimating energy and protein needs.

The percentage of estimated energy and protein requirements met were calculated for the first postoperative week. The progression of patients onto an oral diet was recorded for each postoperative day.

Assumed average daily energy and protein of the oral diets were: clear fluid diet (3520 kJ and 5 g protein), free fluid diet (7790 kJ and 63 g protein), light diet (9300 kJ and 100 g protein) and full diet (9200 kJ and 100 g protein). Nursing records such as ward food charts were used to assess intake when available. Oral supplement drinks were included where prescribed. All parenteral nutrition (PN) was provided using a standard three-in-one solution given via central venous access device at an infusion rate adjusted to each patient's individual estimated energy requirements. No peripheral PN was used.

All data was tabulated using Microsoft Office Excel 2008 and analysed statistically using SPSS Statistics Version 19 IBM Corporation, NY, USA. Student's t-test was used for between group comparisons of the parametric data and chi-square test was used for non-parametric data. A p value of <0.05 was considered significant for all tests.

The study was approved by the hospital's Ethics Review Committee.

RESULTS

Thirty-eight patients were included in the study. See Table 1 for patient demographics.

Thirteen patients were malnourished to some degree (SGA B or C); 25 patients were acceptably nourished (SGA A).

Preoperatively, 21 patients were given a bowel preparation. This was not associated with any increase in time to first flatus (p=0.59) or bowel motion (p=0.48) or clinical signs of gut dysmotility (p=0.80).

Postoperatively, 22 patients received their first nutrition via the oral route but only 9 patients commenced during postoperative day 1. Two weeks postoperatively, 9 patients were still receiving only fluids orally. No patient received EN postoperatively. Sixteen patients initially received PN without any trial of oral or EN, 12 continuing on PN for longer than 7 days and 6 receiving no other nutritional intake in the first postoperative week.

Of these 16 PN patients, 12 had clinical signs of gut dysmotility (see Table 2). Observed return of bowel function was delayed in patients who had intestinal resections, which was associated with delay in first flatus (p=0.022) and first bowel motion (p=0.018). Patients receiving sole PN experienced significant delays in return of flatus and bowel motion compared to orally-fed patients and more frequent postoperative complications.

For many patients there was no clear documentation as to the reason why PN was commenced. Expected or observed gastrointestinal dysmotility and risk of anastomotic leak were the most common reasons given.

Nutritional adequacy was assessed separately for patients on PN or oral diets. Mean energy intake was 73.5% (SD 10%) of estimated requirements in PN patients compared to 78.5 % (5.2%) in orally-fed patients; protein intake was 45.5% (6.4%) in PN patients and 57.0% (5.0%) in orally-fed patients, see figure 1.

During data analysis, the 38 patients were classified into groups relating to surgical procedure (open, laparoscopic or unclassified), surgical team or nutritional support (PN or oral) to allow comparison. There were no significant differences between surgical teams or between patients receiving the different surgical procedures but hospital length of stay and time to progress to oral diet was significantly different between PN and orally-fed patients, see Table 2.

Length of stay in hospital correlated significantly with SGA score (p=0.019) with malnourished patients staying median 23 days (interquartile range 12-37 days) com-

Table 1. Patient demographics

Characteristic	
Age, years	63.7 (12.3)
Gender, male:female	19:19
Weight, kg	71.1 (11.3)
BMI, kg/m^2	27.5 (7.03)
Principal procedure, n	
cystectomy with formation of ileal conduit or neobladder	8
nephrectomy	6
prostatectomy	
with lymph node dissection	6
without lymph node dissection	1
oophorectomy and/or hysterectomy	5
pelvic lymph node dissection	6
other bowel resection procedure	2
other genitourinary surgical procedure	6
Comorbidities, n	
malignancy	35
diabetes	13
renal impairment	11
previous abdominal surgery	24
Preoperative weight loss, n	17
Preoperative SGA status, n	
SGA A	25
SGA B	10
SGA C	3
Length of hospital stay, days (median, interquartile range Q1-Q3)	14 (10-24)

Data are given as mean (standard deviation) unless otherwise indicated.

Table 2. Comparison between patients receiving oral versus parenteral nutrition

	Total (n=38)	Oral (n=22)	Parenteral (n=16)	Oral vs parenteral significance level (*p*)
Length of hospital stay, days	14 (10-24)	11.5 (8.0-12.8)	26.0 (19.0-39.3)	<0.01
SGA 'A'	13 (9-21)	9.5(8.0-12.0)	21 (18-26)	<0.01
SGA 'B' or 'C'	23 (12-37)*	12 (12-23)*	62.5 (42.0-79.8)	ns
Method of surgery, n				
open	28	16	12	ns
laparoscopic	6	3	3	ns
bowel mobilised	26	14	12	ns
bowel resection:				
small intestine	9	1	8	0.05
large intestine	3	2	1	ns
Complications, n	53	10	43	<0.01
clinical signs of gut dysmotility	13	1	12	
ileus confirmed on imaging	4	0	4	
faecal loading	3	0	3	
sepsis	6	2	4	
hyperglycaemia	16	1	15	
oedema	8	3	5	
wound breakdown	3	3	0	
Nil by mouth, days	3 (1-7)	1 (0-3)	9 (7-13)	<0.01
Time until first flatus, days	3 (2-5)	2 (2-3)	5 (3-8)	<0.01
Time until first stool, days	7 (3-10)	4 (3-8)	10 (7-14)	<0.01

Data are given as median (interquartile range Q1-Q3) unless otherwise stated.
* significant difference in LOS between SGA 'A' and SGA 'B' or 'C' overall (p<0.019), and for patients on oral diets (p = 0.03) but not for patients on PN (p = 0.17).

pared to acceptably nourished patients whose median stay was 13 (9-21) days.

DISCUSSION

This audit indicated that the enteral and oral routes are under-used for postoperative nutrition in this urology/ gynaecology surgical ward. Of note, no patient received EN during the study period and almost half of the patients received PN initially without a trial of oral or EN. Often no reason for this decision was documented, however clinical signs of dysmotility (such as distended abdomen, belching, lack of bowel output, nausea or vomiting) were common.

On review of the 13 patients experiencing such signs, only four had ileus confirmed via imaging. Recommendations for commencement of diet versus maintaining bowel rest postoperatively varies in the literature, but overall there is a support of early trials of enteral or oral nutrition for the types of surgery included in this study and a growing trend advocating for patient-regulated trials of oral diet [22] even if there are mild signs of ileus.[23,24] The high rate of PN use in this cohort, in the absence of firm contraindication to oral/enteral nutrition, confirmed the impression that the adoption of new ERAS-style approaches has been slow in this field.

Patients who were commenced on oral intake did not

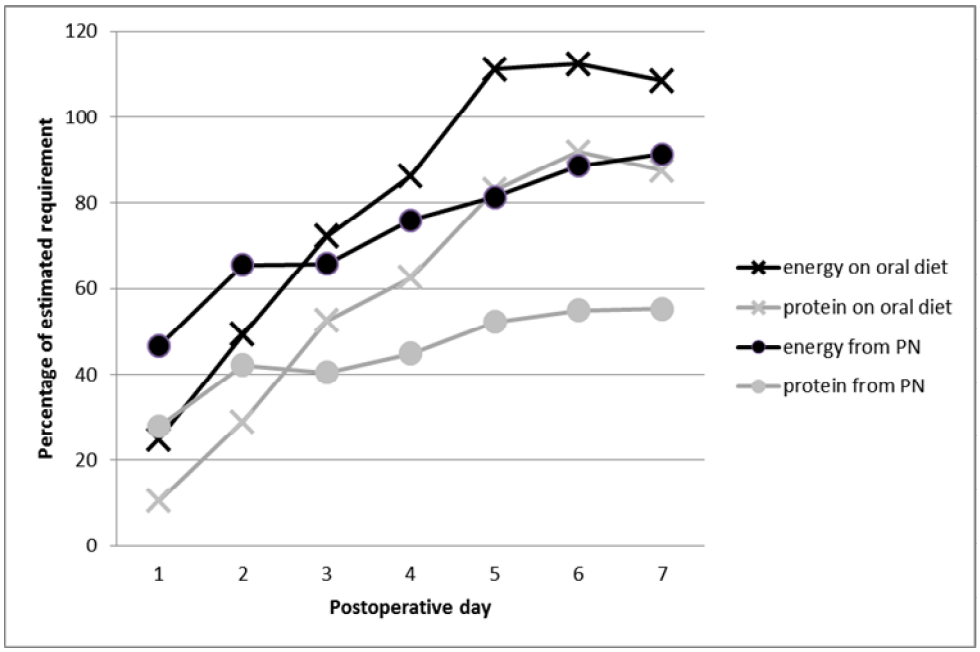

Figure 1. Estimated energy and protein intake during first postoperative week

demonstrate a significant increase in adverse events as a result. Anastomotic leaks were reported in three of the non-PN patients but were related to wound or suture breakdown in the prostatic bed, rather than being anastomotic leaks of the bowel. Conversely, PN was associated with a higher incidence of complications such as oedema, sepsis and hyperglycemia; this could reflect a higher level of acuity in the group receiving PN. Overall patients receiving PN had a lower energy and protein intake than those on oral diets and partly this appeared to be due to reduction in PN infusion rates as part of fluid management.

Within the first few postoperative days, the majority of the non-PN group had recovered bowel activity, in agreement with studies suggesting that early oral intake promotes early gut function.[25,26] Comparatively, PN patients experienced delayed return of flatus (postoperative day 4-7) and delayed bowel opening (postoperative day 8-14). These patients were more likely to have small bowel resection than those on oral diets. This delay in return of bowel function in the PN group may be a reflection of a higher-acuity patient group, but studies have demonstrated the poor reliability of predicting return of bowel function by observing such markers, especially in patients who are fasted [27] and identify that feeding may actually be helpful in reducing postoperative ileus by stimulating bowel motility.[28] It was also noted that prior to surgery, 21 patients were given a bowel preparation, which may also delay time to first bowel action[29] although in this audit there was no significant difference associated with bowel preparation.

Energy and protein requirements were not met during the first postoperative week, either in the orally-fed or PN patients. Since nutritional status directly affects hospital length of stay and therefore admission costs,[4] it is imperative that nutrition be optimised for these patients not only for quality of care but for economic reasons.

We recognise the limitations and bias of this retrospective chart audit. Resource limitations dictated that the mode of this study was observational and the number of patients was small. The types of surgeries within this patient group were diverse and data collection was dependent on the information being documented clearly in the medical notes. Currently, the lack of consensus guidelines regarding nutrition support in urology and gynaecology[27] means that practice varies widely and change may depend on the initiatives of individual surgeons. Several studies identify the individual surgeon as the key agent for change, which may then be more widely adopted by other surgeons or members within the surgical team.[30,31,42] However, by relying on individual surgeons to make independent decisions regarding nutrition support, we may be able to achieve only small localised changes that are insufficient to alter overall outcomes. Other studies advocate for a protocol-driven approach to practice, which eliminates the need for individual decision making and instead implements a consistent, evidence-based approach to nutrition support.[32]

The best example of this is the ERAS approach, which incorporates multi-faceted practice changes and multidisciplinary teamwork. This approach acknowledges a multiplicity of barriers to change, which needs to be matched with a diverse range of strategies.[33] The more complex nature of programs such as ERAS is both a strength and a weakness. Many studies identify that without a multi-faceted approach, improvements in care are unlikely to be realized.[34] Implementation initially requires significant time, resources and staff dedicated to the process and to be effective it usually needs to be a gradual stepwise process which is necessarily slow. Changes are more likely to be sustained if they are small, simple and compatible with existing procedures. [32]

Where attitudes and beliefs are a barrier, it is important to find an effective way to communicate the relevant evidence and protocols to all key stakeholders. Surgeons may be reluctant to follow guidelines written for them by other clinicians[32] so it is essential to include them in a multidisciplinary planning process. The advantages and disadvantages of a facility's current practices may not be obvious, so audits like this study are an initial necessary step in highlighting what changes are needed to motivate a new approach. An audit of clinician knowledge of the issues might also be important to guide a targeted awareness/education program and to identify opinion leaders who will be useful in influencing changes in attitudes and practices.

In a patient group at high nutritional risk with elevated requirements, the conservative approach of delaying gastrointestinal feeding identified in this audit may be to the detriment of patients and expose them to the higher rates of complications associated with PN. Adopting a planned and early use of either enteral or oral diet for these patients, such as in an ERAS approach, rather than the conservative approach of delayed oral feeding, would allow patients to meet both their energy and protein requirements and provide potential benefits for gut motility, immune function and wound healing.

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AUTHOR DISCLOSURE

There are no conflicts of interest for any of the authors and no funding was received for this study.

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何時可進食？未充分施用術後口服營養之原因及解決之道

早期的術後營養有助於疾病預後。然而，在某些地區，仍採取術後禁食的保守策略。在某大型第三層轉診教學醫院，對綜合外科病房之術後營養支持方法做基準檢測，進行回溯性評估。本研究共蒐集 38 位，於 2010 年 11 月至 2011 年 5 月，接受婦科或泌尿科手術的患者資料，其中包括人口學、營養狀態、手術執行細節、術後併發症、營養支持方式，及術後開始固態飲食的時間。評估術後第一週的能量與蛋白質之供應量及其適足程度。其中 16 位患者，沒有執行口服或腸道營養的測試，術後直接給予靜脈營養。給予靜脈營養的原因，包括觀察或預期該患者可能有腸胃道蠕動障礙，以及患者缺乏消化道造口。而這些患者，確顯示有較長的住院天數，及更高的術後併發症比率。令人質疑的是，這麼高比率的患者立即且持續的靜脈營養，病人無法表現其口服耐受度，且無法得到從早期腸道餵食的預期效益。沒有任何一位患者，在術後第一週，獲得足夠的熱量及蛋白質需求。儘管有文獻支持，骨盆腔手術後，可以實施早期的術後營養，但要被全面採納，仍有挑戰性。可能需要採用多種策略去改變現有的做法，並提升早期進食，或施用腸道營養。

關鍵字：婦科手術、腸阻塞、營養支持、靜脈營養、泌尿科手術