

Development and Extended Experience with a Fast Track Surgery Program in a Gynaecological Oncology Service

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Abstract: *Introduction:* Fast Track Surgery (FTS) programs combine a variety of techniques to optimise patient outcomes and as a consequence minimise length of stay.

Methods: An overview of the development of the FTS program at our hospital is followed by an audit of the experience of 3 full years of patients managed by FTS principles.

Results: Over the 3-year audit period, 251 patients were operated upon and managed by FTS principles. Seventy three in year 1, 99 in year 2 and 79 in year 3. Average age was 54, average weight 71.2 kg (Range 38-192kg) and average BMI 27.5 (Range 17-69). One hundred and thirty nine patients (55%) were considered overweight or obese. Two hundred and twenty seven patients (90%) were able to tolerate early oral feeding. Average operating time was 2.3 hours (range 1-10). Average EBL was 286 mL with average Hb change of 10.6g/L. Eight patients (3%) received intraoperative blood transfusions. Median LOS was 3 days. Fifty eight (23%) were discharged on day 2. ALOS was 3.8 days, slightly longer in malignant patients (4.1 days) compared to benign patients (3.4 days). Average LOS declined from 4.2 days in year 1 to 3.7 days in year 3. Eleven patients (4%) were readmitted. Complications were deemed acceptable based upon RANZCOG Quality Indicators.

Conclusions: Our extended experience confirms the feasibility and safety of undertaking a FTS program in patients with complex benign gynaecological pathology and gynaecological malignancy.

Keywords: Fast track surgery, gynaecological cancer.

INTRODUCTION

Fast track surgery (FTS) programs are not new, nor are they complicated. They were first described by Kehlet in Denmark in 2002 and the principles have been adopted by most surgical specialities worldwide [1, 2]. Despite Victorian Department of Health, Cochrane and Australian Safety and Efficacy Register of New Interventional Procedures-Surgical (ASERNIP-S) reviews, the concept and principles have been slow to be adopted in Australia [3-5].

FTS programs incorporate a number of elements and are not just clinical pathways (Fig. 1). Many of these elements are already practiced by surgeons, but few embrace the entirety to gain the maximum benefits for the patient. By minimising stress and maintaining normal physiology as much as possible, the catabolic insults of surgery and anaesthesia can be minimised, optimising patient outcomes and as a consequence reducing length of stay (LOS).

METHODS

This audit reports the experience of 3 full years of patients referred to a single gynaecological oncologist, for the surgical management of suspected or confirmed gynaecological malignancy. The audit includes all patients taken to

the operating room for the calendar years 2008, 2009 and 2010 who underwent a laparotomy. There were no exclusions and no exceptions. Data was collected in a real time fashion on the author's personal database and analysis undertaken in a retrospective fashion.

The program commences with the preoperative consenting of the patient, optimising medical care of those with diabetes, cardiovascular or other disease. Patients are counselled by both admitting surgeon and Clinical Nurse Consultant (CNC) regarding the program, informing the patient of their anticipated LOS and the criteria for discharge. That narcotic analgesia would be limited and adequate analgesia provided by a combination of intraoperative paracoxib and transverse abdominis plane (TAP) block [6, 7]. Mechanical bowel preparations are not routine, fluid balance optimised to retain as close to normal intravascular volume and that unnecessary tissue trauma is avoided by good surgical technique. Strict attention to haemostasis is important and drains are avoided. Postoperatively meloxicam 15mg is prescribed for 3 days with regular paracetamol 1000mg every 6 hours. Oral liquids are allowed on the night of surgery and light diet on post op day 1 with rapid progression thereafter. Movicol or Coloxyl with Senna is commenced routinely on post op day 1 and continued post discharge. All patients receive perioperative enoxaparin sodium 20-40mg SCI which is continued until discharge. Selected high risk patients are offered extended enoxaparin sodium prophylaxis. Intraoperatively mechanical sequential compression devices are employed and all pa-

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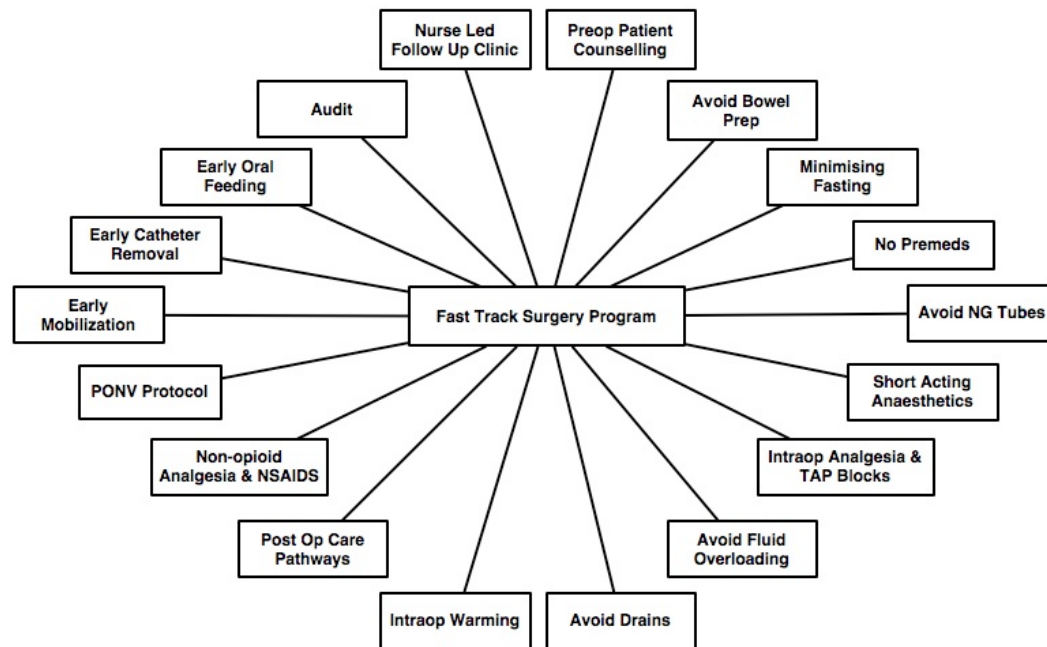


Fig. (1). Elements of a FTS Program.

tients have knee high TED stockings fitted and worn post-operatively for at least 1 month. In addition all patients receive intravenous ceftriaxone 1g prior to surgery unless allergic to penicillin or cephalosporins, in which case clindamycin is usually prescribed. Patients are mobilised on day 1 post surgery and catheters and IV fluids are removed on day 1 if the patient is haemodynamically stable. Patients are given an incentive spirometer or “Triflow” and encouraged to use the device 6 times per hour. Criteria for discharge include the patient adequately mobilising without assistance, tolerating early oral feeding, managing their pain and discomfort with oral analgesia and having adequate home supervision. Post discharge patients receive a follow up phone call from our CNC within 3 days of discharge.

Data collected relate to patient characteristics, hospitalisation and post-hospitalisation. The following patient characteristics were collected: age, weight, height, body mass index (BMI), medical insurance status, and performance status. Hospitalisation details included the procedure performed, type of incision (transverse or midline), operating time, complexity of surgery (simple vs. complex), intraoperative estimated blood loss (EBL), whether a transfusion was required, the preoperative haemoglobin (Hb), post operative Hb and the Hb change, whether patients tolerated early oral feeding (EOF) and if the patient received cyclo-oxygenase inhibitors (COX Inhibitors). All inpatient complications were collected, including modified Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) Quality Indicators. Date of admission and date of discharge were used to calculate LOS. Post hospitalisation admissions and complications were also recorded. All patients were reviewed 2-4 weeks post discharge.

Simple surgery was defined as simple type 1 hysterectomy or adnexal surgery where formal retroperitoneal dissection or ureteric dissection was not performed. All surgeries where at least a formal pelvic sidewall dissection was under-

taken, including bowel, bladder, nodal dissection and omentectomy were classified as “complex”. Transverse incisions were classified according to the incision in the skin, irrespective of whether it was of Maylard or Pfannenstiel type.

Patients were usually placed in dorsal supine position with both arms extended for vascular access. Skin preparation with Povidone-iodine was routinely used, the vagina also swabbed with Povidone-iodine. Apart from the initial skin incision, which was performed with a scalpel, entry was *via* cautery on coagulation mode for all tissue except the rectus sheath, which was incised with pure cutting current. Wounds were routinely closed in layers with the sheath approximated with a running PDS suture, subcutaneous tissue irrigated, closed drain inserted for 24 hours in obese patients and skin approximated with a running subcuticular 3/0 monocryl.

Patients were classified on final pathological determination as either “benign” or “malignant”. Patients with proliferating or borderline ovarian tumours were classified as “benign” as were patients with complex atypical endometrial hyperplasia and patients with cervical dysplasia needing definitive treatment. Patients with malignant pathology were routinely reviewed 2 weeks postoperatively and then regularly thereafter; whilst those patients with benign pathology were reviewed 2-4 weeks post operation.

Ethics approval was granted to allow review and presentation of the data as a clinical audit. Statistical analysis including descriptive statistics, t-test and ANOVA for nominal variables and chi-squared test for categorical data.

RESULTS

Over the 3 year audit period, 251 patients were operated upon whose mean and median age were 54.1 and 55 years respectively (Range: 20.1-86 years). One hundred and fifty three (61%) patients were greater than 50 years of age. One hundred and forty seven (59%) had malignant disease.

Of those with malignant disease 82 (56%) had stage I disease, 8 (5%) stage II, 47 (32%) stage III and 10 (7%) had stage IV disease (Table 1). Lymph node sampling was performed in 44 (30%) patients with malignant pathology. Both median and mean operating time were 2.33 hours (Range: 0.92-10 hours). Vertical midline incisions were performed in 224 (89%) patients due to the suspected high risk of malignancy.

Table 1. Assessment of Tumour/Pathology Site, Year of Management within the FTS Program and FIGO Stage

Site	
Ovary	191 (52%)
Corpus	92 (37%)
Cervix	22 (9%)
Other	54 (22%)
Year	
Year 1	73 (29%)
Year 2	99 (39%)
Year 3	79 (31%)
FIGO Stage	
Benign	104 (41%)
Stage I	82 (33%)
Stage II	8 (3%)
Stage III	47 (19%)
Stage IV	10 (4%)

Mean and median weight was 71.2kg and 66kg respectively (Range: 38-192kg). One hundred and twelve (45%) patients were classified as normal BMI and 139 (55%) as overweight and obese (70 overweight and 69 obese). Median and mean BMI were 25.8 kg/m² and 27.5 kg/m² respectively (Range: 17-69). One hundred and eighty nine patients (75%) had a "0" Performance Status (PS), 51 (20%) had PS 1 and 10 (4%) had a PS of 2 and 1 (0.4%) PS of 3. In total, 62 (25%) had "non-zero" performance status.

Mean operating time was 2.34 hours (range 0.92-10.0 hours) with 86% of operations lasting between 1-3 hours. Surgery was considered complex in 214 (85%). Median EBL was 200ml (Range: 10-3500ml) and the net median and mean Hb change was 9g/dl and 10.6g/dL. In total 8 (3%) patients received intraoperative blood transfusions. COX 2 Inhibitors were prescribed in 215 (86%). Two hundred and twenty seven (90%) were able to tolerate early oral feeding.

Median and mean LOS was 3 and 3.8 days respectively (Range: 2-27 days). Fifty eight (23%) could be discharged on or before day 2 and 18 (7%) had a LOS greater than 7 days. Mean LOS of obese patients was 4.1 days (Median 3 days; Range 2-16 days) compared with 3.7 days in the non-obese (Median 3 days; Range 2-27 days) (NS). Table 2 shows the median and average LOS for assigned year of management.

Table 2. Median LOS and Average (ALOS) and Year of Management Under FTS

Year	Median LOS	ALOS
Year 1	3	4.2
Year 2	3	3.6
Year 3	3	3.7

There were 3 (1%) intraoperative complications/adverse events. Other complications are shown in Table 3.

Table 3. Complications

Intraoperative	3 (1%)
Wound dehiscence	0
Wound infection	9 (3.6%)
Ureteric	0
Bladder	1 (0.4%)
Bowel	0
Vessel injury	0
Hospital readmission	11 (4.4%)
DVT/PE	4(1.6%)
Blood transfusion >2 units	1(<1%)
Return to OR	2 (0.8%)
Unplanned ICU Admission	4 (1.6%)
Deaths within 30 days	0
Anastomotic leak	0
Febrile episodes	3 (1.2%)
Cardiac	3 (1.2%)
Respiratory	1 (0.4%)
GI	9 (3.6%)
GU	7 (2.8%)
Haem	2 (0.8%)
Neurological	3 (1.2%)
Biochem	1 (0.4%)

DISCUSSION

Fast track surgery programs have been widely reported, but their incorporation into mainstream surgery and gynaecology has been slow. Whilst the concept has not been tested in a RCT fashion, extensive data would imply a benefit for the patient with reduced morbidity and a benefit for the health care provider and institution with early discharge and resultant cost saving [8].

The process of clinical audit is fundamental to clinical governance, the process by which clinicians improve the quality of the care they provide. Clinical audits are powerful tools as they present data on all patients who undergo surgery without exceptions or exclusions, and as such represent

“real life” experience. The development of our program and audit of our experience is summarised with comment on the applicability of FTS for general gynaecology. Such audit practices are an obligatory part of the FTS program (Fig. 1).

Initial Experience

In 2008 a FTS program was initiated at the Sydney Gynaecological Oncology Group (SGOG). At the completion of that year the outcomes of those patients managed by FTS were compared to patients, not managed by FTS. Our initial experience showed that those patients managed by FTS are able to be discharged with a reduced LOS, without an increased readmission rate and with comparative outcomes to non-fast tracked patients [6].

FTS in Overweight and Obese Patients

Overweight and obese patients unfortunately are becoming increasingly common in surgical practice. An audit of obese and overweight patients managed by FTS was performed. Patients classified as overweight or obese were significantly more likely to have a poorer performance status, have undergone vertical midline incision and to have had COX II inhibitors withheld. However they were found to have similar outcomes when compared to patients of normal body mass index. The proportion of patients successfully fast tracked and able to tolerate early oral feeding was similar. The median LOS was 3 days for the patients with a normal BMI and also 3 days for those overweight or obese [9].

Super Early Discharge After FTS

The improvement in surgical outcomes demonstrated in FTS programs has allowed as a consequence a reduction in the hospital LOS. We thus separately analysed the effect of FTS on LOS over the duration of our program, in particular super early discharge after laparotomy i.e. discharge on day 2. We have reported that with experience, 1 in 3 patients undergoing a laparotomy for gynaecological surgery can be discharged on day 2 post surgery, without an increased morbidity or readmission rate [10, 11]. With increasing experience we have been able to increase the percentage of patients discharged on day 2 from 10% in the first year of the program to 25% in the second year and 31% in the third year after initiating a FTS program. These outcomes were not restricted to “low risk cases” as 24 (44%) patients discharged on day 2 were considered overweight or obese, 40 (74%) had complex procedures performed and 40 (74%) had vertical midline incisions [12].

Interim Analysis of FTS Experience

In 2010 our 2 year experience was presented in poster form at the International Gynecologic Cancer Society (IGCS) meeting [13]. Overall 148 (86%) patients were able to tolerate the introduction of early oral feeding. Median length of stay (LOS), for all patients, without exception was 3.0 days.

FTS in Corpus Cancer management

In an unselected group of 66 patients with corpus cancer managed with FTS principles, average EBL was 227ml and median LOS was 3.0 days. There were 3 (5%) intraoperative complications and no intraoperative ureteric, bowel or vascular injuries. Postoperatively, 13 (20%) patients experienced a total of 24 adverse events, but only 2 (3%) patients experienced complications greater than grade 2 [14].

Our current extended audit is the largest of its kind reported in the gynaecological literature and confirms our earlier experience, that the majority of patients are able to tolerate EOF, early mobilization, enhanced recovery and as a consequence early discharge. What then are the implications of this audit data for the general gynaecologist? The principles can be adopted by surgeons performing either laparotomy or laparoscopy. That the introduction of such a program will “enhance recovery” and as a consequence earlier discharge from hospital may result.

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