



Original research

Challenges and outcome of surgery for bowel obstruction in women with gynaecologic cancer



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HIGHLIGHTS

- Patient with former gynaecologic cancer and bowel obstruction need careful differentiation.
- Recurrent gynaecologic cancer is associated with malignant bowel obstruction.
- Surgery solve malignant bowel obstruction in gynaecologic cancer.
- Complication rates are high and survival short.
- Observation may be an option in patients with malignant bowel obstruction.

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ABSTRACT

Introduction: Bowel obstruction is associated with a reduction in quality of life and survival among cancer patients, and the entity is traditionally treated by general surgeons without dedication to the different malignancies that cause bowel obstruction or to palliation.

This study aims to identify and improve outcome of bowel obstruction in women with a history of a gynaecologic cancer.

Methods: Women operated for bowel obstruction were screened for a history of gynaecologic cancer and their records were reviewed.

Results: Bowel obstruction followed cancer treatment by a median of 18.4 months (range 2.3–277) in 59 women. A malignant cause was identified in 53% and recurrence of cancer in 61%. The cause of malignant bowel obstruction was peritoneal carcinomatosis (19%), obstructing tumour and carcinomatosis (31%) and solitary tumour (3%). Ovarian cancer (OR: 6.29, 95% CI 1.95–20.21), residual tumour during initial surgery (R2-stage) (OR: 18.7, 96% CI: 4.35–80.46) and chemotherapy (OR: 7.19, 95% CI: 2.28–22.67) were all associated with malignant bowel obstruction. Surgery solved 84% of malignant bowel obstructions, but median survival was brief (2.5 months, 95% CI: 1.4–3.6) when compared to benign bowel obstruction (95.3 months, 64.7–125.9) ($p < 0.001$). Readmission for bowel obstruction occurred after a median of 4.3 months (95% CI: 3.1–5.5) in surviving patients with malignant bowel obstruction and after a median of 84.5 months (95% CI: 73.6–95.3) with adhesive obstruction ($p < 0.001$).

Conclusions: Increased awareness of the aetiology to bowel obstruction may improve treatment strategy in these women. Women with malignant bowel obstruction should be carefully identified and differentiated in order to improve quality of life rather than pursuing emergency surgical procedures.

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1. Introduction

Relapse of gynaecologic cancer is a demanding cause of bowel obstruction in women [1] and several studies suggest bowel obstruction may occur in 25–60% of patients treated for gynaecologic cancer [2–4]. Surgical treatment and palliation of bowel

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obstruction in these patients is associated with high morbidity and mortality rates [5]. Alternative strategies involving chemotherapy and medical palliation of intestinal obstruction have been explored with less morbidity, but with some reduction in survival rate when compared to surgery [6,7].

Nevertheless, a fraction of patients with former gynaecological malignancies has intestinal obstruction due to benign causes such as adhesions, radiation or inflammatory bowel associated strictures or even hernias [8,9]. It is therefore imperative to identify the aetiology of bowel obstruction in order to implement a structured management strategy. Patients with bowel obstruction are admitted in surgical clinics and general surgeons are therefore frequently exposed to women with pre-existing gynaecologic cancer and bowel obstruction.

This study investigates a series of women admitted to a surgical unit with bowel obstruction and a history of previous gynaecologic cancer. The study aims to identify factors associated with cancer as aetiology to bowel obstruction, complications and an impaired survival rate. Women with the same background and a benign cause of bowel obstruction serve as control.

2. Material and methods

Women treated for gynaecologic cancer were identified among patients operated for intestinal obstruction at Haukeland University Hospital, a tertiary referral teaching hospital also providing hospital facilities to the local community. The patients were identified from the Patient Information Management System (PIMS) database that contains information on all patients discharged from the hospital with diagnoses coded according to the International Classification of Diseases (ICD), ninth and tenth revision (ICD-9 and ICD-10). The surgical procedures are coded according to the NOMESCO Classification of Surgical Procedures (NCSP) and the corresponding Norwegian Classification of Medical Procedures (NCMP).

The diagnose codes 560.* (ICD-9) and K56.* (ICD-10) with all sub classifications were entered together with the treatment codes 4600–4799 (“Classifications of operations”) and JF* (A-W) in NCSP (from 2006 and onwards) into the queries. Patients with former gynaecologic cancer were identified by the codes 179.*-184.* (ICD-9) and C51.*-C57.* including all sub classifications in ICD-9 and ICD-10. All relevant combinations of diagnoses and treatments were used for the queries in PIMS.

All women operated for bowel obstruction after a discharge for treatment of gynaecologic cancer were included in the study. Excluded from the study were women with bowel obstruction as the first symptom of their gynaecologic cancer, and women with persistent intestinal paralysis or obstruction following treatment of the primary cancer. The diagnosis of intestinal obstruction was established by symptoms and signs of intestinal obstruction, supported by plain abdominal film, intestinal series or computer tomography.

A cohort of patients operated for bowel obstruction between 1995 and 2007 was identified in order to have long term follow up. The study enrolled 59 women and their medical records were reviewed twice. The initial abstraction was completed on a standardised chart abstraction protocol and involved identification of the study population. The second abstraction period collected additional clinical and physiological variables using a similar chart abstracting protocols. The chart abstraction protocols identified patient demography, information on the primary cancer (origin, stage of disease, time of treatment, treatment strategy and complications), intestinal obstruction, surgical procedure, and time until recurrence of intestinal obstruction or death. Complications were coded according to Clavien-Dindo [10]. Surgery for intestinal

obstruction was the index event from which all time lags were calculated (time since treatment of primary neoplasm, time until recurrence of obstruction, death, clinical course).

The study was performed in accordance with the World Medical Association Declaration of Helsinki, 1996 and the Regional Committee of Ethics in western Norway, Norwegian Social Science Data Services, and The Norwegian Directorate of Health approved the study.

2.1. Statistics

All analyses were performed using SPSS version 22.0. The main grouping factor in the analyses was aetiology of intestinal obstruction (malignant or benign cause of obstruction). The outcome variables were rates of recurrent obstruction, time until recurrence of intestinal obstruction, survival rates, and factors associated with the grouping factor. Data are presented as medians and range for continuous variables and as absolute frequencies for categorical variables. Mann-Whitney U tests were used for continuous variables. Categorical variables were analysed by Chi-square and Fishers exact tests or by unadjusted and adjusted binary logistic regression models for variables believed to influence the main grouping variables. Adjusted analyses were performed by the Forward Stepwise Likelihood Ratio method. A significance level of $p < 0.05$ was considered statistically significant.

3. Results

The median age of the 59 enrolled women was 58 years (range 34–81) by the time of initial cancer treatment (Table 1). The dominant surgical procedure was hysterectomy (73%), and a concomitant resection of adjacent structures (bladder, intestine) was carried out in 14% of the patients. A complete tumour resection (R0) was possible in only 39% of the women and 37% of the women had a second operation related to the initial cancer operation. The majority of women received adjuvant chemo- or radiotherapy.

The bowel obstruction followed the initial cancer treatment

Table 1
Characteristics of women with bowel obstruction and former gynaecologic cancer.

N	59 (%)
Age (median, range)	58 (34–81)
Origin of cancer	
- Ovary	31 (53)
- Uterus	25 (42)
- Miscellaneous	3 (5)
Intervention	
Hystero-salpingoophorect (HS)	43 (73)
HS + adjacent structures	8 (14)
Other	5 (8)
None	3 (5)
R0-resection	21 (39)
R1-resection	6 (11)
R2-resection	27 (50)
Chemotherapy	31 (52)
Radio-therapy	22 (37)
Other tumour therapy	3 (5)
Secondary laparotomy due to	
- Complications req surgery	7 (12)
- Recurrences	6 (10)
- Second cancer operation	2 (3)
- Extended lymph node dissection	1 (2)
- Other surgery	6 (10)

R-stage: 5 patients could not be R-staged because of missing information on primary operation (2) or no operation (3).
Miscellaneous: sarcoma and others.

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