

Fast-track surgery for breast cancer is possible

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ABSTRACT

INTRODUCTION: Breast cancer is common among Danish women with more than 4,100 new cases annually. In 2008 the concept of fast-track surgery was introduced at the Department of Breast Surgery at Rigshospitalet, Copenhagen. The aim of this study is to describe the new clinical pathway for breast cancer patients after implementation of a fast-track surgery programme.

MATERIAL AND METHODS: A clinical pathway of all involved disciplines was developed including anaesthetic, analgesics, nausea and vomiting, drain and wound management, discharge assessment and psychosocial support.

RESULTS: The overall mean length of stay (LOS) decreased from 3.6 days before introduction of fast-track surgery to 1.2 days after its implementation. The largest decrease was observed among patients undergoing mastectomy, where LOS was reduced from 5.0 to 1.6 days. The number of beds at the department was reduced by about 30% and a nurse-led clinic was established which enabled nurses to take charge of wound management, seromas, temporary breast prostheses and psychosocial and rehabilitation aspects in the outpatient clinic. Additionally, the previously available telephone counselling service was intensified to provide immediate advice and support.

CONCLUSION: The results confirm that a short stay can be successfully carried out for breast cancer patients. Implementing the fast-track programme involved the introduction of a clear clinical pathway for the patients and more effective daily routines. Patients felt safe and confident after early discharge.

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Breast cancer is the most common malignancy among Danish women with more than 4,100 new cases every year. Surgery is the first line of treatment offered for the majority of patients with primary breast cancer. Advances in surgical technology over the past decades have paved the way for less invasive breast cancer surgery. Thus, an increased use of breast conserving surgery (BCS) and routine axillary lymph node dissection (ALND) being replaced by sentinel lymph node biopsy has reduced surgical trauma.

The concept of fast-track surgery or enhanced recovery programmes has been successfully introduced in many fields of surgery [1-3], including early discharge after breast cancer surgery [4-8]. However, most of the literature describes problems concerning post-operative

nausea and vomiting (PONV) and pain [9]. Furthermore, drain and wound management need revision if recovery is to be enhanced. Finally, psychosocial support is an important issue, since breast cancer is a potentially life-threatening disease often followed by depressive symptoms and severe distress [10, 11]. Traditional hospitalization with a 3-5-day length of stay (LOS) offers an opportunity to provide bedside psychosocial support. In fast-track surgery, psychosocial support must, however, be provided by an outpatient department to cover the need for patient education and counselling, reinforce self-care and provide emotional support. Hence, introducing fast-track surgery involves changes in daily routines and requires a multidisciplinary effort and a firm implementation strategy including thorough consideration of several factors (**Figure 1**).

In 2008 the concept of fast-track surgery was introduced at the Department of Breast Surgery at Rigshospitalet, Copenhagen. Before fast-track surgery was introduced, the department had a framework for the patients which included flow charts, continuity in treatment and care, patient-centred communication and psychosocial support. Furthermore, in- and outpatient clinics were integrated, and all patients had a named doctor and nurse who followed them all the way through both as an in- and outpatient. LOS was about 3-5 days.

The medical professionals in the department expressed concerns about the acceptability of a fast-track programme for the patients and also identified barriers related to wound and drain management and treatment of pain and nausea. Many expressed worries about feasibility and safety, especially in the elderly patients. The nursing staff in particular greeted the fast-track programme with scepticism and reluctance to give up a well-established current practice, and they had severe concerns about being able to provide sufficient psychosocial support [12].

The aim of this paper was to describe the new clinical pathway for breast cancer patients after implementation of a fast-track surgery programme.

MATERIAL AND METHODS

Setting

The project took place at a specialized department of breast surgery where approximately 800 women undergo breast cancer surgery annually.

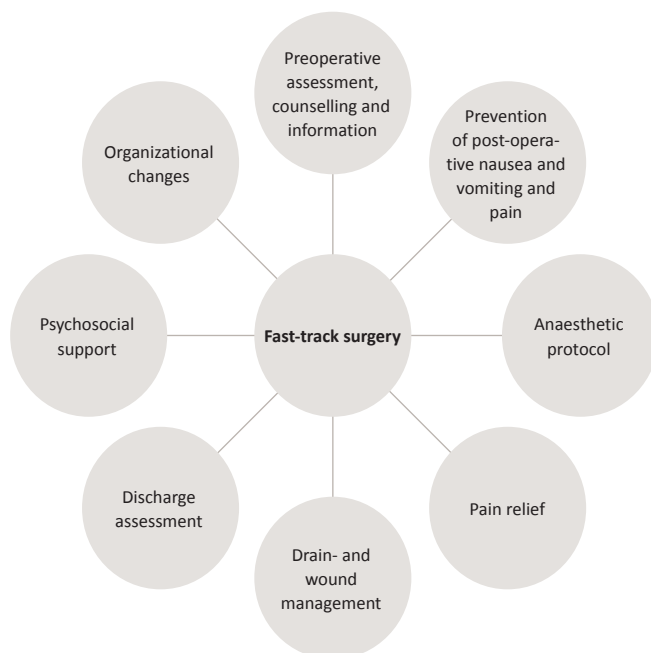
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FIGURE 1

Factors to be considered when introducing fast-track breast cancer surgery.



replaced by a nurse-led outpatient clinic and an intensified telephone counselling service. In November 2008, the clinic was ready and the concept of fast-track surgery was implemented.

Preoperative assessment, counselling and information

Preoperative assessment and psychological preparation were key areas. Every patient was assessed according to cognitive functioning and presence of an adult caregiver at home for the first night after discharge; if discharged on the day of the operation. Patients were provided with information about early discharge both orally and in writing when surgery and admission were planned. Preadmission counselling included clarification of expectations of the hospital stay.

Anaesthetic protocol

Premedication with triazolam was only given on specific patient request to alleviate anxiety, on average in less than 3% of the patients. Over the past years, inhalation anaesthetics have been replaced with intravenous anaesthetics, and treatment of PONV has improved. Intravenous anaesthesia was induced with 0.15 mg fentanyl and 2 mg/kg body weight propofol. Five minutes before incision, another 0.15 mg fentanyl was added, and anaesthesia was maintained with 0.15-0.20 mg/kg body weight/min. propofol [9]. A laryngeal mask airway was used routinely for oxygen/air ventilation at a target FiO₂ of 0.7.

Prevention of post-operative nausea and vomiting and pain

Nausea and vomiting are factors known to delay discharge. Thus, managing PONV as well as pain is essential within short-stay surgery. A pain and PONV prevention package was introduced based on modified recommendations from PROSPECT [13] for non-cosmetic breast surgery. One to two hours before surgery, the patients received 1 g paracetamol, 8 mg dexamethasone, 30 mg dextromethorphan, 400 mg celecoxib and 1,200 mg gabapentin (600 mg in patients > 70 years). Approximately 20 minutes before end of surgery, 4 mg ondansetron was given [9]. The medicine was administered by nurses and given to the patients under surveillance in the ward. Thus, the nurses ascertained that all patients took the prescribed medicine.

Post-operative analgesia

Optimal pain control is crucial to obtain early recovery. All patients had to use paracetamol 1 g × 4 as standard medication in the days after discharge. Patients who underwent axillary dissection and/or mastectomy supplemented with ibuprofen 400 mg every eight hours for the first days. The analgesic treatment was conferred with the nurse by telephone.

FIGURE 2

Clinical pathway for women with breast cancer at the Department of Breast Surgery.

Day no.	
1	Picture imaging and biopsy
7	Outpatient clinic: diagnosis, planning of surgery and preoperative appointments
8	Nurse-led clinic: telephone consultation
10	Nurse-led clinic: preoperative assessment, information and counselling, presurgical testing
11-12	Admission and surgery: discharge in the afternoon or the next day
14-15	Nurse-led clinic: telephone consultation
16-17	Nurse-led clinic: wound management, puncture of seromas, temporary breast prostheses and psychosocial and rehabilitation aspects
20	Outpatient clinic: pathology results, referral to adjuvant therapy
21	Nurse-led clinic: telephone consultation

Preparing the fast-track concept

An inventory of current practices for all involved disciplines was made and implementation strategies were designed. The new clinical pathway for breast cancer patients was described (Figure 2) along with new opioid-sparing multimodal analgesia procedures [9] and standards based on evidence in the field and consensus among the medical staff. LOS was reduced and bed-stay

Drain and wound management

Drains have traditionally been widely used in breast surgery, and patients have remained in hospital until the drains were removed. Drains may cause considerable post-operative pain and uneasiness. A review of the literature concerning the use of drainage after breast surgery revealed that the drain can be removed the first day after surgery without increasing the risk for patients [14, 15]. It may result in more punctures for seroma, but this can be handled in the nurse-led outpatient clinic.

Discharge assessment

Every patient was assessed according to clear guidelines before discharge, consisting of practical, physical and psychological aspects of importance for early discharge. The assessment was documented on a check list (**Table 1**). Information about wound management, post-operative pain management and psychological aspects was given orally and in writing before discharge. Relevant rehabilitation activities were planned. The patient was given a name and telephone number to "her" contact nurse and had as a minimum one planned telephone contact 2-3 days after discharge as well as a planned visit to the outpatient clinic after 5-6 days.

Psychosocial support

Psychosocial support is crucial for cancer patients and begins at the very first visit to the clinic. Patient-centred communication, continuity in care and telephone contact support services were established to help patients to cope. It has been documented that the presence of an easily accessible hot-line prevents unnecessary re-admissions [15].

Thus, free telephone counselling has been available to patients both before and after admission. Patients were offered referral to relevant rehabilitation in and outside the hospital.

Follow-up

Admission time data were extracted from the electronic patient management system and the average time of hospitalization was calculated monthly for the first six months and quarterly hereafter. To assess the patients' experiences of quality in care, a total of 50 semi-structured interviews were conducted. A written interview guide was designed comprising some 22 "yes/no" and open-ended questions covering specific items on well-being, need for information, wound and pain management, psychological aspects and coping after discharge. Data from follow-up interviews were compared with baseline data. Annual spot tests have been carried out ever since.

Trial registration: not relevant.



TABLE 1

Discharge checklist.

	Yes	No	Notes	Date and signature
<i>Practical topics</i>				
Telephone contact is arranged				
Outpatient clinic appointment				
Next of kin has been informed about discharge plans				
Next of kin can stay with the patient the first night after surgery				
<i>Information</i>				
Folder "Information about the time after discharge" has been supplied and gone through with the patient				
<i>Mentally and psychologically</i>				
The patient is prepared and informed and accepts discharge				
The patient is psychologically ready for discharge				
<i>Observations</i>				
No serious oedema/haematoma				
Optimal pain control				
No nausea/vomiting				
Is able to move around				
Dry wound dressing				
<i>Mastectomy patients</i>				
Supplied with temporary breast prosthesis				
<i>ALND/mastectomy patients</i>				
Instructed in arm/shoulder exercises				

ALND = axillary lymph node dissection.

RESULTS

From November 2008 fast-track surgery was performed. The overall mean LOS decreased from 3.6 days before the introduction of fast-track surgery to 1.2 days after its implementation. LOS was calculated for four different types of surgery (**Table 2**): mastectomy with sentinel lymph node dissection (SLND) or mastectomy with ALND and BCS with SLND or BCS with ALND. Today, the average LOS for patients having BCS and SLND is 0.8 days, and 60% are treated as day patients and discharged a few hours after surgery. 78% of patients who undergo BCS and ALND are discharged the morning after surgery and the average LOS for this group is 1.2 days. The largest change has been observed in the groups of patients undergoing mastectomy, where the mean LOS has been reduced from 5.0 to 1.6 days and for patients having mastectomy and SLND from 4.5 to 1.6 days. 55% of mastectomy patients are only hospitalized for 24 hours. Age turned out to play a minor role in the adaption to fast-track surgery. In 2009 the share of patients aged 80+ yrs was 8.7%, whereas in 2010 and 2011, it was more than 12%.

The number of beds in the department has been reduced from a total of ten to seven following introduction of the fast-track programme. As a result of early discharge and changes in the planning of surgery, it

TABLE 2

Average length of stay for breast cancer patients classified according to type of surgery. The green middle column indicates the implementation of fast-track surgery during 2008. The values are days (range).

	Before inter- vention 2007	2009	2010	Jan-Jun 2011
<i>Mastectomy</i>				
Mastectomy and ALND	5 (3-10) (n = 126)	1.6 (1-7) (n = 170)	1.6 (1-3) (n = 164)	1.6 (1-4) (n = 61)
Mastectomy and SLND	4.5 (2-7) (n = 95)	1.4 (1-4) (n = 167)	1.6 (1-7) (n = 134)	1.6 (0.5-4) ^a (n = 51)
<i>Lumpectomy</i>				
Breast-conserving surgery and ALND	4.1 (2-7) (n = 50)	1.2 (0.5-3) ^a (n = 120)	1.2 (0.5-3) ^a (n = 103)	1.2 (0.5-2) ^a (n = 31)
Breast-conserving surgery and SLND	1.4 (1-7) (n = 122)	0.9 (0.5-5) ^a (n = 391)	0.9 (0.5-3) ^a (n = 315)	0.8 (0.5-3) ^a (n = 132)

ALND = axillary lymph node dissection; SLND = and sentinel lymph node dissection.

a) 0.5 days are used for patients admitted for less than 12 hours

became possible to close the department during weekends from Friday evening to Monday morning. A nurse-led clinic was simultaneously established enabling nurses to take charge of wound management, puncture of seromas, temporary breast prostheses and psychosocial and rehabilitation aspects in the outpatient clinic.

The nurse-led outpatient clinic is today well established with 25 daily consultations and 15 scheduled telephone consultations. In addition, the open telephone counselling is widely used. A recent, unpublished study showed an average of 18 weekly non-scheduled telephone calls from patients. The topics of these conversations were primarily concerns about wound/skin and swelling (50%), use of analgesics (12%) and psychosocial issues (20%). Drains were routinely removed the day after surgery. Regrettably, we have no data on the incidence of seroma punctures before and after implementation of the fast-track concept.

The patients' perspective was not scientifically analysed, but semi-structured interviews about need for information, pain, arm mobility, wound and psychosocial issues showed a high degree of satisfaction before the intervention and unchanged or improved quality after six months on all issues apart from post-operative pain [12]. All interviewed patients reported that they felt safe and confident upon discharge.

DISCUSSION

The present prospective study shows that the mean LOS for breast cancer patients can be reduced by implementing fast-track surgery. Our results confirm prior reports that a short stay can be successfully carried out for breast cancer patients. We examined LOS for patients undergoing different types of surgery and found the largest decrease among patients having mastectomy and ALND.

The nurses at first greeted the new concept with scepticism and had severe concerns about being able to provide psychosocial support and counselling. Thus, a nurse-led outpatient clinic was established to accommodate this concern. It turned out that the nurses in general found it easier to provide psychosocial support and counselling owing to the fact that the sessions were scheduled and undisturbed. Furthermore, the telephone counselling service was intensified in order to provide immediate medical and psychosocial advice and support. It has previously been demonstrated that nurse-led follow-up services are effective in providing support to vulnerable patients [16] and offer an opportunity to seek counselling on swelling and redness in surgical wounds, seroma, pain and shoulder exercise, among others [17].

Patients reported slight pain the first 1-2 days after discharge. More detailed information about post-operative pain was provided along with telephone follow-up, and recent results show that this problem has now been solved. Patients felt safe and confident upon early discharge. Many patients spontaneously emphasized the telephone counselling: "Knowing that I could just grab the phone and ask my contact nurse any question made me feel safe and confident at home" or "The telephone contact is a life-line for me".

Fast-track surgery was introduced solely to improve the quality of treatment and care. Thus, no systematic cost-effectiveness analyses were conducted. Still, we have doubled the number of patients treated in the department since we implemented the new programme (Table 2). Furthermore, closing down the ward during weekends has led to a reduction in costs (weekend pay) and a better staffing on weekdays. A general reduction in health care expenses has been effected in the same period of time which has reduced the medical staff and



Counselling in the nurse-led outpatient clinic.

the number of nurses has been reduced by 15% since 2007, despite running the successful fast-track programme.

Following implementation of the fast-track programme, future efforts should focus on identification of any subgroup of patients who may need more psychological support [18] and reduction of the significant burden of persistent pain [19].

In summary, implementing the fast-track programme has involved the creation of a clear clinical pathway for the patients and more effective daily routines. A larger part of the daily nursing activities are now scheduled and take place in undisturbed surroundings in the outpatient clinic, which, in our opinion, leads to a more predictable, effective and less stressful working day.

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