

Feasibility and safety of outpatient breast cancer surgery

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ABSTRACT

INTRODUCTION: Improvement in perioperative care programmes has facilitated post-operative recovery and use of short-term or outpatient procedures. The aim of this study was to assess the feasibility and safety of an outpatient breast cancer programme in patients referred to a large breast cancer unit.

METHODS: After an introduction period involving 554 consecutive patients, all patients operated from 1 November 2015 to 30 June 2016 (a total 483 patients) were treated with multimodal oral analgesia, preoperative high-dose glucocorticoids and no routine use of drains. Planned inpatient surgery included patients with mastectomy > 70 years, < 8 h in post-operative observation and < 2 h of observation after mobilisation.

RESULTS: Of the 382 patients who were planned for outpatient surgery (79%), 90% received surgery in an outpatient setup. Among the 101 patients (21%) who were planned for inpatient surgery, 17% returned home on the day of surgery. Consequently, the overall outpatient rate was 72% and the overall mean length of stay was 0.3 days, ranging from 0.1 days for breast-conserving surgery to 0.8 days for mastectomy. About 2% were readmitted within < 30 days, mostly due to wound problems.

CONCLUSION: Outpatient breast cancer surgery is feasible and safe in most patients in a socialised healthcare system.

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Breast cancer surgery is common with > 4,500 new annual cases in Denmark [1]. The concept of fast-track surgery aiming for the “pain-and-risk-free” operation has been successfully introduced in many fields of surgery [2, 3] including in breast cancer surgery [4]. Developments to optimise post-operative recovery problems like pain, nausea and vomiting, use of drains, psychosocial support, etc., allow for further improvement questioning the feasibility and safety of outpatient breast cancer surgery in patients in a non-private large hospital setting.

The aim of this paper was to describe the feasibility and safety of further improvement of a previously published [4] optimised perioperative management programme targeted at the outpatient setting in breast cancer surgery.

METHODS

Setting: The study was performed in a specialised department for breast cancer surgery with more than 900 annual surgical procedures. All operations from 1 March 2015 to 1 July 2016 were included, but plans for an outpatient setup were initiated as from 1 November 2015.

The perioperative management before the introduction of the present care programme revision, which has previously been described in detail [4], included optimisation of pain management, a nurse-led outpatient clinic and a telephone counselling service. Anaesthesia included propofol and fentanyl and preoperative administration of 1 g paracetamol, 8 mg dexamethasone (as from 1 November 2015 125 mg methylprednisolone), 400 mg celecoxib and 600 mg gabapentin (patients ≥ 70 years 300 mg) and nausea prophylaxis in the form of 8 mg ondansetron before end of surgery. Peripheral nerve blocks were not used. High-dose glucocorticoids were not given in the few patients with pregnancy, lactation or insulin-dependent diabetes (n = 5). Post-operative analgesia included 1 g paracetamol/6 hourly and 400 mg ibuprofen/8 hourly. This standard regimen included no routine use of drains. Discharge criteria on a checklist have previously been described in detail [4]. For the present “outpatient programme”, “inpatients” comprised patients ≥ 70 years with planned mastectomy less than 8 h of post-operative observation and < 2 h observation after mobilisation. The study was a prospective quality assurance assessment and required no approval from the ethical committee and was not registered with clinicaltrials.gov.

Trial registration: not relevant.

RESULTS

The present study included consecutive patients operated from 1 March 2015 to 1 July 2016 (**Table 1**). The previous development analysis ended in June 2011 [4]. In the pre-outpatient study period from 1 March 2015 to 1 November 2015, the organisation was changed to evaluate whether outpatient breast cancer surgery was potentially feasible and, furthermore, we stopped using drains routinely.

ORIGINAL ARTICLE

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TABLE 1

Patient demographics on procedure-dependent length of stay in the total patient material with planned/non-planned outpatient surgery. The outpatient programme was initiated on 1 November 2015.

	1st period: 1.3.-30.10.15	2nd period: 1.11.15-29.2.16	3rd period: 1.3.-30.6.16
Patients, n	554	236	247
Age, mean, yrs	61.4	60.5	61.7
Type of surgery, n (%)			
BCS + SLNB	277 (50)	116 (49)	120 (49)
BCS + ALND	66 (12)	29 (12)	30 (12)
BCS + 2-step ALND	12 (2)	6 (3)	5 (2)
Mast + SLNB	108 (19)	56 (24)	50 (20)
Mast + ALND	84 (15)	27 (11)	41 (17)
Mast + 2-step ALND	7 (1)	2 (1)	1 (1)
Length of stay, mean (range), days			
All operations	0.67	0.25	0.35
BCS + SLNB	0.34 (0-2)	0.04 (0-1)	0.06 (0-1)
BCS + ALND	0.7 (0-2)	0.24 (0-2)	0.17 (0-1)
BCS + 2-step ALND	1.17 (0-3)	0	0.4 (0-1)
Mast + SLNB	1.04 (0-2)	0.48 (0-1)	0.64 (0-3)
Mast + ALND	1.21 (0-4)	0.7 (0-1)	0.98 (0-6)
Mast + 2-step ALND	0.14 (0-1)	0.5 (0-1)	0

ALND = axillary lymph node dissection; BCS = breast-conserving surgery; mast = mastectomy; SLNB = sentinel lymph node biopsy.

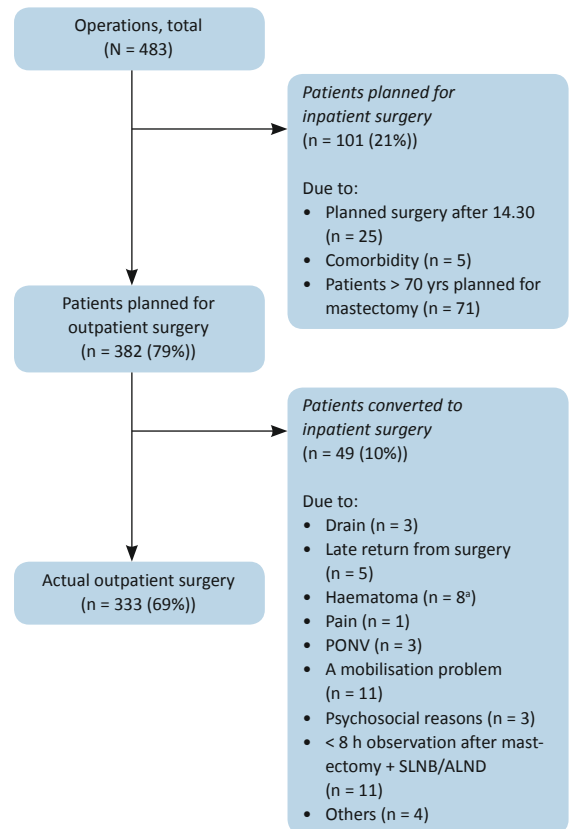
For the actual study period from 1 November 2015 to 1 July 2016, 101 patients (21%) were planned for inpatient surgery because surgery had been planned to start after 2.30 pm or due to severe comorbidities or mastectomy in patients > 70 years (Figure 1). In that group, the mean age was 74 years. The mean length of stay (LOS) was 0.95 days (median one day). Only three of the 101 patients stayed for more than one day, one due to reoperation for haematoma, another due to worsening of a preoperative pulmonary comorbidity and one due to subcutaneous emphysema of unknown origin. In all, 17 of the 101 patients who had been planned for inpatient surgery were, nevertheless, discharged on the day of their surgery because they fulfilled the discharge criteria and wanted to go home. Of these patients, five were > 70 years and mastectomised.

Of the 382 patients (79%) who had been planned for outpatient surgery, 333 (90% of planned outpatient surgery and 69% of the total material) were actually operated on an outpatient basis, whereas 49 (10% of the potential outpatients) stayed for various, primarily surgery-related, reasons or late return from surgery (Figure 1). Overall, the outpatient approach was achieved in 72% combining planned "outpatient" and "inpatient" procedures.

In Table 1, the developments over time including two periods for the actual outpatient setup are shown. Herein, the mean LOS was around 0.3 days for all operations, but with a mean LOS of 0.1 days for breast-con-

FIGURE 1

Patient details from the primary study period from 1 November 2015 to 1 July 2016 after the feasibility study running from 1 March 2015 to 1 November 2015.



ALND = axillary lymph node dissection; PONV = post-operative nausea and vomiting; SLNB = sentinel lymph node biopsy.

a) Only 2 of the 8 patients were re-operated.

serving surgery and sentinel lymph node biopsy (BCS + SLNB), increasing to 0.2 days for BCS and axillary lymph node dissection (ALND). However, patients with mastectomy who received an SLNB or ALND had an average LOS of around 0.8 days. The overall percentage of outpatient procedures was 92% for BCS and 39% after a mastectomy. The LOS results reflect discharge to the patients' own home, since a hotel facility was not in use.

The use of drain decreased from 26 cases in the first period to five cases in the third period. The readmission rate decreased over the period (Table 2) and was reduced to about 2% in the third period. The main reasons for readmission in the last two periods were the few cases of infection observed.

DISCUSSION

The present quality improvement study in patients referred to a large breast cancer department in a socialised healthcare system represents a further improvement of care principles including no use of drains or



TABLE 2

Surgery	Age, mean yrs	LOS, mean, days	Haematoma, n	Infection, n	Others, n	Comment	n
<i>1st period: before the outpatient programme</i>							554
Mast + ALND	91	1	-	-	1	Diarrhoea and dehydration + surgery	
Mast + ALND	52	4	1	-	-		
BCS + SNLB	50	1	-	1	-		
BCS + SLNB	83	1	1	-	-	Observation only	
Mast + SLNB	69	1	1	-	-	+ surgery	
Mast + 2-step ALND	46	1	1	-	-	+ surgery	
Mast + SN	71	2	-	1	-	-	
<i>2nd period: 1.11.15-29.2.16</i>							236
BCS + ALND	68	7 + 1	-	1	-	-	
Mast	51	5	-	1	-	-	
BCS + SNLB	45	1	1	-	-	+ surgery	
Mast + ALND	55	4	-	1	-	-	
BCS + SNLB	42	0	-	-	1	Wound suture	
<i>3rd period: 1.3.16-30.6.16</i>							247
BCS + ALND	45	3	-	1	-	-	
Mast + SLNB	86	6	-	1	-	-	
Mast + ALND	68	1	-	1	-	-	
BCS + ALND	76	4	-	1	-	-	

ALND = axillary lymph node dissection; BCS = breast-conserving surgery; LOS = length of stay; mast = mastectomy; SLNB = sentinel lymph node biopsy; SN = sentinel node.

Readmissions and reasons among 1,037 breast cancer operations performed between 1 March 2015 and 30 June 2016. The outpatient programme was initiated on 1 November 2015.

high-dose preoperative glucocorticoid to facilitate analgesia and nausea and vomiting compared with the department's previously reported setup [4]. The use of preoperative high-dose steroid was based upon the previously reported enhanced recovery in hip and knee arthroplasty [5, 6] and analgesia in breast reconstruction [7]. The overall results showed a continuous improvement resulting in an overall length of stay in a consecutive patient material of about 0.3 days compared with a previous LOS of 1.2 days [4]. The shorter LOS was not associated with more clinically relevant readmissions or other safety issues. In addition, the data showed that with the well-defined exclusion criteria for outpatient surgery, 87% of the 79% of the patients who were scheduled for outpatient surgery actually received outpatient surgery, while the 101 patients (21%) who were planned for inpatient surgery included 17 patients who nevertheless underwent in an outpatient setting, altogether increasing the outpatient performance to 72%.

The introduction of day case breast cancer surgery has been reported before [4, 8], mostly in selected patients as also illustrated by a recent Italian day-surgery centre report [9], which excluded major procedures and high-risk patients. Our results have major organisational and financial implications, for instance by securing the

closure of the breast cancer unit at nights and during weekends. The few patients needing a weekend overnight stay were moved to the nearby Section for Plastic Surgery. In addition to the shortening of LOS, there was a continuous, high degree of patient satisfaction and within the nursing group, as published previously, but at that time not with a day case setup [8].

The present results are also interesting as far as pain and nausea issues are concerned, since recent efforts have focused on the use of more invasive analgesic techniques such as paravertebral blockade or pectoral nerve blocks [10, 11]. Although not assessed in detail in our study, the present simple setup did not lead to pain and nausea problems limiting a day-case setup, and that questions the need for more invasive and technically challenging analgesic techniques. Similarly, recent Enhanced Recovery after Surgery guidelines include 18 items for enhancing recovery after breast reconstruction [12]. However, most of these items lack procedure-specific evidence [12] and are in sharp contrast to the simple setup of the present study.

CONCLUSION

Using a simple multimodal intravenous and oral analgesic technique, outpatient breast cancer surgery was

feasible in about 72% of the patients referred to a large university breast cancer unit, and the approach raised no safety issues. Further improvements must focus on organisational issues and the few direct surgical issues (haematomas).

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CONFLICTS OF INTERESTS: Disclosure forms provided by the authors are available with the full text of this article at www.danmedj.dk

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