ANTICANCER RESEARCH *40*: 2179-2183 (2020)
doi:10.21873/anticanres.14178

Comparison of Patient Satisfaction on a Day-case Mastectomy Pathway for Breast Cancer *Versus* a Traditional Inpatient Delivery Model, Using a Validated Questionnaire

SIMON DAVEY[1], AIDAN ROCHE[2], IBIFUNKE PEGBA-OTEMOLU[3], ABDULLA IBRAHIM[4] and RACHEL AINSWORTH[1]

[1]*North Bristol NHS Trust, Southmead Hospital, Bristol, U.K.;*
[2]*St. John's Hospital, Livingston, U.K.;*
[3]*Oxford University Hospitals NHS Foundation Trust, John Radcliffe Hospital, Oxford, U.K.;*
[4]*Queen Victoria Hospital NHS Foundation Trust, East Grinstead, U.K.*

Abstract. *Background: In 2011, a guidance was issued by the National Health Service (NHS) Improvement a model on how mastectomy could be offered in the day-case setting. The goal of this guidance was to reduce inpatient bed days and cost to the NHS, and demonstrate that it can be performed within an acceptable safety profile. The aim of this study was to assess whether patients find the day-case pathway for mastectomy an acceptable management model. We compared complication rates between the day-case and inpatient delivery model. Patients and Methods: This study was a retrospective analysis of patients' experience undergoing day-case (n=26) and inpatient mastectomy (n=60). The primary outcome measure was based on a telephone interview using a validated, standardised questionnaire. Results: No statistically significant difference in the satisfaction levels between the two groups (raw scores 6.76 day-case vs. 6.15 inpatient, p=0.37) was demonstrated. We found no statistically significant difference between the two groups when specifically analysing whether patients found the first night harder as a day-case or inpatient (3.192 vs. 2.80, p=0.59, range 0-10). Our overall complications were 11.4% (day-case) and 18.3% (inpatients). Rates were comparable between the two groups and equivalent to published rates in the literature. Conclusion: There was no statistically significant difference in satisfaction scores between patients who had a mastectomy as an inpatient versus those who had their operation as a day-case procedure. In addition, there were no significant differences in the complication rates between the two groups. We conclude then that it is feasible and safe to offer day-case mastectomy, with no loss in patient satisfaction.*

The data in this paper has been, in part, presented at the following meeting: Association of Breast Surgery Conference. ICC Birmingham, 18-19th June 2018. Abstract: EJSO 2018 available at: https://www.ejso.com/article/S0748-7983(18)30780-7/abstract

Correspondence to: Mr. Simon Davey, Specialist Registrar, North Bristol NHS Trust, Southmead Hospital, Bristol, BS10 5NB, U.K. Tel: +44 07715 171637, e-mail: drsdavey@gmail.com

Key Words: Day-case, mastectomy, patient satisfaction, questionnaire.

In 2011, a guidance was issued by the National Health Service (NHS) Improvement a model on how mastectomy could be offered in the day-case setting (1). The goal of this guidance was to reduce inpatient bed days and cost to the NHS, whilst demonstrating that it could be done within an acceptable safety profile. Since that date, published literature has shown that mastectomy can be undertaken within an appropriate safety profile on a day case basis (2, 3). This day-case model has also been offered in some European Centres since 2010 with reported success (4). However, there is little published data on whether patients are satisfied with the day-case model of delivery. Therefore, the primary aim of this study was to assess whether patients having a mastectomy in the day-case setting find it an acceptable management pathway compared to the inpatient model. This study offers one of very few qualitative analyses on patient satisfaction undergoing day-case mastectomy. The secondary aim of this study was to obtain and compare the complication rates between these two groups at the Units where the study was performed.

Patients and Methods

This study was a retrospective review of patients' experiences undergoing day-case and inpatient mastectomy at two hospitals in the South West of England, under the care of a pooled group of breast

surgeons. The primary outcome was based on a telephone interview using a validated, standardised questionnaire (5). The patients were unselected, sequential cases whose operations were undertaken between December 2015 and December 2016 (n=208). The authors limited the time frame for the telephone questionnaires to 18 months following their operation in order to minimise recall bias. However, the Trusts involved in this study had been offering day-case mastectomy from October 2014. Therefore, when complications were being considered, the authors decided to include all patients from the start of that period when day-case mastectomy was routinely offered at these Trusts (n=314). This gave the largest data set through which to assess the safety profile for the day-case pathway.

Inclusion criteria. We included all female patients over the age of 18 undergoing mastectomy, mastectomy with sentinel node biopsy or mastectomy with axillary node clearance. Patients for day-case management were required to have a responsible adult with them for 24 hours following discharge. In addition, patients were generally only considered eligible for day-case if they were ASA 1 or 2 and who managed their activities of daily living without carers. On its own, age was not considered as a factor for exclusion on the day-case pathway.

Exclusion criteria. Patients undergoing bilateral mastectomy or any form of immediate reconstruction were excluded.

Statistical analysis. We compared satisfaction scores between the two patient groups undergoing mastectomy either in the day-case setting or as an inpatient using the Student's *t*-test. Data on complications are presented as percentages.

Benchmarking. To assess whether day-case can be deemed as safe, we benchmarked our day-case complication rates to those reported in published literature. We assessed our complications using the Clavien-Dindo System. In a large American series (n=1,660) wound infections with mastectomy were reported at 4.34% and 30-day mortality at 0.24% (6). In our study, we included seromas. It is interesting to note that there are significant variations in the reported rates within the published literature for seroma formation ranging from 2.5% to 86.0% (6, 7).

Questionnaire. Patients were sent a letter prior to being telephoned, explaining the reason for the questionnaire. Any patient who had not received the letter when called was explicitly told that they had no obligation to continue. However, if they were happy to proceed with the questionnaire, they were not excluded. All patients were informed that the questionnaire was not being undertaken in response to any clinical concerns that had been raised. Ethical approval was granted by the local audit department. The questionnaire was developed and validated at the University Medical Center (UMC) in Utrecht, Holland. It was originally developed to assess the satisfaction of the day-case pathway for patients undergoing stapes surgery, rather than assessing satisfaction with the surgery itself. As such, it is not necessarily specific to otolaryngology. Minor modifications to the wording were made to ensure applicability to our patient group for day-case mastectomy. The questionnaire is presented in Table I.

Demographics. The day-case group was 8 years younger (60; range=34-85 years) when compared to the inpatient group (68; range=39-91 years) which was not found to carry statistical significance (p=0.8). Details on co-morbidities were not collected.

Results

A total of 208 mastectomies were completed between December 2015 and December 2016. Of these, 140 were eligible for inclusion. A total of 86 patients agreed to answer the telephone questionnaire. Of these patients, 26 were day-case and 60 were managed as inpatients.

Primary outcome and satisfaction scores. No statistically significant difference in the satisfaction levels between the two groups (raw scores 6.76 day-case *vs*. 6.15 inpatient, p=0.37) was demonstrated. We found no statistically significant difference between the two groups when specifically analysing whether patients found the first night harder as a day-case or inpatient (3.192 *vs*. 2.80, p=0.59, range=0-10).

Secondary outcome and complication rates. The data for complications included 314 cases. A total of 79 cases were day-case and 235 were managed as inpatients. Our overall complications were 11.4% (day-case) and 18.3% (inpatients). Complications by C-D classification are shown in Table II. Rates were comparable between the two groups and equivalent to rates published in the literature (6). A total of 7 patients suffered from more than one complication. The most common complication was a seroma needing aspiration in clinic (CD 3a) accounting for approximately half the total number of complications in both groups (day-case 4/9-44.4%; inpatient 18/43-41.9%).

The day-case surgical site infection rate was 2.5% (2/79). The inpatient surgical site infection rate was 2.1% (5/235). Returns to theatre (CD 3b) were 1.3% (1/79) in the day-case group and 1.7% (4/235) in the inpatient group. Overall readmissions were 6.3% (5/79) for day-case and 3.8% (9/235) for inpatient. No patients died within 30 days of discharge.

None of the complications were classified as Grade 4 or 5 (life threatening or death). All these rates are in line with published data. The most common reason for a return to the theatre was for evacuation of a haematoma. There was a small number of other complications. These included early onset of lymphoedema, limited range of motion in a shoulder requiring physiotherapy, and one patient fainting when being discharged (not related to a haemoglobin drop).

Discussion

This study is one of the very few to examine patients' experience of day-case mastectomy. It provides evidence that patients having a mastectomy are equally satisfied when having the procedure as a day-case compared to as an inpatient. This is in contrast to a UK study in 2015 (9) where patients expressed a preference to having the procedure as an inpatient (n=41 respondents). However, that study asked patients who had been managed as inpatients whether they

Table I. *Utrecht patient satisfaction survey.*

1.	Did you feel more anxious because the surgery was planned in a day-case setting?	Yes	No
2.	Did you feel less anxious because the surgery was planned in a day-case setting?	Yes	No
3.	If you had the choice: would you undergo the surgery in day-case setting again next time?	Yes	No
4.	Did you find it pleasant that you did not have to spend the night in the hospital after the surgery?	Yes	No
5.	Would you have preferred to have spent the night in the hospital after the surgery?	Yes	No
6.	Would you have preferred to have been admitted the night prior to the surgery?	Yes	No
7.	Were you content with the hospital admittance in general?	Yes	No
8.	How easy or difficult was the first night after the operation on a scale from 0 to 10 (0 is very easy and 10 is as difficult as possible)?	N/A	N/A

"found their night in hospital helpful". That approach cannot answer the question as to whether a cohort managed carefully and selected with appropriate pre-operative work-up can be managed on a day-case basis without a loss in satisfaction. Our study directly assessed patient satisfaction with their allocated pathway.

It is clear that there is a significant psychosocial aspect for patients in receiving a diagnosis of any cancer but those with breast cancer, in particular (9-11) seem to suffer more. The UK study above (9) found that 50% of those undergoing mastectomy with sentinel node biopsy and 70% of those undergoing mastectomy with axillary node clearance found the night in hospital useful because of the reassurance it conferred. Whilst this is understandable from the patient point of view, it does not necessarily follow that we cannot manage patients on a day-case pathway if the pre-operative counselling is rigorous and supportive.

Satisfaction scores. The Utrecht questionnaire attempts to assess whether there is a statistically significant difference between two groups rather than assess the quantum of satisfaction in one or the other. In our study, the similarities in the scores suggest that whether managed on a day-case or inpatient pathway, patients are satisfied with their treatment pathway. This implies that both groups were adequately prepared pre-operatively with regards to their expectations of each pathway.

Complications. Overall, there were fewer complications in the day-case group. This study has not highlighted any reason as to why that might be the case, but it does suggest that day-case mastectomy can be offered to patients within an acceptable safety profile. The most common complication was haematoma formation. The main reason for readmission was for evacuation of a haematoma. The rates of wound infection in our sample of 2.5% (day-case) and 2.1% (inpatient) are acceptable when compared the benchmark of 4.34%. We had no deaths within 30 days in either group.

Whilst there is no doubt that seroma formation is a significant problem, there is discussion in the published literature as to whether this should still be considered as a complication rather than a consequence of the operation. Rates as high as 85% have been reported after mastectomy and focus now lies with surgical techniques to try and reduce them (8). Our rates are well below this (5.1% day-case and 7.6% inpatient), but the raw figures underplay the impact these complications have on the patient and hide the cost to the NHS. Aspiration was undertaken in the clinic, in some cases up to seven times. In one case an aspiration caused a haematoma requiring a return to the theatre and another caused a sterile seroma to become infected.

Table II. *Complication by type using the Clavien-Dindo (CD) classification.*

C-D Classification	Day-case (n=79)		Inpatient (n=235)	
	Number	%	Number	% of Total
1	3	3.7%	12	5.1%
2	1	1.3%	9	3.8%
3a	4	5.1%	18	7.7%
3b	1	1.3%	4	1.7%
Total	9	11.4%	43	18.3%

Limitations. The authors accept that there are a number of limitations in this study. The first is the sample size. Although we have 86 patients in this study, only 26 in the day-case group completed the questionnaire, so robust statistical analysis is limited. The authors accept that there is a risk of type 2 error in this study. In addition, common with any retrospective questionnaire, recall bias cannot be excluded. We tried to minimise bias by only including patients who had the procedure within the prior 18 months of receiving the telephone call.

This series of patients came from a pooled process so it does not represent a single-surgeon series. It is possible that there are differences between surgeons that could affect outcomes. Finally, the inpatient group were older than the day-case group. Accurate comparison needs a matched group

and it may well be that some of that elderly population cannot be managed on the day-case pathway, particularly those operated on late in the day.

The previous UK study appears to highlight that psychological barriers remain the major issue in persuading the more elderly that they can be managed safely as a day-case. We also have to accept that the day-case pathway will simply be unsuitable for a number of patients due to co-morbidities or more commonly due to the social situation and lack of a support network at home.

Although some patients would not manage on a day-case pathway, the general trend to find new options for delivering treatment in hospital are happening alongside very significant advances in the understanding of the genetics of breast cancer (12). In the future, it is clear that a targeted, day-case pathway with a highly individualised treatment plan, based on an individual's genetic profile will become the standard of care.

Patient experience in their own words. Once answers were collected for the questionnaire, the authors had the opportunity to discuss with the patients any other matters that they felt that the questions did not capture. Comments presented in this way are not rigorous for analysis, but they are certainly useful in understanding some of the common problems hospitals will face when setting up this service. The authors felt it was useful to highlight these comments to help other Centres understand some of the issues that would need to be addressed in order to provide a safe, functional day-case service to their local populations.

It was notable that there was a significant variation in the standard of care given on the wards over the study period. As an example, patient A expressed herself as "absolutely delighted with the care". However, just two weeks later at the same hospital, patient B stated that she had waited 5 hours for a transfer and was "completely ignored" on the transfer from recovery.

Making patients feel welcome onto a new ward was also frequently not done by the clinical staff which had the effect of making patients feel vulnerable and isolated. Examples are patient C "I was treated like a machine" and patient D "no one introduced themselves". This lack of basic communication was a significant driver for the *#hellomynameis* campaign in the United Kingdom which highlighted frequent failings of staff to perform well in basic tasks of communication. There is a significant body of published literature highlighting the psychosocial aspect of mastectomy and how it can affect outcomes. Getting this essential part right in the day-case pathway will be crucial to the success or otherwise, of offering day-case mastectomy as a routine procedure.

Another theme related to patient concerns is about the management of drains at home. However, patients would then report in retrospect that it was the anticipation which worried them rather than the reality. Patient E is a good example "my drain was a nuisance but not a problem".

A common theme in the inpatient group was that most wanted to stay in for reassurance because the operation was considered as major life event. Patient F "I wanted to stay in. It's a scary procedure and is just like a major operation". This is echoed by patient G "I was very nervous. I'd never had an operation before". This was highlighted in the UK study (9). Managing and addressing patients' concerns in the pre-operative setting will be crucial to delivery of a successful day-case service.

In our institution, we felt that these concerns had been rigorously addressed prior to their operations. Every patient had at least one meeting with both the surgeon and their nominated breast care nurse. This was followed-up with "open access" to the Breast Care Nurse both before and after their operations. All were given written information on the operation that they were to undergo and information regarding the management of drains at home. Yet, despite this, some patients clearly felt that they would not be able to manage on their own at home. This highlights the crucial importance of patient selection when setting up this service so that there is an immediately positive result from providing day-case mastectomy to enable the service to flourish.

Conclusion

Acknowledging the limitations of our study as highlighted, we conclude that it is feasible and safe to offer mastectomy as a day-case procedure, with no loss in patient satisfaction.

From our data, there is no statistical difference in satisfaction scores between patients who have had a mastectomy as an inpatient and those who have had their operation as a day-case procedure. In addition, there was no significant difference in the complication rate between the two groups.

Limited qualitative assessment in this paper has shown that if hospitals are going to provide this service routinely, it is imperative that patients know exactly what the route back into hospital will be if they have a complication. The pre-operative discussions need to cover the management of drains in more detail. Hospitals must also try to improve consistency in delivery of care on the wards.

Conflicts of Interest

None declared.

Authors' Contributions

All Authors contributed to study concept and design. SRD, AR, IP and AI performed the data acquisition. All Authors were involved in analysis and interpretation of data and manuscript preparation.

References

1 NHS Improvement. Delivering Major Breast Surgery safely as day-case or as a one night stay (excluding reconstruction). December 2011. Available from: https://www.slideshare.net/NHSImprovement/delivering-major-breast-surgery-safely-as-a-day-case-or-one-night-stay-excluding-reconstruction

2 Falguni Raja (2016) 23 hour discharge model; Summary of audit findings May 2015 Breast Surgery as Day Surgery, September 2016. Available from: http://www.healthcareconferencesuk.co.uk/breast-surgery-day-surgery

3 Marla S and Stallard S: Systematic review of day surgery for breast cancer. Int J Surg *7(4)*: 318-323, 2009. PMID: 19427922. DOI: 10.1016/j.ijsu.2009.04.015

4 Ballardini B, Cavalli M, Manfredi GF, Sangalli C, Galimberti V, Intra M, Rossi EM, Seco J, Campanelli G and Veronesi P: Surgical treatment of breast lesions at a Day Centre: Experience of the European Institute of Oncology. Breast *27*: 169-174, 2016. PMID: 27123957. DOI: 10.1016/j.breast.2016.04.002

5 Derks LSM, Wegner I, Tange RA, Kamalski DMA and Grolman W: Day-case stapes surgery: Day-case versus inpatient stapes surgery for otosclerosis: a randomized controlled trial. Ear Nose Throat Disord *16*: 3, 2016. PMID: 26924941. DOI: 10.1186/s12901-016-0024-6

6 El-Tamer MB, Ward BM, Schifftner T, Neumayer L, Khuri S and Henderson W: Morbidity and mortality following breast cancer surgery in women: national benchmarks for standards of care. Ann Surg *245(5)*: 665-671, 2007. PMID: 17457156. DOI: 10.1097/01.sla.0000245833.48399.9a

7 Barwell J, Campbell L, Watkins RM and Teasdale C: How long should suction drains stay in after breast surgery with axillary dissection? Ann R Coll Surg Engl *79*: 435-437, 1997. PMID: 9422871.

8 Kumar S, Lal B and Misra MC: Post-mastectomy seroma: a new look into the aetiology of an old problem. J R Coll Surg Edinb *40(5)*: 292-294, 1995. PMID: 8523301.

9 Athwal R, Dakka M, Appleton D, Harries S, Clarke D and Jones L: Patients' perspective on day-case breast surgery. BreastCare *10*: 39-43, 2015. PMID: 25960724. DOI: 10.1159/000370207

10 Lenze F, Kirchhoff C, Pohlig F, Knebel C, Rechl H, Marten-Mittag B, Herschbach P, Eisenhart-Rothe R, and Lenze U: Standardized screening and psycho-oncological treatment of orthopedic cancer patients. In Vivo *32(5)*: 1161-1167, 2018. PMID: 30150439. DOI: 10.21873/invivo.11359

11 Fafouti M, Paparrigopoulous T, Zervas Y, Rabavilas A, Malamos N, Liappas I and Tzavara C: Depression, anxiety and general psychopathology in Breast Cancer Patients: A cross-sectional control study. In Vivo *24(5)*: 803-810, 2010. PMID: 20952755.

12 Lumachi F, Chiara G, Foltran L and Basso S: Proteomics as a guide for personalised adjuvant chemotherapy in patients with early breast cancer. Cancer Genomics Proteomics *12(6)*: 385-390, 2015. PMID: 26543084.

Received February 19, 2020
Revised February 27, 2020
Accepted March 4, 2020