

Immediate Breast Reconstruction after Mastectomy with Implant as a Day Case Procedure

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Abstract: *Day - case implant - based immediate breast reconstruction IBR represents a feasible and safe approach in selected breast cancer patients. This retrospective cohort study examined 46 procedures conducted between January 2019 and 2022, focusing on various factors, including patient demographics, comorbidities, types of mastectomies, and complications. Results revealed that 41 (89%) of patients were successfully discharged on the same day, with 10 experiencing postoperative complications, such as hematoma and implant loss. These rates were below national standards, demonstrating the potential for day - case IBR as a viable option. Key factors contributing to success included preoperative patient education, effective postoperative pain management, and the support of a dedicated community healthcare team. This study underscores the significance of tailored patient care and comprehensive protocols in enhancing the feasibility of day - case IBR for breast cancer patients.*

Keywords: day - case surgery, immediate breast reconstruction, breast cancer, postoperative complications, patient education

1. Introduction

Day - case surgery represents a rare convergence of patient, clinical and managerial interests and benefits. Patients report better satisfaction, increased mobility, less disruptions to their lives and quicker post - operative recovery. From a clinical point of view, early ambulation helps in the reduction of thrombo - embolic events, reduction in hospital acquired infections and chest infections. Managerial benefits include the freeing up of beds, cost efficiencies and reduction in waiting lists [1].

Various surgical specialties are in different phases of the establishment of day - case surgery pathways for both elective and even emergency surgical procedures. While simple breast surgery procedures like wide local excisions and simple uncomplicated mastectomies lend themselves to day - case pathways, the use of an ambulatory system for complex procedures like immediate breast implant - based breast reconstruction (IBR) is not well established [2, 3]. Clinical and social factors determine patients suitable for day - case procedures and a baseline guidance is well established. Factors peculiar to breast surgery include the availability of out of hours breast specialist nurses, drop - in breast clinics and home clinical services [1].

In the United Kingdom, the average length of stay after IBR is 2 days with only a few centres offering day case IBR. However, since shorter lengths of stay has not been showed to be associated with adverse outcomes like readmission or return to theatre, in suitable patients, more cases can be put through the Day - case pathway and increase the current national average of day - case IBR from less than 10% [2]. Data suggests in the few centres that carry out day - case IBR, the focus is on patients having pre - pectoral fixed volume IBR, hence there is a need to develop standard guidelines and pathways for patients having IBR suitable for day case surgery [1, 2].

Aims and Objectives

This study was aimed to describe our experience of day - case implant - based immediate breast reconstruction via both pre and sub pectoral techniques. The secondary outcome measures were post - operative complications including bleeding and wound related problems, unplanned readmission, reoperation, loss of breast implants and 90 days follow up.

2. Methods

This study was carried out as a retrospective analysis of patients undergoing immediate breast implant reconstruction (IBR) in the Breast Unit at East Surrey Hospital. All patients that had an IBR between Jan 2019 and 2022 were assessed for eligibility for enrolment in the study. Data regarding the operation was recovered from the operative records while the electronic patient records provided information regarding demographic data, co - morbidities and hospital re - admission. Patient's suitability for day case surgery was assessed in the preoperative assessment clinic and were briefed on the pathway and expectations if they were suitable for day - case surgery. Co - morbid medical conditions including ASA grade, smoking status and high BMI were recorded. Important information including points of contacts, available family/social support, and access to healthcare facility and home visits by healthcare professional were recorded. Operative records including type of mastectomy (nipple/skin sparing and skin reducing mastectomy) and type of implant reconstruction (pre/sub pectoral implant) and use of mesh were also noted. The operating surgeon and breast care specialist nurses reviewed all patients before discharge from hospital. Post operative instructions including adequate oral analgesia, antibiotics and safety net advice were detailed verbally as well as written information provided. All patients had a provisional inpatient bed booked to account for an unplanned hospital admission. An established unit protocols on safety netting, rescue outpatient appointments and home

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clinical services (SASH[at]Home) were arranged. All Patients were followed up at 1 week, 1 month and 3months. Follow up clinic records were also examined to assess for out of hospital treatments or complaints.

Statistical analysis collated using the Microsoft Excel software while statistical analysis was performed using the statistical analysis in social science software (SPSS). The study was registered with the local audit department hence formal ethical approval was deemed unnecessary as data was anonymized and the study was carried out as part of departmental quality improvement measures.

3. Results

A total of 54 patients were identified who underwent immediate breast reconstruction.4 patients underwent bilateral procedures thus resulting in a total of 58 reconstruction procedures.12 cases were excluded due to undergoing only an exchange of implant, which was due to previous implant related complications including rupture of implants and capsular contractions.46 procedures were included in the study for analysis. The median age was 50 years old (31 - 78years old). In terms of risk factors, 16 patients (35%) had significant comorbidities including 5 patients (11%) who were smokers and 1 (2%) ex - smoker.28 patients (61%) had Nipple - Sparing Mastectomy (NSM), 16 patients (35%) had Skin - Sparing Mastectomy (SSM), and 2 patients (4%) had Skin reducing mastectomy.44 patients (96%) had cancer diagnosis, most common of which was invasive ductal carcinoma (48%), and 2 patients (4%) underwent risk reducing surgery.31 patients (66%) had pre - pectoral implants, 11 patients (24%) had sub - pectoral implants and the implant plane was not documented for 4 patients (10%). All patients had a suction tube drain at the end of the procedure. Patients were discharged home with suction tube drains in - situ and monitored by the specialist team of nurses named SASH [at]Home in our hospital.

41 patients (89%) were discharged successfully as day case procedures and 5 patients (11%) stayed overnight. All overnight patients were due to social reasons. All patients were given paracetamol and codeine for pain control.10 patients (21.7%) had post operative complications, which included 3 patients (6.5%) who had a haematoma at day 1 post - operative, where 2 patients (4.35%) returned to theatres 1 patient (2.1%) was treated conservatively.4 patients (2.1%) had a post operative infection, which was treated with antibiotics. Out of the 4 patients, 2 patients had T junction wound dehiscence, which took 6 weeks to heal. The other 2 had minor erythema and superficial skin infection.

Demographic	Number of patients (%)
Age in years (Mean, range)	50, 31 - 78
Smoking Status	
Smoker	5 (10.9%)
Non - smoker	31 (67.4%)
Ex - Smoker	1 (2.2%)
Not Documented	9 (19.6%)
Co - morbidities	
Yes	16 (35%)
No	30 (65%)
Type of Cancer Diagnosis	
Ductal Carcinoma in Situ	12 (26%)

Invasive Lobular carcinoma	13 (28%)
Invasive Ductal Carcinoma	22 (48%)
Risk Reducing	2 (4%)
Papillary	1 (2%)
Types of Mastectomies	
Nipple Sparing (NSM)	28 (61%)
Skin - Sparing (SSM)	16 (35%)
Complications	
Total	10 (21.7%)
Haematoma	3 (6.5%)
Infection	4 (8.70%)
Implant Loss	2 (4.35%)
Pain and discomfort	1 (2.17%)

2 patients lost the implant, where 1 had skin necrosis and the implant was exposed later at 3 months despite taking long course of antibiotics. This patient was a smoker and had a history of radiotherapy.1 patient had mild erythema and the implant was later exposed. Both patients underwent bilateral pre - pectoral implants during reconstruction, but the implants were lost at 3 months.5 patients re - admitted; where 3 patients experienced haematoma formation and 2 patients were re - admitted due to implant loss.4 (7%) patients had unplanned return to theatre due to hematoma and implant loss as noted above.10 (22%) had planned return due to re - excision of margins & completion axillary node clearance. The complication rates were compared with IBRA national audit and given in Tables.

Complication rate at 30 - day follow - up	Study result	IBRA Audit
Re - operation	9%	18%
Re - admission	2.20%	18%
Infection	4.30%	25%
Implant Loss	4.30%	9%

Co - morbidities	Number of patients
Asthma	5
Hypertension	2
Epigastric hernia	1
Renal impairment	1
Exercise - induced vasovagal syncope	1
Arrhythmia	1
congenital bronchial atresia	1
Mitral valves prolapse	1
Depression	1

4. Discussion

Day case surgical procedures have been established as high standards of surgical care due to shorted hospital stay and avoiding hospital related complications, reducing the costs and higher patient satisfaction [3, 4, 5]. British Association of Day Surgery (BADs) has suggested an increase in day case mastectomy rates from 30% to 50% reflecting the safety of this procedure [6, 7]. However, the evidence on the safety and feasibility of IBR with implant/mesh as a day case procedure is still evolving. Previously reported studies described the success rate of 86 - 100% day case procedure for breast surgery [5] however, it did not include reconstruction procedures. There has also been reports of success rates of day case mastectomies between 19 - 86% due to variations in patients' characteristics [8, 9, 10, 11]. More recently, two studies have reported the success rates of 100% in 29 and 11

patients of mastectomy with pre - pectoral implant - based reconstruction [12, 13]. In this study, we have reported 89% (41 procedure) being discharged on the same day. The remaining 11% (5 procedures) need to stay - in overnight because of social reasons which is one of the major determinants of day case procedures.

The cohort of patients in this study is diverse with various age groups, comorbid medical conditions, types of mastectomies performed and breast reconstruction. There were 77% of patients recorded as non - smokers and 35% had significant comorbid medical conditions. Nipple/Skin sparing mastectomies were performed in over 96% of patients (44 procedures) and nearly two thirds of patients underwent pre - pectoral implant reconstruction with biological mesh. This data is very comparable to a recently reported study [14].

Post operative analgesia is one of major considerations for successful day case procedures. All of the patients received intra operative blocks with levo - bupivacaine in addition to anaesthetic management towards the completion of procedure. Paracetamol was prescribed as a regular analgesia with codeine and/or Ibuprofen as a rescue analgesia. This could be considered as an effective analgesic regimen in patients planned for day case mastectomies.

There has been reports of alternative methods to reduce the risk of hematoma/seroma formation including minimising use of drains and use of fibrin tissue sealant [11], all our patients had at least one suction drain at the end of the procedure as a unit policy. All the patients were discharged from the hospital with a drain in place. This is our unit policy to monitor the drains by a team of practitioners (SASH [at]Home) following discharge from hospital. This is necessary to prevent the anxiety around the monitoring/management of surgical drains in the community. Drain was removed either on one week outpatient follow up clinic or at home by SASH [at]Home team when deemed appropriate.

The complication rates of infection and implant loss has been recorded as 8.6% (4 procedures) and 4.3% (2 procedures) respectively which is just below the standards set by the UK Association of Breast Surgery (ABS) and British Association of Plastic and Reconstructive Surgeons (BAPRAS) [15]. These rates are lower than the complication rates recorded in the UK implant - based breast reconstruction (iBRA) national audit [16].

In our study, four patients were returned to theatre during follow up period of 90 days. Among these, 2 (4.3%) patients needed evacuation of hematoma evacuation due to reactionary bleeding on first post operative day. These patients did not require blood transfusion or overnight stay and were discharged home after the recovery from anaesthesia. The other two patients initially developed wound dehiscence followed by implant exposure and eventually loss of implant after pre - pectoral implant reconstruction with mesh. Both patients were high risk for postoperative complications due to active smoking. One of them also had a history of radiotherapy to the breast due to previous breast cancer further increasing the risk of postoperative complications.

It is important to note that the study duration included the period of COVID - 19 pandemic which has put all the surgical procedures on - hold with gradual resumption of surgical activities in a controlled and modified environment. This may potentially have affected the study cohort in terms of patients' demographics, types of mastectomies and reconstruction. However, there is no objective evidence to support this hypothesis.

This is our unit policy to have a detailed discussion with the patient about the day case surgical procedure led by the consultant surgeon and supported by the Breast Care Nurse Specialist in the clinic. A consent form is signed at the same time and further information leaflets are provided including expected post operative recovery course and points of contacts for further information/seeking help and advice. This further enhances and reinforces the patient satisfaction to deliver an effective day case surgical service.

5. Conclusion

This retrospective cohort study supports the concepts of safe and feasible immediate breast reconstruction with implant following mastectomy for breast cancer as a day case procedure. This study emphasises the importance of preoperative patient education, effective post operative analgesic regimen, family/social support and an effective community team to run a successful day case service in selected group of patients.

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