

# The Study of Efficiency of Day Care Surgery in Elective Surgeries

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**Abstract**—To study of efficiency of Day Care Surgery in elective surgeries. The advantages and disadvantages and rate of complication in day care surgery, to reduce/prevent hospital acquired infection. 78 patients underwent day care surgery at JNMC, sawangi (meghe), wardha; from September 2016 to October 2018. Out of 78 patients 45 (57.69%) patients were male and 33 (42.31%) patients were female, with mean age 41.70±18.18 years, range between 10 years to 82 years. Most common diagnosis was abscess (25.64%) followed by sebaceous cyst (15.38%). All patients fall under grade I ASA classification. Most common procedure Incision and drainage (25.64%) followed by excision of cyst (20.51%). All procedures were carried out under local anaesthesia. Mean hospital stay in hours was 5.35±1.30, range between 2 hours to 10 hours. Rate of complication was 2.56%, there was no emergency follow-up and re-admission. Our study concluded that day care surgeries are efficient with low rate of complication rate and help to reduce hospital acquired infections.

**Index Terms**—Day care surgery, advantages and disadvantages, complication rate, hospital acquired infection

## I. INTRODUCTION

The terminology “day surgery”, or “ambulatory surgery”, or “same day surgery” refers to the practice of admitting carefully-selected and pre-prepared patients into hospital on the day of surgery for a planned, non-emergency surgical procedure and discharged within hours of that surgery”. A day case in day care surgery is a patient admitted for a surgical procedure on a planned non-resident basis and who doesn’t require facilities to get recovery. The entire procedure shouldn’t require an overnight stay in a hospital. Nowadays 23 hrs. Stay policy is also carried out that means patients can stay in hospital for 23hr on basis of needs and safety of individual patients and still it will be categorized as day case [2]. The concept of modern day care surgery was introduced by James Nicoll (1864–1921) in 20th century, after he performed 9000 outpatient surgeries at “Sick Children’s Hospital and Dispensary” in Glasgow, Scotland [1]. Unfortunately the progress was made in later decades was not so great [3]. A remarkable growth and change has been noted during past decades that with help of short acting anesthetic drugs and developed in surgery technique. In USA and UK the target for day surgeries is 80% and >75%

respectively and it is achieved but remains much less common in India but there is a huge scope and recent large expansion has been created in private sector which gives the opportunity for further progress in day care surgery [4, 5, 6]. Now day care surgery is high quality, safe and effective approach to surgical technique. Globally accepted term, abbreviation and definitions as proposed by International Association for Ambulatory Surgery [4]: Day Surgery: An operation/procedure where the patient is discharged on the same working day. However in some countries 23 hour stay may be regarded as day care surgery. Ambulatory Surgery / Procedure Patient: A patient having an operation or procedure excluding an office surgery or outpatient operation/procedure, who is admitted and discharged on the same working day. For successful day care surgery department of anesthesia and surgery must walk hand in hand. Under classification of American Society of Anesthesiologists (ASA) patients are divided in VI grades [12] as given below:

- ASA-I: Healthy patient.
- ASA- II: Patient having mild systemic disease.
- ASA-III: Patient having severe systemic disease which is not threatening to life.
- ASA-IV: Patient having severe systemic disease which is constant threatening to life.
- ASA-V: Morbid patient with acute condition, requiring emergency operative procedure without it patient won’t be able to survive more than 24 hours.
- ASA-VI: Brain dead patient possessing organs viable for transplantation.

## II. MATERIALS AND METHODS

A tertiary healthcare center based prospective randomized study was carried out at Jawaharlal Nehru medical college, sawangi (meghe) Wardha. Aim of study was to study efficiency of day care surgery in elective surgeries and objectives were to study advantages and disadvantages of day care surgery, to study rate of complications, to reduce hospital acquired infection. Sample size of 78 patients were selected randomly with fitting in eligibility criteria. Concept of day care surgery was explained to patients and written informed consent was

taken. Detail history and examination was done. Essential investigation accordingly was done. After getting fitness from anesthesiologist, operative procedure were carried out. Patients were discharge with necessary instruction within 23 hrs and patients were examined on follow up days 3rd day and 7th day on OPD basis or telephonically.

A. Inclusion Criteria

1. ASA grade I, grade II
2. Excision of lymphoma, excision of sebaceous cyst, excision of breast fibro adenoma, hair transplant, suprapubic cauterization, Incision and drainage, dilatation of urethra, debridement, banding, etc.
3. Responsible adult should be present to escort the patient at home and for 24-48hrs care after discharge.
4. Patient must be fit and ambulant.
5. Patient should not be grossly obese (BMI<35)

B. Exclusion Criteria

1) Medical

1. ASA grade other than I and II
2. Surgeries require GA with Endotracheal intubation.
3. Patients with morbid conditions.
4. Obese: Body Mass Index >35.
5. Procedures requiring more than 2 hour.

2) Patient

1. Patients not willing for Day care surgery.
2. Patients unfit psychologically.
3. Preterm babies and babies younger than 3 months.
4. Patient with age >85 years.

3) Social

1. Unavailability of companion to accompany patient to home.
2. Unavailability of companion to take care of patient for 24-48 hours after procedure.

III. OBSERVATIONS AND RESULTS

Out of 78 patients 45 (57.69%) patients were male and 33 (42.31%) patients were female, with mean age 41.70±18.18 years, range between 10years to 82 years. Most common diagnosis was abscess (25.64%) followed by sebaceous cyst (15.38%). All patients fall under grade I ASA classification. Most common procedure Incision and drainage (25.64%) followed by excision of cyst (20.51%). All procedures were carried out under local anesthesia. Mean hospital stay in hours was 5.35±1.30, range between 2hours to 10 hours. Rate of complication was 2.56%, there was no emergency follow-up and re-admission.

IV. DISCUSSION

In our hospital there is no established day care unit but it possess great potential to establish day care unit as we are visited by patients who are mostly belong to lower economic

status. We also have facility of OPD based pre-anesthesia check-up, skilled surgeons and transport facility provided by management of DATTA MEGHE UNIVERSITY OF MEDICAL SCIENCE. The British Association of Day Surgery has given an index of surgical procedures that gives goals for day care surgery rates more than 200 procedures [14].

TABLE I  
PARAMETERS OF BASIC CHARACTERS

Characters	Parameters[n=78]
Male	45 (57.69%)
Female	33 (42.31%)
Mean age in years	41.70±18.18
Age range in years	10 to 82
Most common procedure	20 (25.64%)
Mean hospital stay in hours	5.35±1.30
Hospital stay range in hours	2 to 10
Rate of complication	2 (2.56%)

Current development in surgical and anesthesia techniques gives opportunity to majority of patients to being eligible for day care surgery ,unless and until it is essential for patient’s benefit. A planned approach with anesthesia department should be carried out with agreement of protocols for patient’s inclusion and exclusion criteria for day care surgery<sup>35</sup>. As patients get discharge within hours, beds become available for other patients i.e. in emergency or in situation of mass casualty. Comparatively rate of cancellation of procedures reduces due to its planned approach. Day care surgery is also efficient in pediatric age group with respective of cost and stress who are undergoing minor procedures [16]. There is an increase in probability of infection, exposure and delayed mobilization results due to hospitalization in inpatient surgery. On other hand in Day care surgery, the danger of cross-infection decreases and it is due to patients under day care surgery get separated from patients under inpatient surgery which are sicker than prior. They also spend less time in hospital as compare to later and recover in their home [7, 9].

The frequency of post-operative wound infection in day care surgery patients is very low. Globally Methicillin resistant *staphylococcus aureus* (MRSA) infections are becoming problem in inpatient surgery and in day care surgery if infection occurs, it recovers rapidly with antibiotics [25]. Day care surgery is becoming more acceptable and encouraging globally in government and private setup. The cost effectiveness of day care surgery gives benefit to patients, relatives and indirectly community which is responsible for acceptability of day care surgery. Day care surgery also benefit the institution as huge number of patients get treated at low cost. Causes of cost effectiveness of day care surgery are following:

- Requirement of nursing staff is much less comparatively.
- Total hospital expenses also get reduce.
- Day care surgery also reduces bed occupancy which gives opportunity to reduce cost.

*Advantages to the patient are:*

- As day care surgery is planned approach rate of cancellation less.
- As date of operative procedure is pre-decided so waiting time for uncertain long time reduces.
- Early mobilization.
- Early return to home environment.
- Minimum interference in patient’s regular life.
- Reduction in danger of cross-infection.
- Less peri-operative stress.
- Minimal loss of work or school time.

There are some down falls of day care surgery which include:

- Some surgeons still believe that day care surgery is not safe although many literature proved it [10, 11, and 12].
- As skilled surgeons required to carry out day care surgery there will be much less chance to perform surgeries to junior surgeons under day care set-up.

As per obtained data from patients randomly selected for day care surgery, out of 78 patients, maximum patients i.e. 21 patients (26.92%) were of age 20-29 years of age. The mean age with standard deviation of studied population is  $41.70 \pm 18.18$ . Predominance of male (57.69%) was included and observed in present study. While study by Amidyala Lingaiah et. al. 2015[2], males were 61.2% and females were 31.6% and  $45.6 \pm 4.5$  was mean age of their study population showing reassembles with our study. In our study most the common indication for day care surgery was incision and drainage scoring 25.64% followed by excision of sebaceous cyst scoring 15.38% and retention of urine scoring 14.10%. In similar study done by Amidyala Lingaiah et al 2015 [2] commonest indication for day care surgery were excisional biopsy/ cyst excision (29%). In our study the mean hours with standard deviation of hospital stay was  $5.35 \pm 1.30$  and range from 2 hours to 10 hours. In a study conducted by Amidyala Lingaiah et al 2015[2], the mean hours with standard deviation of hospital stay was  $20.5 \pm 2.4$  hours and ranged from 8.5–23 hours. In study conducted by Phillips et al hospital stay range was 05–23 hours [17] and in study of Gupta *et al* hospital stay range was 4 - 21hours with mean hours of stay 7.3 hours [18], as it shown variation in mean hospital stay in different studies.

In our study it is found that total rate of complication [minor] at follow-ups was 2.56% with no deaths. There is one complication on 3rd day i.e. infection due to patient didn’t follow given instruction and other is on 7th day of follow up that also infection due remnant of infected sebaceous cyst following excision of cyst. Both patients have been undergone restoring and given course of antibiotics. In comparative study conducted by Ramyil et al it is found that rate of complication is much lesser in patients operated under day care surgery than in patients operated under inpatient surgery [13]. While study conducted by Russell et al and Kornhall et al it is found that there no significant difference in postsurgical complications

between day care surgery and inpatient surgery[19,20]. Following studies are also co-relate with rate of complication of our study. From mentioned studies comparing with our study we can make inference of similarities of rate of complication in day care surgery.

In our study rate of infection was 2.56% i.e. in 2 patients, one on 3rd day follow-up where some residue was remained and other on 7th day follow up where patient did not follow given instructions, similar figures were observed in Ramyil VM et. al. [13] study i.e.2.89%. Although we had not found any case with post-operative pain, it can be observed in study carried out by D.S. Makwana et.al [24] as given above. Study of Kala SK et.al. [21] And Ramyil VM et.al. [13] Shows 1.45% and 0.72% of PONV respectively, whereas study conducted by Makwana et.al shows higher rates. Our study did not record any case of bleeding while in Lt Col et. al. [23] and Kala SK et.al [21] shows 0.66% and 0.96% respectively.

The efficiency of day care surgery increases with recent development in surgical technique and anesthesia technique like use of local anesthesia, regional block, and short anesthetic acting drugs. Other factors responsible for this improvement are economic powers, planning approach, better counselling of patients and advance analgesic drugs which makes it provide to patients in outpatient basis

TABLE II  
 MEAN HOSPITAL STAY IN HOURS/RANGE

Study By	Mean Hospital Stay In Hours/Range
Amidyala Lingaiah et. al.	20.5±2, 8.5-23
Phillips et. al.	5-23
Gupta et.al	7.3
Our study	5.35±1.30, 2-10

V. CONCLUSION

The advantages of day care surgery are:

- As day care surgery is planned approach rate of cancellation less.
- As date of operative procedure is pre-decided so waiting time for uncertain long time reduces.
- Early mobilization.
- Early return to home environment.
- Minimum interference in patient’s regular life.
- Reduction in danger of cross-infection.
- Less peri-operative stress.
- Minimal loss of work or school time.
- Cost effective.

*Disadvantages of day care surgery are:*

- Some surgeons still believe that day care surgery is not safe although many literature proved it. [10, 11, 22].
- As skilled surgeons required to perform day care surgery there will be much less chance to perform surgeries to junior surgeons under day care set-up.
- A responsible companion is required with patient at home to monitor patient for 24-48 hrs postoperative

period.

- When complexity of case less and with that patient is operated on day care basis, the cost-effectiveness gets reduced.

The rate of complications in our study was pretty low i.e. 2.56% and as there were no readmissions and emergency follow up it is shown reduction in hospital acquired infection. The dependence of success of day care surgery is on management of postoperative nausea and vomiting, management of pain, controlling adverse effect like sedation and providing appropriate analgesia. Adverse effects those might considered as minor ones in inpatient surgery may lead to emergency follow up or readmission.

All above shown that day care surgery benefits patient and hospital that proved alternate hypothesis of study i.e. Day care surgery has more efficiency than inpatient surgery in elective surgeries. However there is limitation in selecting patients. From above it can be concluded that, the dependence of success of day care surgery is on pre-operative assessment, intra-operative period and bleeding, management of postoperative nausea and vomiting, management of pain, controlling adverse effect like sedation and providing appropriate analgesia as adverse effects those might considered as minor ones in inpatient surgery may lead to emergency follow up and readmission. It also affected by education of patients regarding concept of day care surgery and their psychology. It also depends on attitude of surgeons as there are some surgeons who are sceptical about safety of day care surgery. Finance support which is very minimal in health department also affects success of day care surgery to some extent.

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