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Surgical Outpatient Care: Triage, Time and Test

Satyendra K. Tiwary

Abstract

Day care surgery is the standard of care for minor surgical procedures in developed countries and rapidly increasing in practice in developing countries. The main advantages of day care surgery are cost containment, early mobilization of the patient, less pain because of minimally invasive surgical techniques, early return of patient to their home and work. The downsides of day care surgery include the inability to treat all patients and perform all surgical procedures since surgical fitness for day care procedures is demanding, unforeseen readmission, the need for more operating rooms, and increasing expertise among health care workers. Considering day care surgery as systematic, scheduled and short duration stay in hospital, it is very important to select or sort out the cases which fit in the criteria according to all conventional definitions of triage. It is well organized within stipulated time frame and performed in fixed unit with proper assessment by anesthesia and nursing team in addition to core assessment of surgical team. Surgical option exercised and close follow up with ability to manage complications are integral components in working team. Delivery of more surgery in primary care has potential for enhancing patient-centred management by promoting the development of multi-specialty community providers and reducing length of hospital stay. The outpatient surgical centers provide many benefits and advantages for surgical patients with proper organizations, dedicated services, and meticulous procedures.

Keywords: Day Care Surgery, Outpatient Surgery, Anesthesia, Day care set up

1. Introduction

Day care surgery is the standard of care for minor surgical procedures in developed countries and rapidly increasing in practice in developing countries. It is a rapidly evolving and widely accepted way of catering health care to the masses [1]. Patients were in the past, customarily admitted to hospital for all but the most trivial of surgical operations and remained until they are self-sufficient, ambulant and their sutures removed. Considered obligatory for wound healing, post-operative bed rest up to 21 days was commonly enforced on patients in the past [2].

The main advantages of day surgery are cost control, early patient activity, less pain caused by minimally invasive surgical techniques, early return of patients to the home environment, reduced risk of cross-infection in the hospital, and fewer wage losses due to early return. Under the background of making good use of resources, due to the advancement of anesthesia technology and the development of surgical technology, you can quickly and smoothly resume work [3]. The disadvantage of day care surgery is that it cannot be performed on all patients and all surgical

operations, because day care surgery requires high surgical applicability, unexpected readmissions, more operating rooms, and higher skills of health personnel.

Commonly used day care procedures (**Tables 1 and 2**) settings include hydrocele, hernia, varicose veins, varicocele, anal fissure, breast tumor resection, and diagnostic laparoscopic surgery. Hernia is one of the common surgical problems in daily practice in developing countries [1]. It constitutes the majority of waiting cases before surgery in outpatient surgery departments, especially in government hospitals. The postoperative bed occupancy rate of these patients is also very high, making it difficult to rationally use beds in public hospitals In public hospitals, even for important cases such as malignant tumors, the waiting period for intervention is very long.

Day care surgery can shorten the waiting list and help rationalize the cost of surgical treatment. Hence, the demand for day care surgeries in India is increasing. Although its advantages are widely used in developed countries, the rate of use in developing countries is very low. There are many factors that affect the success of day care surgery, such as the financial limitations of developing independent day-care units, inadequate primary health care facilities, and the psychosocial factors of the patients.

General surgery	Gynecology	Trauma	Maxillofacial
Incision and drainage of abscess	Evacuation of retained products of conception	Tendon repair	MUA fractured nose
Laparoscopic cholecystectomy	Laparoscopic ectopic pregnancy	MUA of fracture	Repair of fractured mandible
Laparoscopic appendicectomy		Plating of fractured bone	
Temporal artery biopsy			

Table 1.
Types of urgent surgery suitable for day case procedures.

Breast surgery	Excision of breast
	Simple mastectomy
	Sentinal node biopsy
	Axillary clearance
Gynecology	Operations to manage female incontinence
Urology	Endoscopic resection of prostate (TURP)
	Resection of prostate by laser
General surgery	Cholecystectomy
	Repair of a range of hernia
Orthopedic surgery	Arthoscopic subacromial decompression
	Bunion operations
	Dupuytren’s fasciectomy
ENT	Tympanoplasty
	Tonsillectomy
	Septoplasty

Table 2.
Commonly performed day care surgery.

The factors associated with the success of outpatient surgery are adequate patient selection, adequate patient information, preoperative evaluation, anesthesia and good postoperative analgesia, patient acceptance, and effective review. The concept of day care surgery helps reduce these problems by facilitating early discharge of patients undergoing minor surgery. This concept has been widely accepted by developed countries because their socio-economic status and medical and healthcare facilities are very good. Inguinal hernia is one of the most common surgical problems, but because the development of hernia involves complex anatomy and pathology, it still confuses surgeons.

2. Triage in day care surgery

Considering the day care surgery as systematic, scheduled and short duration stay in hospital, it is very important to select or sort out the cases which fit in the criteria according to all conventional definitions of triage. It is well organized within stipulated time frame and performed in fixed unit with proper assessment by anesthesia and nursing team in addition to core assessment of surgical team. Surgical option exercised and close follow up with ability to manage complications are integral components in working team. So, considering the all the components of Day Care Surgery (DCS), it is very important to try to sort out the cases according to priority, feasibility, associated risks, outcomes and follow-up. Every factor should be considered in anesthetic and nursing team check selected for day care surgery must be thoroughly and completely examined by anesthesia and nursing team. Once anesthetics checkup and nursing evaluation is complete, surgeries are planned and those cases who are not fit in Day Care surgery must be sent or referred back to the corresponding unit for proper management. After selection of the cases, adequate and complete evaluations are must before putting them for surgery and after surgery this should be evaluated again, advised again with key focus for early identification of postoperative complications and management. Patient is advised to report, call or come back earliest so communication is quite important in cases of Day Care surgery as compared to others. Triage of cases in for day care surgery can be divided into three types of patients:

1. **Selected:** Those cases who are selected for the day care surgery with all pre requisite and criteria fulfilled (ASA I & II).
2. **Selected but special care needed:** In ASA III, usually day care surgery not advised but with special care and close follow up with extended recovery protocol.
3. **Not selected:** Those who are not in the category of Day Care surgery are sent back or referred.

3. Success, surgery and selection

Success story for day surgery always includes patient selection, operation selection, surgeon qualification, nurse qualification, and team construction and management.

Patient's fitness for day surgery should be judged by functional assessment just before preoperative assessment. There are few medical conditions once fully optimized which would exclude a patient from day surgery.

3.1 Patient selection

Patients must have adequate family and social support, especially in the first 24 hours after surgery. The patient must use transportation within 24 hours after the operation. You can take a private car driven by a driver other than the patient, or you can use a 24-hour taxi service. They must live within a two-hour drive from the hospital. The selection of outpatient surgery patients is also based on their general health and age. After completing the practice, the following basic requirements are put forward to the patient:

1. **American Association of Anesthesiologists (ASA) Scale:** Generally speaking, only ASA I and II patients are eligible for normal day surgery. It should be noted that there is literature on ASA III patients undergoing outpatient surgery, with a low complication rate [3, 4].
2. **Age:** The literature shows that outpatient surgery has been successfully completed and is suitable for patients of all ages. For example, patients older than 1 year undergo pediatric surgery, patients under 60 years old undergo laparoscopic cholecystectomy (LC) in adults, and the cut-off age for varicose vein and hernia repair is less than 70 years [5].
3. **Body Mass Index (BMI):** Being overweight or obese will increase the difficulty and incidence of postoperative complications. Hypertension, congestive heart failure, and snoring are the main postoperative complications associated with obese patients [3]. British guidelines for outpatient surgery stipulate that patients with a BMI of 35 kg / m² can receive outpatient surgery if they are fully optimized [3, 6].
4. **Co-morbidities associated:** Chronic diseases are not contraindications to surgery and can be included in day surgery as long they are stable and non-progressive, known to the anesthesiologists and surgeons. Examples include hypertension, diabetes, and coronary artery atherosclerotic heart disease. However, end-stage diseases such as liver failure, congestive cardiac failure and kidney failure are excluded from day care surgery [7].

3.2 Surgical option and selection

A list of surgery approved and developed by the Surgical Management Committee during the day must be obtained. The standard is as follows.

- a. Estimated operating time of less than 2 hours (which allows you to walk early and promote fast recovery),
- b. Management of postoperative pain due to the formulation of oral analgesic drugs, and
- c. There is no special postoperative care for the hometown.

3.3 Surgical expertise

Surgeons must be enthusiastic and committed to the development of day care surgery. Senior consultants with experience over 10 years with the ability to operate independently and have completed a minimum number of cases.

3.4 Nursing parameter

Nurses must have a minimum of 10 years of expertise in managing pre- and post-operative care with proper communication skills, vast knowledge in different disciplines, and knowledge of rules in hospital, national health policies, and medical bill reimbursement procedures with insurance coverage [3].

4. Day care set up

Day-care surgery should ideally be provided in a self-contained unit that is functionally and structurally separate from inpatient wards and theaters. The possible suggestion for such functioning may involve [8, 9].

4.1 Hospital integrated

Ambulatory surgical patients are managed in the same surgery facility as inpatients. Outpatients may have separate preoperative preparation and recovery areas.

4.2 Hospital based

A separate ambulatory surgical facility within a hospital handles only outpatients.

4.3 Free standing

These surgical and diagnostic facilities may be associated with a hospital or medical center but are housed in separate buildings that share no space or patient care functions. Preoperative evaluation, surgical care, and recovery occur within these autonomic units. In developing nations, majority of nursing homes and smaller hospitals function in this manner.

4.4 Office based

These operating or diagnostic units are managed in conjunction with physician's offices for the convenience of patients and health-care providers.

5. Eligibility criteria for day care surgery

Screening, selection and surgery of the patients requires certain fixed eligibility criteria and that should be followed meticulously and methodically which is summarized as [9]:

- Patient must be sound to understand the delicate intricacies of day-care procedures.
- During discharge from hospital, an adult person should accompany the patient with written instructions.
- The domestic environment should be conducive enough for smooth postoperative period.

- Besides evaluating basic minimum laboratory investigations, clinical acumen is very important in deciding the fitness for day-care surgery and anesthesia.
- Comorbid diseases should be optimized satisfactorily before declaring patient fit for surgery.
- Decision of day-care surgical procedures also depends on the duration, severity, and potential chances of hemodynamic instability and others.
- Patient should be able to initiate oral intake within few hours of the surgical procedure.
- Anesthetic drugs and techniques should be chosen in manner not to disturb the postoperative ambulation.
- Patient should be able to take care of himself/herself for routine personal chores.
- A good means of transport and communication should be available to the patient at home.
- Availability of physician/surgeon for 24 h is an essential prerequisite in case of any emergency readmission.

5.1 Advantages of outpatient surgery

There are many advantages of outpatient surgery which have an edge over traditional, inpatient surgical procedures. These include the following [8, 10, 11]:

- A. Convenience.** The convenience of recovering in your home generally makes recovery time faster than an in-hospital stay.
- B. Cost effective.** Since there are many aspects including hospital room charges, and associated hospital charges which are curtailed in outpatient surgery leading to cost effectiveness and reduced cost in the treatment. Some surgical procedures are covered in health insurance only on an outpatient basis which may be under the umbrella of day care surgery.
- C. Less stress.** Outpatient surgery leads to less stress on surgical team in the majority of cases, inpatient surgery. Most people prefer to stay in hospital less and less and better for them to recover in their homes rather than in the hospital.
- D. Well Scheduled.** In a hospital setting, first priority are emergency surgeries and procedures which can be unpredictable in outcome and volume and that can delay the scheduled surgeries. In such situations, an outpatient setting can generally stay within a set schedule since the procedures are less complex and more routine.
- E. Reduced hospital infections.** Due to shorter hospital stay and meticulous, timely work plan, incidence of nosocomial infections is reduced markedly. A significant post-operative morbidity in the form of hospital acquired infections is reduced leading to patient satisfaction and less economic burden with smooth functions in post-operative phase.

- F. **Efficiency.** Shorter waiting list for surgery, less hospital bed occupancy, more surgery, flexibility due to non-dependency on hospital beds leads to increased efficiency of the system leading to increased number of surgeries for any hospital set up.

5.2 Disadvantages of outpatient surgery

However, day-care anesthesia and surgery are associated with certain limitations and disadvantages which include but are not limited to the following [8, 10, 11]:

- A. **Complications:** Surgical and anesthetic complications are relatively a stress resulting in unplanned admissions once there is any post-operative major complications.
- B. **Expertise:** A higher expertise level is required in day care surgery for providing results in timely, organized and planned way as compared to routine surgery admissions.
- C. **Pre-anesthetic lacunae:** It is always a possibility of missing the important points in pre-operative anesthetic checkup and possible chances of negligence may be increased.
- D. **Compliance:** There might be poor compliance from the patients regarding medications, instructions about fasting and post-operative protocol after discharge as they are not admitted for the long duration to remain under supervision.
- E. **Anxiety:** Level of anxiety is more in day care surgery in more apprehensive patients as they are worried more about short hospital stay.

5.3 Contra-indications of outpatient surgery

It is not advisable always for outpatient surgery as there are certain limitations which must be considered. Uncontrolled hypertension, severe respiratory disorders, smoking, obesity is considered the major contraindications for daycare surgery. The surgeons often suggest such patients go for elective surgeries which is better in such high-risk patients. In any kind of surgery, such patients will be recovered in a better way without confronting any of the complications. Whether it is a traditional or elective or a daycare surgery, proper care should be taken for such patients. Meticulous assessment to rule out significant co-morbidity is the key factor for excluding the cases unfit for the day care surgery.

6. Protocol in day care surgery

Day care surgery follows standard and set protocols which have been formulated and followed globally [12]. First and foremost, point is pre anesthetic assessment and preparation according to protocol driven nurse-led discharge in each and every patient. This is the key principle in day care surgery patients. Day care surgery patients are mostly from outpatient clinics, sometimes from emergency departments or satellite care or primary care centres. Technical advancements in surgery, anesthesia and investigations have set the momentum for day care surgery globally and many surgical procedures are being performed

but protocols must be followed for every procedure. Social, medical and surgical assessment of every patient coming for day care surgery should be included and multidisciplinary approach must be followed with inclusion and exclusion criteria set before. Planned procedure must be explained to the patient before surgery, post-operative care explained and advice with collaboration with the nursing team in preoperative preparation. Three components must be emphasized which includes education and care explained to the patient regarding surgical intervention, information about planned procedures and post-operative care with informed decisions and documented important information to identify medical risk factors, promote health and optimized patients' conditions. Three components well explained which are essential and must include all three teams of surgery, anesthesia and nursing so day care surgery had in its protocol with three teams and under three headings of time, triage and test with three components well summarized again:

1. Education and care explained to the patient regarding surgical intervention,
2. Information about planned procedures and post-operative care with informed decisions
3. Documented important information to identify medical risk factors, promote health and optimized patients' conditions

7. Tests and practices in day care surgery

Definite set of procedures are always performed and in practice as per pathology present in the patient. Blood investigations and biopsy are two tests that are helping to decide the underlying inflammatory or malignant condition. Apart from imaging in radiology (X ray/USG/CT/MRI/Mammogram) endoscopy and endoscopic USG are integral tests for diagnosis in hollow viscera pathology. Majority of the day care surgery are breast surgery and biopsy with mammogram needed in almost all cases. With continuous evolution in endoscopy, it is endoscopic USG which may detect the underlying pathology close to any hollow viscera and even guided FNAC may yield the diagnosis. Tests to be done depending upon underlying pathology can be summarized as

- Blood tests
- X-rays
- Ultrasound
- CT/MRI Scan
- Mammograms
- Pan endoscopy
- Endoscopic USG
- Biopsy

8. Core issues and key points

The operational system should include the following summary points to clear the management of certain key issues. These include:

1. Screening and selection of the patients with proper history, examination and scrutiny of medical records.
2. Surgical option must be tailored as per the requirement.
3. Pre-anesthetic checkup, and examination by nursing care team should be done before surgery
4. Proper system of medical emergencies in the adverse events of cardiac arrest, major hemorrhage, respiratory distress preferably in the same set up and the availability of equipment, drugs and skilled personnel to manage the complications with the hemorrhage availability of anesthesia team back up always.
5. Robust, tested, clear communications and written service level transfer agreements between the stand-alone unit, the nearest acute hospital, its intensive care unit and the ambulance service.
6. Management of patients who cannot be discharged home or something unpredictable event preventing discharge.
7. Management of patients with complications with proper communications following the discharge (**Table 3**).
8. There should be clear information and complete communication provided to patients as to where to go if complications occur.
9. Appropriate cover advised until patients are discharged from the hospital
10. Teaching, training, supervision and opportunities for research and future planning
11. Regular audit and analysis of the services provided to detect and sort out the lacunae to improve overall the service and results.

<ul style="list-style-type: none">• The patient is alert and able to adapt to time, place and person• Stable vital signs• Oral analgesics control pain• Controlled nausea and vomiting• Able to walk without accidents• No bleeding at the surgical site• Receipt of discharge instructions and prescription• Patient accepts preparation for discharge• Person in charge of escort

Table 3.
“Safe discharge” criteria.

9. Challenges and future

Considering the complexity and cost associated with hospital admissions and inpatient treatment, continuous shift in care from inpatient admission and treatment to outpatient care in the form of day care surgery has been witnessed globally in recent years [13]. Office procedure, OPD care and minor surgery were first included in day care surgery but with advancement of skill, technology and infrastructure even major surgery with proper preoperative work up, modern anesthesia and proper post-operative care with communications properly, adequate transport and back up plans to manage the complications with round the clock operation theater team with anesthesia team in alert and prepared mode for the any events to be managed in the operation theater. Development of health sector in new dimensions with development of day care surgery is optimum utilization of the resources and conserving the scarce fund of the patient for the payment of hospital bills very true and innovation for the underdeveloped nations. On the other hand, in developed nations, day care surgery almost crossed the half mark of all elective surgeries many years back and now almost 75% of the all elective surgeries are day care surgery. The challenges associated with establishment of day care surgery services are many and may appear at first review, insurmountable and may include lack of guidelines, lack of regulatory bodies and lack of supervision in poorly developed parts of the globes. Standard protocols and practices may be defined and set to identify the core concept of day care surgery. First challenge is upgradation of present health services to gear up for practice and all-elective acceptance of the day care surgery. Although there are still problems to be solved at the national level, such as training, this should not hinder the exploration of the development of local services. This is not necessarily very complicated. Simple methods such as the plan, execute, research and act (PDSA) cycle can be a very effective tool for initiating change, because the roles and perspectives of all relevant clinical and management resource groups are determined from the beginning. The plan here is the service change to be implemented (for example, to start a level 2 community surgery service). This involves mapping patient paths to show all relevant procedures and administrative processes surrounding patient management, thereby identifying potential gaps, bottlenecks, and barriers to change. During this process, questions about meeting visit goals, advance appointments, labor, capital flow, facilities, multidisciplinary team agreements, and patient information adequacy can be identified. To do is to implement changes to the service, rather than introducing this “wholesaler”, it is better to test a small number of patients first to assess the impact. Research involves collecting data before and after implementing changes to observe and learn from the consequences. The bill involves determining what changes need to be made before it is fully implemented. Community surgical pathway planning should not be based on cost reduction, because experience shows that if community capacity meets previously unrecognized but clinically relevant needs, the costs of services may increase.

Second and biggest challenge is scope of day care surgery expansion which is limited by poor resource, technology limitations and infrastructure development and many advanced endoscopic, laparoscopic and intervention radiology procedures may not be included in day care surgery due to above limitations. Endocrine surgery, laparoscopic hernioplasty, laparoscopic cholecystectomy and laparoscopic fundoplication may be always in day care surgery with technology, skill and infrastructure. Proper post-operative care after use of an updated and advanced modern anesthesia system is essential in all day care surgery for acceptance in practice as well as patient centric outcomes [14, 15].

10. Summary

In summary, delivery of more surgery in primary care has potential for enhancing patient-centered management by promoting the development of multi-specialty community providers and reducing length of hospital stay. Finally, the outpatient surgical centers provide many benefits and advantages for surgical patients with proper organizations, dedicated services, and meticulous procedures.

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Author details

Satyendra K. Tiwary
Department of General Surgery, Institute of Medical Sciences, Banaras Hindu
University, Varanasi, India

*Address all correspondence to: satyendrak.tiwary1@bhu.ac.in

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