Day surgery guidelines

Monalisa J Marbaniang

Abstract

Day surgery has made major strides in keeping with advances in surgical and anaesthetic techniques. Patient and financial benefits of early ambulation and enhanced recovery programmes are well recognized. The NHS Modernisation Agency recommends that 75% of all surgical procedures performed in a Trust should be done as day case procedures. National and international interest in day case surgery guidelines and pathways on: patient care, facilitating admission and discharge, and logistical aspects of running a day case unit have helped tremendously in the growth of day case surgery. Patient groups and surgical procedures that can be done as day case procedures are ever evolving. Patient safety has been paramount in all these ventures. Selected urgent and emergent surgical procedures are also increasingly considered safe to be delivered as day case procedures.

Keywords Day case surgery; day surgery; day surgery guidelines; preoperative assessment

Introduction

The development and expansion of day surgery has been significant over the recent years. This has stemmed from the recent rapid development in techniques, equipment and drugs used in surgery and anaesthesia. Targeted support from various agencies to encourage day surgery for both patient and financial benefits has also allowed it to thrive. A large number of surgical procedures are today performed with day surgery being the norm rather than the exception.

This article will concentrate on guidelines that are current to the practice of day surgery and touch briefly upon the history of day surgery and the structure of day case units.

Definition of day surgery

Day surgery in Great Britain and Ireland is defined as 'the patient is admitted and discharged on the same day, with day surgery as the intended management'.[1] This is different from the term '23-hour stay' used in the United States. Overnight stays are classed as inpatient stays in the UK. Endoscopic, radiological and other outpatient procedures are not classed as day case surgery.

Day surgery history and guidelines evolution

James H Nicholl (1864–1921), a Glasgow surgeon, reported the first case series of common procedures done as day cases in children in 1909. In 1916, in Iowa, USA, Ralph Waters opened his downtown anaesthesia clinic and in 1951 the first hospital-based day surgery unit opened in Michigan, USA. In the United Kingdom, in 1955, Eric Farquharson, an Edinburgh surgeon, published a series of more than 400 consecutive day surgery inguinal hernia repairs in *The Lancet*.

Since 1995, the International Association for Ambulatory Surgery (IAAS) has been promoting day surgery worldwide. In 2007 the World Health Organization published a policy brief, 'Day surgery: Making it happen' to help facilitate day case surgery (Table 1).

The latest joint Association of Anaesthetists of Great Britain and Ireland (AAGBI) and British Association of Day Surgery (BADS) guidelines from 2019 have been put together with input from the Association of Paediatric Anaesthetists of Great Britain and Ireland (APAGBI), surgeons and lay people.[1]

Included amongst its recommendations are:

- Thorough, anaesthetist-led, nurse-delivered pre-assessment.
- Functional status rather than ASA physical status for determining fitness.
- Surgery in adults and children to be undertaken as day case in most cases.
- A clinical lead for day surgery.
- Protocolized discharge criteria.
- Use of techniques to maximize comfort and early discharge.
- All members of the multidisciplinary team to be trained in day surgery practice.
- High quality age-appropriate advice leaflet for patients.
- A dedicated unit or area for day surgery.
- Quality assurance and improvement programmes to facilitate good care.

Why day case surgery?

Both patients and hospitals benefit from day case surgery.

Patients mobilize early and go home with the benefits of lower risk of deep vein thrombosis and hospital-acquired infections. The comfort of one's home and a familiar environment improves patient satisfaction.

For an organization, decreased use of in-patient beds for elective procedures, lower costs and increased scope of roles for staff thereby increasing staff satisfaction.

The key to success is familiarity of the arrangements in place by all members of the multidisciplinary team. Protocols, policies and a dedicated unit or area inside the main hospital for day surgery enable smooth running of a day case unit. Nurse-led discharge with detailed attention to meeting discharge criteria and how to manage common postoperative complications is important.

Procedures suitable for day case surgery

Historically, the Royal College of Surgeons of England recommended a maximum 60 minutes operating time for day surgery. Advances in surgical and anaesthetic techniques has widened the scope of procedures immensely and relaxed the time limit. Laparoscopic and minimally invasive procedures are increasingly being done as day cases. Confidence has grown to the point where a majority of surgical procedures, including selected urgent procedures, would default into being day cases, unless benefit is identified in inpatient admission. The NHS Institute for

Monalisa J Marbaniang *MBBS FRCA MAcadMed is a Consultant Anaesthetist at the Leeds Teaching Hospitals NHS Trust, Leeds, UK.*
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Evolution of day surgery and guidelines in the United Kingdom

Year	Key events
1909	James Nicoll, the Father of day surgery, publishes 'The surgery of infancy'
1955	Eric Farquharson, publishes a series of more than 400-day case inguinal hernia repairs
1969	James Calnan opens the first day unit in the United Kingdom
1985	The Royal College of Surgeons of England suggests a 50% target for elective procedures to be performed as day cases
1989	The British Association of Day Surgery (BADS) is formed
1990	Audit Commission publishes NHS Value for Money to reduce costs and waiting lists
1991	Audit commission basket of 20 is published.
1993	National Day surgery Task force suggests a 60% target for day surgery
2001	Modernization Agency indicates a 75% target for day surgery
2002	The Department of Health (DoH) launches a task force to optimize day surgery uptake
2004	The NHS Institute for Innovation and Improvement publishes '10 High Impact Changes 'setting out to default to day surgery for elective procedures
2006	BADS Directory of procedures is published
2009	The DoH along with BADS introduces 'best practice tariff' to provide financial incentive for day case surgery
2011	'Day Surgery and Short stay surgery' published by the Association of Anaesthetists of Great Britain and Ireland (AAGBI) and BADS
2016	The Academy of Medical Royal Colleges publishes 'Choosing Wisely' recommending day surgery.
2019	The AAGBI and BADS produce updated Guidelines for Day-case Surgery

Table 1

Innovation and Improvement suggests Trusts should achieve a target of 75% of all surgical procedures to be done as day cases.[2]

The British Association of Day Surgery (BADS) publishes a directory of procedures every 3 years with the sixth edition being the latest in this offering.[3] BADS has also been working with NHS Improvement and the Model Hospital to compare day surgery data between Trusts. Procedures recommended are shown in Table 2.

Design of day surgical units

The latest recommendations are that day surgery units should be self-contained, functionally and structurally separate from inpatient wards and operation theatres.[1] They should have their own reception, consulting rooms, ward, theatres, recovery area and administrative facilities (Figure 1). At present, design varies widely with two common themes noted: day surgery patients are either integrated onto inpatient surgical facilities or standalone day surgery facilities. It is important that the unit is open late enough and staffed to allow patients sufficient time to recover and be discharged.

Patient selection

Stringent patient selection criteria in the 1980–1990s included age limit 65–70 years, ASA 1 and 2 and a BMI less than 30. In modern day case surgery emphasis on the functional status of the patient rather than absolute figures determines eligibility. This necessitates thorough pre-assessment and careful patient selection. Unplanned and unexpected admission will put a strain not only on hospital bed capacity but also affect patient satisfaction. It would also be inexcusable, were a patient to come to predictable or preventable harm following discharge. A multidisciplinary approach is therefore recommended, with protocols for patient assessment, including inclusion and exclusion criteria, agreed locally between surgeons and anaesthetic departments.[1]

Social, surgical and medical factors have to be taken into account for a patient's suitability for day case surgery.

Social factors

The patient should understand the plan for the procedure to be done as a day case. They should have an appropriate place to return to after surgery. A carer must be available to escort the patient home after general or regional anaesthesia. The desirable duration of carer availability may vary depending on the nature of the procedure and is no longer a fixed 24-hour period. Telephone follow up using a 'virtual ward system' and discharging patients without overnight care are developments that might happen in the future.[1] Patients should be able to understand and follow postoperative instructions with regards driving, operating heavy machinery and decision making.

Surgical factors

Locally drawn up guidelines including exclusion and inclusion criteria are helpful in patient selection. Procedures carrying significant risk of bleeding and any postoperative complication requiring immediate medical attention should not be done as day case. Generally, patients should be able to resume normal function such as drinking and be able to mobilize prior to discharge. In those who would have some limitation to mobility, venous thrombo-prophylaxis should be instituted and maintained after discharge. Examples of a few day case procedures that have been carried out successfully for many years are listed in Box 1.

Medical factors

Fitness for a procedure is no longer based on the ASA physical status, age or body mass index, but on the functional status determined at pre-anaesthetic assessment.

Patients with stable medical conditions should be considered for day case surgery. Local departmental guidelines should be drawn up to aid perioperative management of common medical conditions, e.g. diabetes, hypertension, asthma and epilepsy. This will enable clear advice to be given to the patient at pre-assessment and also allow the treating multidisciplinary team to adhere to planned protocolized management.

Types of urgent surgery suitable for day case procedures[1]

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

Table 2

Patients with uncontrolled or unstable medical conditions should not be done as day cases. The decision is then to either optimize control and re-list them for day case surgery or to proceed with in-patient admission.

Obesity is no longer a contraindication to day case surgery, as even morbidly obese patients can be managed safely provided the appropriate resources and expertise is made available.[1] Surgical and immediate postoperative complications are higher in this group of patients. Thorough pre-assessment with regards overt and covert co-morbidities needs to be done to ascertain if day surgery is appropriate. The benefit of day case surgery in this group is early mobilization and short duration anaesthesia.

Obstructive sleep apnoea (OSA) is not an absolute contraindication for day case surgery. Local departmental protocols are useful in stratifying which patients can be discharged the same day. Use of regional anaesthetic techniques and avoidance of postoperative opioids may improve safety. Airway surgery is unlikely to be suitable to be carried out as a day case in this patient group. The Society for Ambulatory Anaesthesia in its consensus statement says: 'patients with a presumed diagnosis of OSA, based on screening tools such as the STOP-BANG questionnaire, and with optimized comorbid conditions can be considered for ambulatory surgery, if postoperative pain can be managed predominantly with non-opioid analgesic techniques'.[1] Patients established on nasal-CPAP should be encouraged to bring their devices into hospital to use as appropriate.

Elderly patients are increasingly listed for day case surgery as people live longer healthier lives. There is no evidence to suggest that advancing age correlates with poor outcomes. However meticulous assessment of comorbidities is essential. Postoperative cognitive dysfunction may be better managed in a familiar home environment.

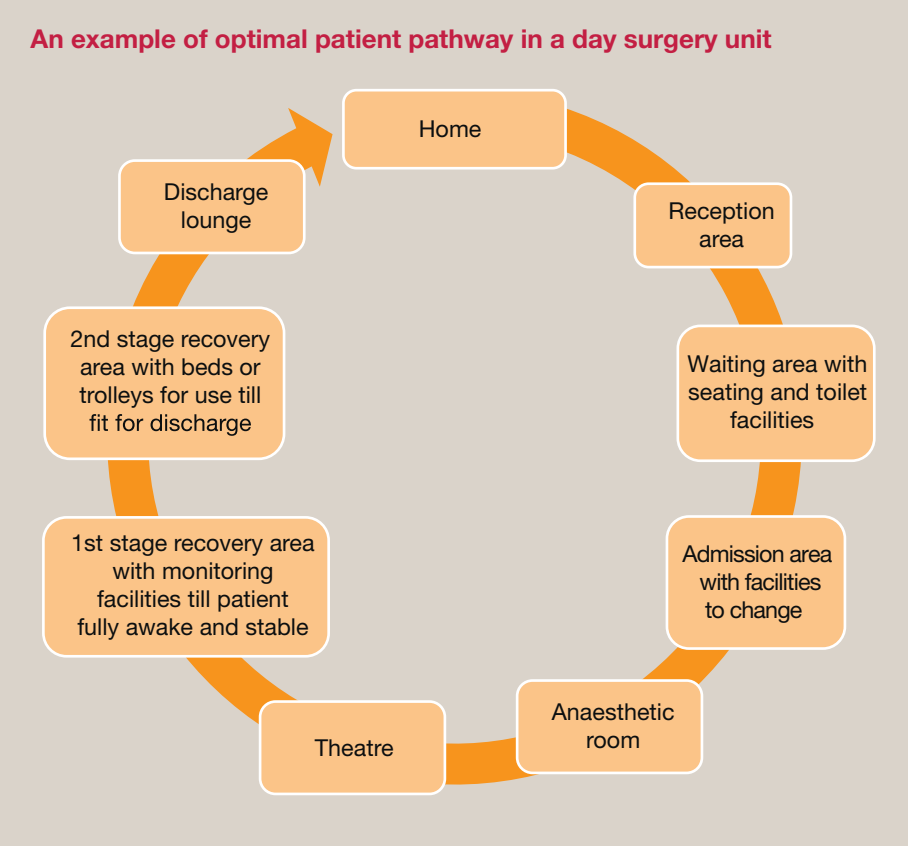

Figure 1

Examples of day surgery procedures

- Cataract surgery
- Squint surgery
- Dental extractions
- Tonsillectomy
- Septoplasty
- Grommet insertion
- Laparoscopy
- Laparoscopic female sterilization
- Laparoscopic cholecystectomy
- Circumcision
- Cystoscopy
- Hernia repair
- Knee arthroscopy
- Cruciate ligament repair
- Local excision of breast
- Polypectomy

Box 1

Day surgery for the paediatric patient

Most children can have day surgery, and standards of care are described in the 'Guidelines for the Provision of Paediatric Anaesthesia Services 2017'.[4]

They should either be listed first and separated from adults in the recovery area or on dedicated paediatric day case lists. Available facilities, equipment and staff expertise will dictate the lower age limit and medical comorbidities that are acceptable as day cases. All hospitals should have guidelines with regards eligibility.

Many tertiary centres adopt a lower age limit of 44 weeks 'post-menstrual age' (defined as gestational age plus chronological age) for minor procedures in well, term, neonates. Ex-premature infants (those born at less than 37 weeks' gestational age) are not usually accepted for day surgery at <60 weeks' postmenstrual age.[1]

Children with obstructive sleep apnoea (OSA) for tonsillectomy/adenoidectomy need careful assessment. Children with severe OSA should be managed in a tertiary centre and are not suitable for day surgery due to the high risk of postoperative complications.

Social factors such as the home environment, distance from the hospital, carer's access to transport and a telephone need to be considered. Carers must be able to understand instructions, give simple analgesics, recognize complications and return to hospital if required (e.g. post-tonsillectomy bleeding).

Anaesthesia for day case surgery

Pre-assessment

Thorough and detailed pre-assessment is necessary to:

- ensure the patient is fully informed to maximize patient satisfaction and allay postoperative anxieties
- optimize any medical conditions
- decrease on the day cancellations.

Pre-assessment clinics are run by specialist nurses with input from anaesthetists. Careful selection of patients at the time of pre-assessment is vital to achieving the goal of same day discharge.

On the day of surgery

The anaesthetist reviews the patient, and plans the most appropriate anaesthetic technique to facilitate surgery and same day discharge.

The general consideration with regards technique and agents to use would be

- smooth induction and recovery
- use of agents both anaesthetic and analgesic with good recovery profile
- effective analgesia
- prevention of postoperative nausea and vomiting.;

Anaesthetic technique

General anaesthesia (GA) or regional anaesthesia (RA) or a combination of the two are acceptable techniques. The choice will depend on surgical and patient factors including: the suitability of the planned procedure to be carried out under a local anaesthetic technique; patient comorbidities; risk factors for postoperative pain, nausea and vomiting; and patient choice. Spinal anaesthesia may be used in day case surgery using short acting local anaesthetics.

Analgesia

Multimodal analgesia tailored to the individual patient is recommended. The use of simple analgesics such as paracetamol and NSAIDs (if not contraindicated) is useful in the immediate preoperative and postoperative period. Weaker opioids can be used safely, while stronger opioids (e.g. morphine) should be avoided if possible to decrease the incidence of postoperative nausea vomiting, narcosis and constipation. If a patient has received morphine in the past and tolerated it well it will be reasonable to use it for procedures that are likely to be more painful, e.g. laparoscopic cholecystectomy.

Local and regional anaesthesia, including central neuraxial (spinal and caudal), plexus and nerve blocks, may be used. Patients should be warned of any limitation of movement and loss of sensation. Advice should be given to protect the numb limb. Oral analgesia should be started before the block wears off as pain may be excruciating when the effect of the local anaesthetic wears off. Central neuraxial blocks with short-acting agents (e.g. prilocaine) are useful in surgery of the lower extremities and the perineum.[7] Adequate analgesia should be instituted before the spinal anaesthetic wears off. Information should be provided with regards post dural puncture headache, CNS infection and nerve damage. BADS and the AAGBI recommend information about post-dural puncture headache be included in the discharge information following spinal anaesthesia.

Postoperative nausea and vomiting (PONV)

This is a well-researched area relating to anaesthesia. PONV is a distressing and debilitating experience for the patient and can significantly delay discharge and cause unplanned admission. Risk factors are well documented (Table 3) and management according

Risk factors for PONV[6]

Patient factors	Anaesthetic factors	Surgical factors
Female gender	Volatile anaesthesia	ENT surgery
Non-smoker	Nitrous oxide	Ophthalmic surgery
History of PONV, motion sickness	Opioid use	Laparoscopic or intra-abdominal surgery
Children older than 3 years	Duration of anaesthesia	Gynaecological surgery

Table 3

to scoring systems is recommended. Minimal starvation times and use of intravenous fluids is effective in reducing PONV rates.[5] Antiemetics should be given prophylactically where indicated and rescue antiemetic prescribed for postoperative use. A single agent such as $5HT_3$ receptor antagonist, ondansetron or steroid such as dexamethasone may be used as first line therapy. For those with multiple risk factors a second agent such as cyclizine, prochlorperazine, metoclopramide may be required. Total intravenous anaesthesia (TIVA) or regional anaesthesia should be considered in the high risk patient.

Discharge following surgery

Nurse-led discharge following agreed protocols should be the standard pathway for day case units. The surgeon and anaesthetist should be contactable to deal with any problems. The principles behind these protocols should include:

- ability to eat and drink
- stable vital signs
- ability to dress and walk (where applicable)
- passed urine (where applicable)
- absence of bleeding from wound sites
- analgesia considered acceptable by the patient
- safe environment to return to with adequate supervision.

Patient information on discharge

Verbal and written information should be given at the time of discharge. Instructions should be given in the presence of a responsible person escorting the patient home.

Instructions should include: not to drive, not to drink alcohol or operate heavy machinery at least 24 hours after a GA. If longer acting agents such as isoflurane are used, the guidance is to avoid driving for up to 4 days.[1] Driving restrictions regarding opioid-based medications state that patients can drive only if they have been prescribed by a healthcare professional, they do not cause them to be unfit to drive and they follow the advice given on how to take them.

Procedure-specific driving instructions should be given such as drive only when pain or immobility from their surgery allows them to perform an emergency stop and control the car safely.

Appropriate analgesia and advice on when and how to seek medical assistance for postoperative complications.

A discharge summary should be sent to the general practitioner and a copy given to the patient.

Best practise is a helpline for at least 24 hours after discharge and a follow up phone call the next day.

Audit

Effective audit is essential to assessing, monitoring, maintaining the efficiency and the quality of patient care and experience in day surgery units. Day surgery processes amenable to audit include:

- booking process
- preoperative preparation
- admission process
- anaesthesia quality
- recovery
- discharge process
- postoperative follow up

The future of day surgery

The face of day surgery will continue to evolve as medical, surgical and technological advances take place in and out of the field of medicine. Audit of processes in place is necessary to keep up with these changes in order to maintain safety in day surgery. Day surgery pathways will help stream line patient flow and ensure safety and satisfaction as more complex patients and surgical procedures are carried out as day surgery. ◆

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