

An overview of patient selection and anaesthesia for day surgery

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INTRODUCTION

Day surgery is an expanding specialty. The 2000 NHS plan predicted that 75% of all elective operations will be carried out as day cases in the future.⁽¹⁾ The average day case rate across the whole NHS rose from 55.7% in 1996 to 67.2% in 2003.⁽²⁾ Currently, there is a wide variation in day surgery rates amongst the NHS trusts, ranging from 40.2% to 82.7%, with only 12% of trusts carrying out more than 75% of the operations as day cases.

There has been more emphasis, politically and economically, on day surgery than ever before. Treatment as day surgery is identified as one of the ten 'high impact changes' by the NHS Modernisation Agency,⁽³⁾ which will help NHS organisations to achieve a quantum leap improvement in patient and staff experience, clinical outcomes and service delivery. They recommend that day surgery should be the norm for elective operations rather than inpatient surgery, which should be only by exception.

Day surgery encompasses a spectrum of planned surgical procedures, which allows the patient to go home after a few hours or on the same day (23 hours in case of extended day case units). The perceived benefits of day surgery include:

- timely treatment
- lower incidence of hospital acquired infection
- earlier return to normal activity
- ability to recuperate in the comfort of patient's own home
- reduced in-hospitalisation, with associated financial savings

PATIENT SELECTION FOR DAY SURGERY⁽⁴⁾

To be classified as an 'acceptable patient' will depend upon an individual unit's human and technical resources and experience. Therefore, a locally agreed policy should exist after considering the unit's capability and limitations. Any exception from this should be discussed with the relevant specialties. Careful selection of patient is paramount for successful running and improving efficiency of day surgery units and can be achieved by ensuring that:

- the intended surgical procedure is suitable
- adequate information is provided and confirming the patient's wish to undergo day surgery
- the risks of surgical and anaesthetic complications are minimised
- patients are adequately supported after discharge

In selecting a patient for day surgery, three categories should be considered: social factors; surgical considerations; and medical co-morbidities.

Social factors

Since a major part of recuperation takes place outside hospital, careful consideration should be given to a patient's home circumstances and social support. The salient points are listed in table 1, but exceptions to this can be arranged. For example, some hospitals provide 'patient hotels' for those patients who have to travel longer than an hour or who don't have a responsible adult to care for them.

Responsible adult to care for in the first 24 hours
Access to telephone
General practitioner/nursing backup, or telephone access to hospital staff for advice
Journey by private car or taxi (not public transport)
Travel time to home should be less than one hour

Table 1 Social considerations for a day case patient

Surgical considerations

In 2001, the Audit Commission identified a 'basket' of 25 procedures that can be performed as day cases. In addition, the British Association of Day Surgery (BADS) proposed a 'trolley' of procedures which are suitable for day surgery in selected cases. These lists of procedures enable trusts to audit their day surgical activity against national standards. Recently, the NHS Modernisation Agency, along with BADS,⁽²⁾ has short listed ten procedures from these lists (eight from 'basket' and two from 'trolley' procedures) that can be easily done as day cases. They have also suggested day case rates to be achieved for these procedures (see table 2).

Procedure	Current national day case rate (%)	Potential national day case rate (%)
Inguinal hernia	47.5	85
Varicose veins	54.4	90
Termination of pregnancy	89	95
Cataract	90.6	99
SMR	22.9	95
Extraction of wisdom teeth	87.9	95
Cystoscopy/ TUR bladder tumour	19.1	40
Arthroscopy meniscectomy	73.1	90
Excision of Dupuytren's contracture	41.7	95
Myringotomy/grommets	85	98

Table 2 Ten procedures that can easily be done as day cases

Medical co-morbidities

General health, co-morbidities and specific anaesthetic issues should be established and optimised to reduce the risk of unexpected cancellations and complications. Although broader guidelines exist in aiding the selection process, these should be carefully considered on a patient-by-patient basis. Only the conditions that would produce persistent complication following the surgery should be considered for overnight stay in the hospital as an inpatient. Generally, one should consider whether the patient's management would differ by admitting them pre- or postoperatively; if not, then they should be listed for day surgery.

Age

- no upper age limit
- lower acceptable age limits will depend on unit's facility and expertise

American Society of Anesthesiologists (ASA) status

- ASA 1 to 3 are generally suitable unless there are other contraindications
- some ASA 4 patients will be suitable (for example, limb surgery under regional anaesthesia)

Obesity

- individual unit's upper limit may vary
- body mass index (BMI) <35 are generally acceptable
- BMI between 35-40 is acceptable for most procedures

Cardiovascular disease

- controlled hypertension without end-organ damage is acceptable
- blood pressure should be <170mmHg systolic and/or <110 mmHg diastolic on two different occasions
- stable and optimally controlled angina is acceptable – continue peri-operative B blockade
- previous myocardial infarction is not a contraindication as long as it is >6 months old
- uncontrolled or poorly treated congestive cardiac failure patients are not suitable

Respiratory disease

- well-controlled asthma and chronic obstructive pulmonary disease (COPD) are acceptable
- recent exacerbations of asthma or COPD, dyspnoea at rest or on minimal exertion due to any respiratory disease are not suitable
- recent upper respiratory tract infection with fever and signs of lower respiratory tract involvement should have their surgery postponed

Diabetes mellitus

- well-controlled diabetes mellitus is usually not a contraindication, but the nature of the surgery and postoperative course needs to be taken into consideration
- associated end-organ damage should be assessed, investigated and optimised

Obstructive sleep apnoea (OSA)

- not suitable due to increased risk of postoperative respiratory complications

Liver disease

- patients with advanced liver failure are unsuitable, but milder cases could be considered

Neurological disease

- well-controlled epilepsy is not a contraindication

Renal disease

- patients with end-stage renal failure on dialysis are generally unsuitable, but simple procedures could be performed under local anaesthesia (for example, formation of a fistula for dialysis)

Mentally unwell and patients with learning difficulty

- many of these patients may benefit as there is minimal separation from their normal environment

Anaesthetic concerns

- previous or family problems with anaesthesia, such as suxamethonium apnoea, difficult tracheal intubation and malignant hyperpyrexia can all be managed, as long as the relevant anaesthetist has been informed and reviewed patient notes

Drug history

- seek advice on patients taking anti-coagulants (warfarin) and anti-platelets (aspirin, clopidogrel) drugs; risk of stopping should be weighed against its benefits
- the contraceptive pill should be continued unless specifically instructed by the surgeon
- patients taking mono amine oxidase inhibitor (MAOI) should be discussed with the anaesthetist
- of the recreational drugs, only recent use of ecstasy and cocaine should contraindicate elective surgery; cannabis is not a contraindication
- patients using and abusing opioids may need to be admitted as difficulty can be encountered in managing the postoperative pain

ANAESTHESIA FOR DAY SURGERY

A well-conducted anaesthetic with meticulous attention to detail can significantly improve the efficiency of a day surgery unit by improving the throughput and by minimising the unexpected admissions. An ideal day case anaesthesia should involve provision of safe and effective operating conditions coupled with rapid recovery and minimal postoperative complications leading to early discharge. Recent advances in anaesthetic techniques and availability of new anaesthetic drugs have made the above possible and enable the surgeon to undertake even more complex procedures as day case. In recent years, the role of anaesthetist has expanded well beyond theatres. Their organisational and peri-operative care expertise were utilised by many units to improve efficiency and success of a day surgery unit.

Broadly, there are three clinical areas where an anaesthetist could contribute: pre-operative period; intra-operative period; and, postoperative period.

Pre-operative period

Selection and preparation

This is usually conducted by nurses trained in pre-operative assessment based on agreed hospital protocol/guideline, led by a consultant anaesthetist. For patients falling outside the selection criteria, provision should be in place for discussing with an anaesthetist, ideally the one who will be involved in anaesthetising the patient, for further advice and ordering appropriate investigations. Investigations performed should be

guided by the patient's physiological condition, and guidelines produced by the National Institute of Clinical Excellence (NICE) could be a useful tool for investigating in all elective surgery.⁽⁵⁾ An integrated care pathway (ICP) would be ideal for day surgery patients, as this can be utilised to keep all the relevant information, including pre-operative assessment, investigations performed, information provided, consent, anaesthetic and surgical record, recovery data, discharge and follow up. Adequate information regarding the pre-operative fasting time, medications to take or avoid, detailed description of the events that will happen during the day of surgery, what to expect in the postoperative period, should be provided. Patients and carers should be also encouraged to ask questions and clarify any doubts.

Immediate pre-operative period

On admission, a nurse assessment should include completion of the relevant sections in the care pathway and obtaining routine observations. An anaesthetic review at this time provides an opportunity to clarify various prerequisites like pre-operative fasting, medications (taken and omitted) and to address the need for anxiolysis and pre-emptive analgesia.

Intra-operative period

Induction

GENERAL ANAESTHESIA (GA)

GA can be induced intravenously, usually with Propofol, which has an ideal pharmacokinetic profile to suit day surgery as it achieves rapid induction of anaesthesia and emergence with added benefits of reduction in the incidence of postoperative nausea and vomiting (PONV). As an alternative, inhalational induction with sevoflurane can be used to induce anaesthesia, especially in paediatric patients or in adults with needle phobia where vascular access for intravenous induction could prove difficult.

The majority of the surgery can be undertaken with minimal airway instrumentation (eg, mask, laryngeal mask airway). On occasions, endotracheal intubation is performed to ensure the protection of the airway from aspiration. The perceived disadvantages of endotracheal intubation are prolonged recovery time to extubate patients, increased incidence of sore throat and increased risk of PONV. However, patient safety should not be compromised in view of these drawbacks.

REGIONAL ANAESTHESIA (RA)

Many of the day case procedures can be conducted solely under RA. Epidural anaesthesia, spinal anaesthesia or peripheral nerve blocks can be performed and there are a number of advantages over GA:

- avoidance of airway trauma, sore throat, muscle pain
- provides analgesia without sedation
- early discharge
- prolonged postoperative analgesia

If used in conjunction with GA, RA or local infiltration can reduce the amount of opioids required for postoperative pain relief.

Maintenance

In day surgery, the choices of inhalational agents are Isoflurane, Desflurane and Sevoflurane. The former two have the disadvantage of being airway irritants, which makes them unsuitable for inhalational induction. Desflurane and

sevoflurane are characterised by rapid recovery time, which may be of benefit in day surgery, facilitating early discharge.

A balanced multimodal approach to postoperative analgesia should be employed. When RA is not contemplated, consider local anaesthetic infiltration preferably before the surgical incision. When there is no contraindication, consider non-steroidal anti-inflammatory drugs.

Postoperative period

Recovery

Recovery following day surgery can be divided into three phases:

- Phase 1. The immediate postoperative period – involves the emergence from anaesthesia and the recovery of protective reflexes and motor function.
- Phase 2. The period from end of phase 1 to discharge from the unit – involves the recovery of coordination and return of normal physiology.
- Phase 3. Completed at home – may take many days to return to pre-operative physiological state.

Discharge from phases 1 to 2 is usually determined by subjective assessment by nursing staff, but there are scoring systems, to make it more objective (eg, Aldrete Score). 'Fast tracking' involves keeping phase 1 as minimal as possible, resulting in early discharge home. RA and recent anaesthetic advancement, including modern techniques and drugs, have played a significant part in facilitating 'fast tracking' of patients through day surgery.

Discharge

Discharge following day surgery should be nurse-led, based on specific criteria. Reliable questionnaires such as post-anaesthesia discharge scoring systems (PADSS) can be used to facilitate discharge (see table 5).

Category	Description of status	PADSS score
Vital signs	Within 20% range of pre-op value	2
	Within 20% to 40% range of pre-op value	1
	>40% range of pre-op value	0
Respiratory status	O ₂ saturation >94% on room air	2
	O ₂ saturation >94% on nasal prongs @ 4 litres per minute (LPM) or less	1
	O ₂ saturation >94% on face mask @ 10 LPM or less	0
Nausea and vomiting	Minimal, treated with oral medications	2
	Moderate, treated with parenteral medications	1
	Continues after repeated treatments	0
Pain	Acceptable to patient (with oral medications)	2
	Pain somewhat acceptable to patient	1
	Pain not acceptable to patient	0
Surgical bleeding	Minimal: no dressing changes required	2
	Moderate bleeding: one to two dressing changes	1
	Severe bleeding: intervention required	0
Table 5 Post-anaesthesia discharge scoring system (PADSS)		

Adequate information should be provided on acceptable physical activities, seeking appropriate help when needed and postoperative analgesia along with take-home analgesics.

Unanticipated overnight hospital admission rate varies widely amongst trusts. The most frequent causes are bleeding, persistent nausea and vomiting and uncontrolled pain. Although infrequent, perforated viscous, extensive surgery, conversion from planned laparoscopic to open surgery, and change in social circumstances, will need hospital admission.

Regular auditing of cancellations, unanticipated admissions, morbidity and mortality and patient satisfaction can provide information for further development and improvisation of day surgery service. This can be facilitated by a follow-up telephone call to all or a selected group of patients on the following morning.

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Day case rates at University Hospitals of Morecambe Bay (UHMB) 'Peer' percentages are an average of 20 trusts similar to UHMB Entries in BOLD are procedures from the NHS modernisation agency shortlist (see text)			
	Day cases	UHMB %	Peer %
Bunions	13	15.5	60
Excision of breast lump	5	18.5	78.6
Excision of Dupuytren's Contracture	19	48.7	78.8
Arthroscopy	363	74.8	84.7
Haemorrhoidectomy	12	42.9	60.6
Lap cholecystectomy	3	1.5	27.8
Removal of metalware	58	59.8	72.8
Dilation and curettage/hysteroscopy	147	79	89.6
Excision of ganglion	43	89.6	93.6
Circumcision	134	82.7	88.7
Inguinal hernia	180	55	62.7
Laparoscopy diagnostic/therapeutic	216	67.3	73.9
Sub-mucous resection	75	50.3	60.1
Anal fissure dilation or excision	3	75	80.9
Varicose vein stripping or ligation	175	83.7	85.6
Operation for bat ears	5	45.5	50
Termination of pregnancy	185	91.1	93.2
Reduction of nasal fracture	47	88.7	89.1
Tonsillectomy	76	42	38.2
Orchidopexy	16	94.1	88.6
Myringotomy with/without grommets	162	94.2	92.8
Carpal tunnel decompression	272	98.6	97
Cystoscopy change to TURBTs	104	40.9	29.8
Cataract with/without Implant	1,736	99	98.1
Correction of squint	29	100	94.4

Source: Geoff Hind