Paediatric day case surgery

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Abstract

Paediatric day surgery is common and increasingly more complex surgeries are being carried out on more complex children. The benefits to the child and parent include less disruption to daily routines and fewer psychological and emotional effects than an overnight stay would incur. The use of day case services improves efficiency and is more cost effective for organizations. To deliver high-quality paediatric day surgery services there are several key components to address. This article discusses the role of preoperative assessment and the need to consider each case individually despite robust inclusion/exclusion criteria. Optimization of preoperative hydration, pain management and prevention of postoperative nausea and vomiting are highlighted as important factors to successful day case surgery.

Keywords Ambulatory surgery; day case surgery; paediatric anaesthesia; paediatric pain management; paediatric sedation; preoperative starvation

Royal College of Anaesthetists CPD Matrix: 3A06; 2DO2, 2DO5, 2DO6

Learning objectives

After reading this article, you should:

- be aware of the inclusion and exclusion criteria for paediatric day surgery
- have strategies for minimizing postoperative pain in the hospital and at home
- have strategies for minimizing postoperative nausea and vomiting

Introduction

A unifying definition of day case surgery remains elusive. In the UK, day case is when a planned patient is admitted and later discharged home without staying overnight.[1] This differs in other countries, notably in the USA where a stay of under 23 hours is deemed day-case.

The momentum for increasing day surgery provision is due to advances in both surgical and anaesthetic techniques, patient and public expectations and the cost-efficiency benefits. The most recent data from 2013 show that 78% of elective surgeries are day cases (surpassing the 75% target set by the NHS Plan in 2000) and has potentially saved the NHS over £2bn allowing treatment of up to 1.3 million more patients.[1,2]

Paediatric day case services are particularly popular as many of the common surgical operations are especially well suited to this. Children are usually healthy with little co-morbidity and the psychosocial benefits to the child and their family avoiding a prolonged hospital stay are well documented. Hence there is an increasing ambition to provide ambulatory care for children of younger ages and more complex medical conditions safely.

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Facilities and organization

The most recent published standards by the children's surgical forum ensure the safeguarding of children undergoing ambulatory surgery (see Further reading and References). The main purpose of these standards is to ensure that children receive the very best care possible in the safest, most appropriate environment.

Ideally children should be treated in specifically designed paediatric day case units where specialized equipment and paediatric trained multi-disciplinary teams are available from admission until discharge. There should be play specialists, translators and play areas to further improve experiences.

In non-specialist hospitals children are cared for in predominantly adult environments but the standards should remain the same. All children should have a named consultant surgeon, anaesthetist and paediatrician involved/available during their stay. Consultants with paediatric lists and maintained core competencies should deliver anaesthesia. Registered paediatric nurses should be involved in the care of children and all staff should have child protection training with at least one of the team delivering care being up-to-date with paediatric resuscitation.

Providing day surgery in hospitals with no medical paediatric cover requires the presence of paediatric trained consultant surgeons and anaesthetists and a working agreement with neighbouring children's services to provide support and safe transportation for any complications. The overarching principle of these standards is to ensure that children receive surgery in a safe, appropriate environment, which is as close to their home as possible as stated by the European Charter of Children's rights.[3]

Advantages and disadvantages

The advantages outweigh the disadvantages for most children and families. Day case care reduces the risk of nosocomial infections, anxiety behaviours such as nocturnal enuresis or disrupted sleep patterns and ensures that children have less time off from school. For families, there is less disruption to work patterns and childcare needs: decreasing the economic load on society. Each day case procedure confers not only considerable monetary savings but also delivers a far more efficient service.[2]

A friendly environment and approachable staff ensure families and patients feel well cared for and are not being rushed or discharged home under pressure. Patient/parent satisfaction with day case care is usually high, but the services can be further

optimized by shorter waiting times prior to surgery, good postoperative analgesia and next day follow-up maintaining contact, shifting the emphasis for facilitating delivery of postoperative care to the home setting.[4]

The major disadvantage is the inevitable inability to control factors once patients have been discharged, most notably pain, nausea and vomiting and deterioration of specific conditions. The feeling of abandonment once home by parents required to step into an unfamiliar medical/nursing role can be allayed by 24 hours telephone accessibility and also by provision of both robust verbal and written postoperative information and instructions.

Inclusion and exclusion criteria

In specialist environments ever more complex surgeries and patients are undergoing day case procedures and the absolute exclusions to day case anaesthesia are diminishing (Box 1). If children live a long way from the hospital, a patient hotel allows discharge of the otherwise well child from an inpatient bed negating a long homeward commute and maintaining access to suitable postoperative assistance.

Specialized cases need to be evaluated on their own merits and these include neonates, complex chronic conditions and the obese child.

Neonates

More premature babies are being considered for surgical procedures due to improved neonatal survival. There is little evidence to suggest a specific age when neonates are suitable candidates for day surgery.[5,6] The general consensus is that term babies are appropriate candidates for day surgery once they reach 44 weeks post-conception age (PCA) but each neonate has to be considered individually, as well as taking into account the facilities and expertise on hand.

A special subgroup of neonates is the ex-premature infants. This group is at high risk of developing apnoea after anaesthesia regardless of whether a regional or general anaesthetic is used.[7] Regional anaesthesia seems to decrease the risk of apnoeas in the first 12 hours postoperatively but not in the longer term (24 hours) period, which is critical for day case surgeries.[8] Risk factors for apnoea includes degree of prematurity at birth, PCA at time of surgery, previous postoperative apnoea and anaemia. Most centres limit day case surgery until 60 weeks PCA (some consider anaesthesia at 50 weeks PCA). Figure 1 demonstrates the decision process required with neonates for day surgery.

Chronic conditions

Previously excluded complex chronic conditions are now being considered provided they are in a stable state. Parents are often experts in managing their child's requirements such as home ventilation or feeding regimes and a prolonged stay in hospital may not improve upon this care. Increasingly complex cardiac repairs present for surgery and by using experienced anaesthetists and surgeons who understand the physiology and requirement of adequate preoperative hydration, even day surgery in children with Fontan circulations have been successful.

Obesity

Obesity is increasing amongst children. Undiagnosed issues such as obstructive sleep apnoea, asthma, type 2 diabetes, hypertension and gastro-oesophageal reflux can pose potential problems to the unsuspecting anaesthetist. The NHS Modernisation Agency has raised the upper limits of body mass index (BMI) for day

Inclusion categories for day case surgery

Non-medical considerations

- Consent — agreement to day surgery by patient or/and parents
- Care — parents are able to accompany/look after the child on discharge
- Communication — parents are able to access 24 hours help from the hospital via a phone
- Closeness — patients reside within an hour of the hospital

Medical factors

- Healthy child/mild systemic disease or stable chronic disease
- Surgery included on the British Association of Day Surgery directory of day case procedures
- No excessive cardiovascular effects or blood loss
- No excessive postoperative pain anticipated

Specific considerations should be in place for age (post-conception) and obesity and all children should have had good preoperative assessments carried out.

Box 1

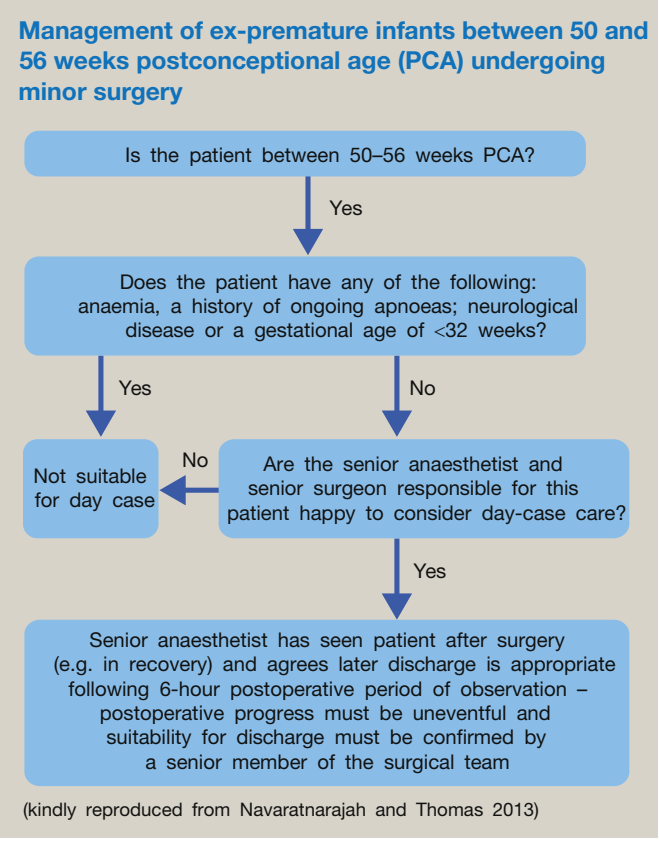

Figure 1