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Introduction

Preoperative screening of ambulatory surgery patients is essential to ensure their safety, as well as to minimise late cancellations and disruption to operating lists. Assessing the patients in advance also presents a valuable opportunity to provide information and answer questions, thereby improving the overall quality of their experience.

Selection should be based on surgical, social and medical criteria. As ambulatory surgery expands, these selection criteria are being relaxed and expanded, based on the evidence of our past experience. This lecture will review the mechanisms for preassessing ambulatory surgery patients and provide an update on current selection criteria.

SELECTION CRITERIA

The safety and success of ambulatory surgery depends on appropriate patient selection to minimise postoperative complications. As ambulatory surgery expands, the surgery inevitably becomes more complex and patients are more likely to have significant preexisting diseases. It is therefore essential that rational selection guidelines are developed and adhered to. It is generally agreed that patient selection should be based on surgical, medical and social criteria (table 1). While surgical criteria are often easiest to classify and identify, there is currently enormous variation between (and even within) countries in the percentage of several common surgical procedures which are performed on an ambulatory basis, for example, tonsillectomy and cholecystectomy.

TABLE 1 SUMMARY OF AMBULATORY SURGERY CASE SELECTION CRITERIA.
(See text for more detail on specific medical conditions).

SURGICAL:

- operation of moderate duration
- associated with minimal blood loss or fluid shifts
- no specialised equipment required (becoming less important, e.g., laparoscopes)
- no specialised postoperative care
- few postoperative complications anticipated
- pain manageable at home (usually with oral analgesia)

SOCIAL:

- responsible adult escort for first 24 hours
- patient understands instructions
- reasonable access to a telephone
- reasonable access to general medical practitioner and / or district nurse
- able to return to hospital within reasonable time frame
- not expected to care for children or perform hazardous tasks

MEDICAL:

- healthy, or:
- preexisting condition stable and well-controlled
- symptoms relatively stable
- patient understands disease (able to judge stability)
- disease unlikely to be adversely affected by surgery

Assessment before the day of surgery is essential to prevent delays and cancellations. The surgeon is usually the first person to see the potential patient in the hospital outpatient clinic, but they rarely consider medical or social factors and may select patients for ambulatory surgery inappropriately. Conversely, surgeons

may be too conservative, bypassing the ambulatory surgery unit and booking some patients directly as inpatients [1], when a little investigation or an adjustment of therapy could have rendered them acceptable for ambulatory surgery. In either case, a robust system of preassessment is necessary and it is advisable that all patients scheduled for appropriate operations are put through this process [1].

In North America, patients may visit a preassessment clinic, usually staffed by anaesthetists in training. This represents a significant drain on resources and, unless such clinics can be provided every day, often requires that patients make an additional hospital visit, which is contrary to the spirit of ambulatory surgery! In addition, a face-to-face interview with an anaesthetist is seldom required at this stage (although I firmly believe the anaesthetist should personally assess every one of their patients on the day of surgery). In England, the most common model of preassessment is a nurse-led clinic, usually located on the ambulatory surgery unit. This allows the assessment to be completed soon after the surgical consultation and also allows the patient see where they will have to come on the day of surgery. Such a personal approach may be most reassuring and will also ensure accurate blood pressure, height and weight are recorded. However, the majority of other required information can be readily obtained from a structured questionnaire. This allows for several alternative methods of screening, as the questionnaire may be completed at the surgical clinic, by telephone, or even at home and returned by mail. My own hospital has relied on questionnaire screening for many years without apparent detriment.

The outcomes from the completed questionnaire or interview are subsequently checked by nurses against a protocol, developed in association with the local anaesthetic department. The principal aim is to triage patients into those who are definitely suitable for ambulatory surgery, those who are clearly unsuitable and a third group who require further, targeted, assessment. Other advantages of using the ambulatory surgery unit for preassessment are that an anaesthetist is likely to be available to answer specific questions and investigations may be requested immediately. Nevertheless, special investigations should be performed only if indicated by the history; routine screening tests (including blood tests, ECG and x-rays) are of no clinical benefit [2-8]. In addition, they are unpleasant, expensive, and may cause unnecessary anxiety, delays and cancellations.

The preassessment clinic is also an ideal opportunity to provide patients with written information about their forthcoming procedure. This may include material specific to the planned operation, as well as more general advice. To ensure that patients are discharged to safe and acceptable home conditions, they should not drive for at least 24 hours after the procedure and must be accompanied home by a responsible, physically able adult who can care for them overnight (or longer for more invasive procedures). The ability to comply with these requirements constitutes an important part of the social acceptability criteria and needs to be checked during the preassessment process. Several studies show that almost all ambulatory surgery patients follow our advice to have a responsible carer with them and to abstain from dangerous activities, at least until the day after surgery [9, 10]. What we do not know is how many patients are denied ambulatory surgery because they cannot meet these criteria in the first place. Single patients and those with elderly partners or multiple small children are more likely to have difficulties in making suitable arrangements. Unfortunately, as there is little hard evidence for these apparently sensible requirements [11], we do not really know if it would be safe to relax some of them in certain cases.

MEDICAL SELECTION CRITERIA

Initially medical selection criteria were similarly conservative and somewhat arbitrary. With increasing experience, these criteria have broadened somewhat, based on good evidence from previous experience. Revised national guidelines have recently been published in the United Kingdom [12], but these differ little from what good units have been doing for several years.

Before considering specific issues, a few general points should be stated. For any patient who is not completely healthy, the nature of any preexisting condition, its stability and functional limitation should all be evaluated. Treatment should obviously be optimised (which applies equally well to elective surgery performed on an inpatient basis). Rather than considering items in isolation, the interaction of any disease(s) with the planned surgical procedure should also be considered. A pragmatic (but nevertheless fundamentally important) question to ask is how the management or outcome would be affected by pre- or postoperative hospitalisation. If no improvement would be achieved, then the patient should undergo treatment on an ambulatory basis.

AGE

Physiological age is clearly more important than chronological age. Nevertheless, although medical and social problems become more common with increasing age, there should be no arbitrary upper age limit for ambulatory surgery. Children benefit considerably from ambulatory surgery and should certainly not be excluded. However, they will best be cared for by specialist staff in dedicated facilities (which may be part of an adult unit or completely separate, depending on local circumstances).

HYPERTENSION

Hypertension should be taken seriously as there is a positive correlation with perioperative complications (especially myocardial ischaemia) [13, 14]. Patients with known hypertension should have their good blood pressure control and continue with their medication. There is some controversy about the appropriate “threshold” blood pressure for ambulatory surgery. A value of $\leq 175/105$ mmHg has been suggested [15], although other factors such as age should be taken into consideration. As blood pressure may be expected to be higher on the day of surgery (in everyone), it may be advisable to refer patients back to their general practitioner to instigate treatment (or modify existing therapy) if the blood pressure at screening is within 10–15 mmHg of the acceptable limit. Surgery should be delayed (if possible) until the blood pressure is controlled and has been stable for about 4 weeks. This may take 2–3 months (or even longer). However, more rapid measures to lower blood pressure will not reduce cardiac risk.

OTHER CARDIOVASCULAR DISEASE

Previous myocardial infarction is not a contraindication to ambulatory surgery, unless it has occurred within the past 6 months. Angina, if present, should be relatively stable and optimally controlled. Angina at rest, or on minimal effort, is a contraindication. If a potential ambulatory patient fails to meet these selection criteria, they may not be appropriate for elective inpatient surgery either. However, if the surgery is of an urgent nature, inpatient care will improve the quality of postoperative management. Warfarin therapy is not an absolute contraindication, but optimum management will need to be discussed with anaesthetist and surgeon, taking into account the risks of perioperative bleeding and the original indication for anticoagulant therapy.

ASTHMA

Asthma is not a contraindication to ambulatory surgery, provided that it is well controlled and the patient has good exercise tolerance. Recent exacerbations and/or the need for hospital admission or systemic steroids warrant caution. Peak expiratory flow and spirometry are useful assessment tools, but chest X-ray is not. It is worth asking about previous exposure to non steroidal anti-inflammatory drugs (NSAIDs). NSAIDs only trigger bronchospasm in around 5% of asthmatics and these useful drugs should not be withheld if the patient has taken aspirin, ibuprofen, etc. in the past without ill effect. In the absence of any history, the risks and benefits must be balanced for the individual patient.

CHRONIC RESPIRATORY DISEASE

Principles similar to those for asthma. Exercise tolerance is an important prognostic factor. Dyspnoea at rest or on minimal, indoor, exertion, would be contraindications. Use of regional or local anaesthesia may increase the proportion of suitable patients. Smoking should be discouraged, but this is seldom effective. Inpatient care is not a panacea to the problem and avoiding hospitalization is likely to reduce hospital-acquired infection;!

ACUTE UPPER RESPIRATORY TRACT INFECTIONS (URTI)

These present more of a problem on the day of surgery than during screening. If preassessment is occurring close to the date of operation, the patient should be rescheduled if they are febrile or unwell, or if surgery will involve the airway [16]. In other cases, patients should be advised to ring the ambulatory surgical unit if their condition deteriorates. In adults with mild URTI, who are afebrile and have no signs of involvement of the lower respiratory tract, most ambulatory surgery will be relatively safe. However tracheal intubation should be avoided if possible.

OBESITY

Obesity is becoming increasingly prevalent in western society. Many ambulatory surgery units have previously imposed fairly conservative limits on Body Mass Index (BMI), since obesity is associated with numerous perioperative complications. Nevertheless, many of these, including difficulty with venous access and manual handling, problems with the airway, desaturation and other cardiorespiratory abnormalities, occur during the perioperative and early recovery periods. Therefore they would not be avoidable by overnight hospital admission. Indeed, obese patients should benefit from some of the common features of ambulatory surgery such as the use of short-acting drugs and avoidance of opioid analgesia. More recent evidence suggests that late postoperative complications (i.e., those which might be avoidable with overnight admission) only begin to become prevalent as BMI exceeds about 40 kg.m⁻² [15]. It is also important to consider the nature of the surgery and the overall fitness of the patient, in addition to their obesity. Certain operations or regional blocks may be technically difficult in obese patients and may have their own weight limitations. In addition, many operating tables and trolleys will have an absolute weight limit. Outside of these constraints, patients of BMI ≤ 35 should be acceptable (providing there are no other contraindications), while even those of BMI range 35–40 should be acceptable for most procedures [12].

DIABETES

Non-insulin-dependent diabetes should not present any significant management issues in ambulatory surgery. Food and oral hypoglycaemic agents should be omitted before surgery and recommenced as soon as possible thereafter. Similar principles may be applied to insulin-dependent diabetics, restarting the patient on their regular medication soon after surgery. This will involve delaying the patient's breakfast and morning insulin until after surgery and then adjusting the timing of later meals and doses until the normal routine is re-established. This has eloquently been described as "moving the sun in the sky" [17].

When screening diabetic patients, it is important that they are carefully evaluated for evidence of cardiovascular, renal and autonomic nervous system disease. This applies irrespective of their type of diabetes. An ECG may be useful to look for evidence of silent ischaemia, while glycosylated haemoglobin can provide an indication as to the stability of control. As returning diabetics to their normal regimen is easier after short surgical procedures and when nausea can be avoided, local anaesthesia is preferable, where possible. In addition, the range of acceptable surgical procedures may need to be modified when considering diabetic patients.

HEPATOBIILIARY DISEASE

Most ambulatory surgery will be contraindicated in patients on renal dialysis, due to both practical difficulties and co-morbidity. Nevertheless, formation of fistulae may often be performed in the ambulatory setting. Severe liver disease will be an absolute contraindication, but mild dysfunction should not pose difficulties.

MISCELLANEOUS CONDITIONS

Epilepsy is not a contraindication, provided it is stable and not triggered by surgical procedures! Many patients with neuromuscular disorders are acceptable, but the anaesthetist should make the final decision as the requirement for neuromuscular blocking drugs will affect acceptability. Previous problems with anaesthesia must be considered in light of the proposed technique. For example, difficulties associated with succinylcholine or tracheal intubation should be of little consequence if the current operation can safely be managed with a laryngeal mask airway. Although managing a difficult airway may introduce some delay, there is no other reason why these cases cannot be accepted for ambulatory surgery.

Gastrointestinal reflux is common. The history should elucidate the frequency and severity of symptoms, as well as precipitating factors. If reflux is mild or does not occur in the fasting state, no special measures are necessary. In more severe cases, H₂ antagonists or proton pump inhibitors may be required (although most such patients will already be taking these). Patients with "learning difficulties" may be awkward to manage in ambulatory surgery, but they benefit from the shortest possible length of separation from their normal surroundings.

DRUGS AND MEDICATION

Patients should be reminded to continue with their normal medications on the day of surgery. Diuretics may be inconvenient and can probably be omitted safely. Insulin and oral hypoglycaemics will require special instructions. The oral contraceptive should not be stopped before the majority of operations, but local guidelines may apply.

Recreational drug use may pose social problems, which are beyond the scope of this lecture. MDMA (“Ecstasy”) and cocaine are dangerous and surgery should not continue if these have been taken recently. Opioid use may make pain relief more difficult, but non-opioid analgesia is often sufficient for many procedures (intraoperative opioids are probably also best avoided, if possible). Cannabis is not a contraindication. Significant alcohol consumption may induce tolerance to many anaesthetic drugs, but is not a contraindication in the absence of severe hepatic dysfunction. Patients who are acutely intoxicated should be deferred due to the likelihood of a full stomach and dehydration. Hospital admission prior to surgery may ensure better compliance with fasting policies in the future.

SUMMARY

Preassessment of ambulatory surgery patients is predominantly a nurse-led process. Although some countries use anaesthetists for this purpose (some even mandate it), this is an unnecessary waste of a valuable resource. A physician anaesthetist certainly needs to have input into the protocols upon which selection is based and should be contactable to advice on specific patients, but their skills will be better deployed in caring for patients actually undergoing ambulatory surgery. The patient history provides the greatest input into preassessment and much of the required information may be obtained from a structured questionnaire. Physical examination adds little extra information, with the exception of arterial blood pressure, which should always be checked. Special investigations are especially unhelpful as a screening tool, but have a valuable role where specifically indicated.

There is now considerable experience of successful ambulatory surgery which provides useful evidence on which to base robust selection criteria. Many of the earlier recommendations have proved unnecessarily conservative. Ambulatory surgery should be the normal form of elective surgical care and is only contraindicated if the safety, comfort or outcome of the patient will be improved by a pre- or postoperative hospital admission.

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