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Anaesthesia for hip fracture repair

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Learning objectives

By reading this article, you should be able to:

- Outline the current controversies in hip fracture anaesthesia.
- Explain the justification for prompt hip fracture repair.
- Implement strategies to avoid hypotension and postoperative delirium.
- Adopt an evidence-based approach to the perioperative management of patients with hip fracture.

Key points

- Hip fracture is a major and increasing concern for public health.
- Timely hip fracture repair surgery is associated with lower morbidity and mortality.
- There is little evidence to suggest that general or regional anaesthesia is superior; the conduct of each should account for a patient's physiological limitations.
- A quarter of patients with hip fracture experience postoperative delirium.
- Hypotension is associated with an increased risk of mortality; in many cases, it can be avoided by minimising the doses of anaesthetic agents.

Hip fracture is a major and increasing concern for healthcare; in 2018, 77,210 proximal femoral fractures were recorded in the UK and Ireland, and the number of cases is projected to increase.[1–3] Hip fractures are the commonest reason for older people to require emergency surgery, are the type of fracture most likely to require hospital admission, and account for more orthopaedic trauma bed days than all other fractures combined.[1,4] Disorders of cognition are common in patients with hip fracture, with 30% having severe cognitive impairment before surgery.

Although hip fracture remains the commonest cause of death after an accidental injury, the 30-day mortality rate reported in England, Wales and Northern Ireland by the National Hip Fracture Database (NHFD) has reduced in recent years: from 10.9% in 2007 to 6.1% in 2018. Similar improvements have been noted in Scotland and the Republic of Ireland.[1–3] The reasons for this progress are multifactorial, but it is notable that this has occurred in the context of increased attention paid to processes and outcomes; the introduction of clinical guidelines; and, in England and Ireland, the introduction of Best Practice Tariffs (BPTs) for hip fracture care (Table 1). These specify criteria that, if achieved, result in additional payment to the healthcare organisation.

Many guidelines regarding anaesthesia for hip fracture repair are available, with some differences between documents. In 2013, Kearns and colleagues compared five contemporary sets of UK hip fracture anaesthesia guidelines, and they

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found inconsistencies in their recommendations for analgesia, anaesthesia, preoperative investigation and optimisation.[5] Such variation is inevitable, as different guidelines emphasise different aspects of care, and more recent guidelines account for newer evidence. It is our assessment that the aims of such guidelines are generally consistent; all focus on enabling the timely repair of hip fracture in a way that is sympathetic to the physiology of frailty. More recent guidelines by the Association of Anaesthetists and Fragility Fracture Network have addressed these inconsistencies and harmonised best practice recommendations, nationally and internationally.[6,7]

Although early mortality has improved in the past decade, less is known about restoring function and reducing morbidity, and the long-term effects on patients. However, national data collection has started to address this. For example, the BPT for England (Table 1) specifies postoperative screening for delirium using the 4AT (www.the4at.com), and the NHFD collects data on the proportion of patients that return to their original residence.[1] Qualitative research confirms that delirium and long-term complications, such as loss of function, cognitive impairment and increasing dependency, have profoundly negative impacts on patients' lives.[8] Although some of these outcomes are challenging to assess, measuring them will provide further opportunities to improve the quality of hip fracture care.

Hip fracture repair presents numerous challenges to anaesthetists and perioperative physicians. The need to enable timely surgery in complex and frail patients who are at high risk of complications yet are often unable to participate fully in the decision-making process, presents clinical, ethical and organisational dilemmas. In this article, we explore these dilemmas and review the evidence and controversies that surround them.

Table 1 English and Irish BPT clinical criteria.[1,3]

England	Ireland
Time to surgery within 36 h of presentation	Admission to an acute orthopaedic ward (or operating theatre) within 4 h of presentation
Assessed by a geriatrician within 72 h	Surgery within 48 h of admission and within normal working hours
Preoperative cognitive test using the abbreviated mental test score	Does not develop a new Grade 2 or higher pressure ulcer during admission
Assessment for bone protection	Reviewed by a geriatrician at any point during admission
Specialist falls assessment Nutritional assessment on admission	Bone health assessment Specialist falls assessment
Postoperative delirium assessment using the 4AT	
Assessed by a physiotherapist on the day of or the day after surgery	

Evidence-based anaesthesia for hip fracture repair

Anaesthesia for hip fracture repair is notable for its variation. In the 2014 Anaesthetic Sprint Audit of Practice (ASAP) in England, Wales and Northern Ireland, 50.7% of patients received GA, 44.2% received spinal anaesthesia, and 3.4% received both spinal and GA.[9] The distribution of this variation suggests that, whilst some institutions are strongly committed to one mode of anaesthesia, many do not appear to adopt a 'standard' approach.

One explanation for this variation may be that there is no convincing evidence that either regional or GA is superior. The most recent Cochrane review concluded that the only benefit to regional anaesthesia is a lower rate of venous thromboembolism in the absence of pharmacological thromboprophylaxis.[10] This is in contrast to the recent International Consensus on Anaesthesia-Related Outcomes after Surgery review on anaesthesia for elective hip arthroplasty, which suggests that neuraxial anaesthesia is beneficial.[11]

It is likely that variations in practice within different modes of anaesthesia accounts for some of the difficulty in generating evidence to guide practice. This has led to calls to standardise both anaesthetic techniques and outcome measures.[12,13] However, it is also possible that anaesthesia has less of an impact than receiving timely surgery, high-quality orthogeriatric care and appropriate rehabilitation.

Although there is little evidence to favour either mode of anaesthesia, accumulating evidence suggests that the aims and techniques of anaesthesia (of either mode) are important in hip fracture repair.[6]

Proceeding with anaesthesia and surgery

As a result of the advanced age, frailty and comorbidity of many people with hip fracture, proceeding with anaesthesia and surgery may appear high risk. In some cases, patients may have been told they are 'not fit' for elective hip surgery. However, the risk of proceeding must be weighed against the risk of adopting a non-operative approach. In many cases, the risks of not operating are even higher, and non-operative management involves several weeks of painful immobilisation. Using NHFD data, Johansen and colleagues analysed the rates of in-hospital mortality according to ASA grade.[14] They found that 48.6% of patients with hip fracture who did not undergo surgical repair died in a hospital, compared with 6.6% of patients who underwent surgery. Although the excess mortality associated with non-operative management may relate to a higher burden of comorbidity, the mortality rate was 24.8% in patients of ASA 5 status who did undergo surgery. If one assumes that all non-operated patients are of ASA 5 status, this is a large reduction in expected mortality for this group. Because surgical hip fracture repair provides effective analgesia, we suggest that it is reasonable to proceed even when the procedure is deemed to be palliative, unless the patient is felt to be likely to die imminently (e.g. within 48 h).

Enabling timely hip fracture repair

Pain and immobility associated with an unrepaired hip fracture may lead to complications. The English BPT and the Scottish Hip Fracture Audit standards state that hip fracture repair should be undertaken within 36 h of admission, with the Irish Hip Fracture Database adopting a standard of 48 h,

Table 2 Intraoperative surgical and anaesthetic roles to reduce the risk of BCIS. Reproduced from the Association of Anaesthetists/BOA/BGS guideline.[20]

Conduct of surgery	Ask the anaesthetist to confirm that he/she has heard your instruction to the theatre team that you are about to prepare the femoral canal for cement and prosthesis insertion. Carefully prepare, wash, and dry the femoral canal. Use of a pressurised lavage system is recommended to clean the endosteal bone of fat and marrow contents. Use a distal suction catheter on top of an intramedullary plug. Insert the cement from a gun in retrograde fashion on top of the plug and pull the catheter out as soon as it is blocked with cement. Do not use excessive manual pressurisation or pressurisation devices in patients at higher risk of cardiovascular events.
Conduct of anaesthesia	Ensure that the patient is adequately hydrated before induction of and during anaesthesia. Maintain vigilance for possible cardiovascular events once the femoral head is removed and the surgeon has verbally indicated his/her intent to instrument the femoral canal. Confirm to the surgeon that you are aware of preparation of the femoral canal for cement and prosthesis insertion. Aim to maintain the systolic blood pressure within 20% of preinduction values throughout surgery, using vasopressors and/or fluids. Invasive blood pressure monitoring is indicated for patients at higher risk. Be ready to give vasopressors, e.g. metaraminol/adrenaline in case of cardiovascular collapse.

consistent with the recommendations of the Fragility Fracture Network.[1–3,7] Although these time frames are pragmatic and achievable, more stringent targets are gaining prominence. Using NHFD data, Sayers and colleagues demonstrated a 9.4% relative increase in 30-day mortality risk when hip fracture repair was undertaken >24 h after hospital admission.[15] Likewise, amongst patients with mild-to-moderate cognitive impairment, delaying surgery for more than 1 day increases the risk of delirium two-fold.[16] The Hip Fracture Accelerated Surgical Treatment and Care Track (HIP ATTACK) study, a large international RCT comparing complication rates when 'accelerated' hip fracture repair was undertaken (median: 6 h from diagnosis) with standard care (median: 24 h), did not demonstrate any benefit in terms of the risk of 90-day mortality or 'major complications'. However, the risk of delirium and the times to mobilisation and discharge were all significantly lower in the 'accelerated' group.[17]

Avoiding hypotension

The ASAP-2 study used NHFD outcome data to compare anaesthetic techniques as recorded in the ASAP.[9,18] No mortality benefit was found to either spinal anaesthesia or GA, but a statistically significant increase in 5- and 30-day mortality was associated with incremental decreases in the lowest recorded MAP. This is consistent with the findings of a recent systematic review including patients undergoing various types of surgerys, which demonstrated that mortality risk increases with a MAP <80 mmHg for >10 min.[19] In ASAP-2, lower MAP was weakly associated with using higher doses of intrathecal bupivacaine. The authors of this study therefore advocated lower-dose spinal (and general) anaesthesia, suggesting a reduction of the dose of intrathecal bupivacaine 0.5% 'towards 1.5 ml' (7.5 mg).[18] Although ASAP-2 does not allow us to conclude if the avoidance of hypotension (i.e. by using lower doses of anaesthesia) or its management (i.e. with fluids or vasopressors) yields equivalent benefits, it is reasonable to use the lowest practical dose of anaesthetic for the clinical situation, to have a low threshold for continuous arterial pressure monitoring and to treat hypotension proactively if it does occur.

Bone cement implantation syndrome (BCIS) is an important cause of cardiovascular (and respiratory) collapse during cemented hemiarthroplasty and total hip replacement, and to a lesser extent in any procedure involving instrumentation of the femoral canal (e.g. femoral nail). Risk factors include male sex, the use of diuretics, significant cardiopulmonary disease and increasing age. Uncemented prostheses should be considered for high-risk patients, although this increases the likelihood of pain on mobilisation and loosening of the prosthesis. Together with the British Orthopaedic Association (BOA) and the British Geriatrics Society (BGS), the Association of Anaesthetists has issued guidance on reducing the risk of BCIS (Table 2).[20]

Peripheral nerve block

The fascia iliaca compartment block (FICB), femoral nerve block and 3-in-1 block provide effective but incomplete analgesia in patients with hip fracture. This is because the innervation of the hip joint arises from both the lumbar and sacral plexuses. A multimodal strategy for analgesia is useful. However, both opioids and NSAIDs have greater potential to cause harm in the elderly. Both should be used with caution, particularly in the context of renal dysfunction.[6,7] The lateral cutaneous nerve of the thigh (LCNT) should be blocked for surgery, as it supplies the skin that is incised, although additional local anaesthetic infiltration is required if a posterior surgical approach (sometimes used for total hip replacement) is used (Table 3). Blockade of the LCNT can be achieved either directly or as part of the FICB. The Association of Anaesthetists advises that peripheral nerve blocks for hip fracture patients can be repeated after 6 h. It is therefore often appropriate to provide an FICB in the perioperative period even if it has been undertaken earlier, to reduce quadriceps femoris muscle spasm, facilitate positioning for anaesthesia and provide postoperative pain relief.[6]

Avoiding cognitive complications

Delirium affects a quarter of people with hip fracture and is associated with increased rates of adverse outcomes, including mortality and the need for residential or nursing care.[1] Furthermore, it is an unpleasant experience that is often remembered by patients, with the potential for long-lasting effects.[8] Timely hip fracture surgery appears to mitigate the risk of delirium, and the avoidance of brain

Table 3 Common hip fracture operations. *Also used to preserve the femoral head in young patients with displaced intracapsular fracture.

Operation	Fracture	Patient position	Reduction required before incision?	Approximate 'skin-to-skin' operating time (min)	Typical incision
Cannulated hip screws	Minimally displaced intracapsular*	Supine; high traction table	Minimal	45	Lateral
Dynamic (sliding) hip screw	Simple intertrochanteric	Supine; high traction table	Yes	45	Lateral
Intramedullary nail	Complex intertrochanteric or subtrochanteric	Supine; high traction table	Yes	60	High lateral; small distal incision for locking screw
Hemiarthroplasty	Displaced intracapsular	Lateral or supine; low table	No	60	Lateral
Total hip replacement	Displaced intracapsular in fit patients	Lateral or supine; low table	No	90	Lateral; may curve posteriorly

hypoperfusion attributable to hypotension may have a protective effect.[16,18] Many drugs used in anaesthesia may provoke or worsen delirium, including opioids and drugs with central anticholinergic activity, such as cyclizine, prochlorperazine and atropine.[21] Anaesthetists should therefore be mindful of the 'anticholinergic burden' of drugs and avoid the use of deliriant agents if possible. A multidisciplinary 'care bundle' approach focused on the provision of FICB and the avoidance of long-acting opioids, antihistamines, antipsychotics and anticholinergics, maintained through staff education and continuous audit, appears to be effective in preventing delirium.[22]

Controversies in hip fracture anaesthesia

Despite the advancing evidence base, a number of unanswered questions in hip fracture anaesthesia remain. Furthermore, there are practices that are reasonable in the care of patients with hip fracture, but may not align with other more generic guidelines. All of these dilemmas can be approached by adopting an anaesthetic technique that enables timely surgery, is sympathetic to frail physiology and that aims to avoid cognitive complications.

'Delay' *vs* 'optimisation'

Timely repair of hip fracture provides analgesia, and is associated with reduced mortality and complications overall.[15,16] However, studies that analyse the time from admission to surgery tend not to assess what is done during this time. Some suggest that the reason for delay may be more important than the delay itself, and argue that, although timely surgery is emphasised in national standards, delaying surgery may be appropriate if effective optimisation is undertaken during this time. However, achieving this in patients with hip fracture is resource intensive and reliant on a well-staffed orthogeriatric service, which may not be achievable in all settings. Furthermore, despite the burden of comorbidity common to patients with hip fracture, there is often little that can be effectively optimised whilst the patient remains in pain and immobile, and those conditions that can be optimised can often be addressed promptly (e.g. transfusion for preoperative anaemia). Delays should therefore be uncommon and contingent on a treatment plan, which should be time bound and carefully balanced against the risk of delay. This should be discussed and agreed amongst the multidisciplinary team.

Anaemia and blood transfusion

Preexisting anaemia is common, and compounded by acute blood loss from the fracture and surgery. Extracapsular fractures and more complex surgery are associated with greater reductions in haemoglobin concentration. Anaemia can provoke organ ischaemia and delay functional recovery, particularly in frailer patients. However, transfusion is associated with well documented risks. Multiple studies have assessed the association between haemoglobin concentration and outcome in patients with hip fracture, with the most recent Cochrane review finding no clear benefit to either 'restrictive' (around 10 g dl^{-1}) or 'liberal' (around 8 g dl^{-1}) transfusion thresholds, aside from 'very low quality' evidence of a lower risk of myocardial infarction in the liberal group.[23]

The Association of Anaesthetists guideline states that, although younger, fitter patients may be able to tolerate lower perioperative haemoglobin concentrations, a target of 9 g dl^{-1} should be adopted for frailer patients. This target is increased to 10 g dl^{-1} for patients with a history of ischaemic heart disease, or who are unable to mobilise because of fatigue or dizziness on the first postoperative day.[6]

Strategies to reduce blood loss include expediting surgery and minimising operating time, and the use of tranexamic acid. Although tranexamic acid reduces transfusion requirements, there is less certainty regarding any associated increase in the risk of thrombotic events in patients with hip fracture, and future research is therefore required.[24] We suggest that tranexamic acid be considered in patients who are at higher risk of bleeding and complications of anaemia.

Undiagnosed cardiac murmur

Approximately 25% of patients with hip fracture have an audible cardiac murmur on examination; often, no

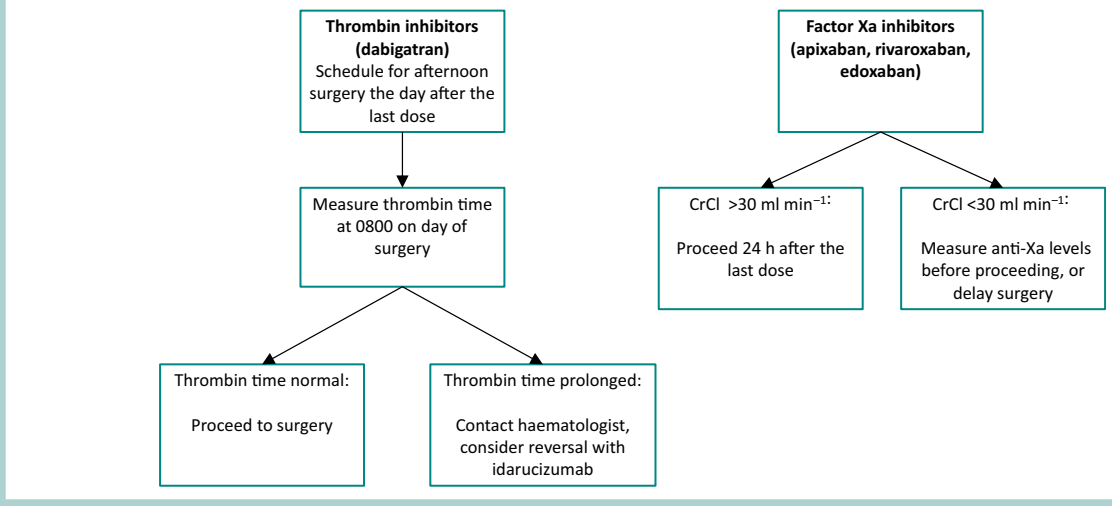

Fig 1 DOACs and spinal anaesthesia. Adapted from the Association of Anaesthetists guideline.[6]

documented assessment of the valvular lesion is available and a history of concerning clinical features (e.g. chest pain, reduced exercise tolerance and syncope) may be difficult to elicit. In these cases, obtaining a preoperative echocardiogram has the potential to influence anaesthetic management, as demonstrated by the ECHONOF-2 pilot study, and if this can be accomplished promptly, it is an appropriate preoperative investigation.[25] However, surgery should not be delayed pending the results of echocardiography for undiagnosed murmurs; anaesthesia should instead proceed with invasive blood pressure monitoring and particular attention paid to maintaining cardiovascular stability through the use of lower doses of anaesthesia, i.v. fluids and vasoactive drugs as appropriate.

Anti-platelets, anticoagulants and spinal anaesthesia

Many people with hip fracture are prescribed antiplatelet or anticoagulant medications. Guidelines on regional anaesthesia and anticoagulation that are not hip fracture specific tend to adopt a conservative approach when defining what is considered 'safe'. Whilst this approach is undoubtedly appropriate in the elective setting, the excess morbidity and mortality associated with delaying surgery should be weighed against the very small (although serious) risk of vertebral canal haematoma. The Association of Anaesthetists guideline therefore adopts a pragmatic approach to anticoagulation when spinal anaesthesia is deemed superior to GA (e.g. severe chest disease) for a patient awaiting hip fracture repair:[6]

(i) Single antiplatelet therapy, including clopidogrel, is not a contraindication to spinal anaesthesia. Spinal anaesthesia may be appropriate for patients taking dual antiplatelet therapy for who are unsuitable for GA, on a risk/benefit basis.

(ii) For patients taking vitamin K antagonists, spinal anaesthesia can be undertaken once the international normalised ratio (INR) is ≤1.5. Those patients presenting with an INR of >1.5 should receive an initial dose of vitamin K as soon as possible (i.e. in the emergency department), with further vitamin K or prothrombin complex concentrate if the INR remains >1.5 after 4–6 h. Bridging therapy (e.g. heparin infusion) is not usually required for patients with uncomplicated atrial fibrillation or previous venous thromboembolism, but may be required for more complex patients (e.g. with a metallic heart valve).

(iii) Direct-acting oral anticoagulant (DOAC) activity cannot be reliably assessed using standard coagulation tests. However, unless the patient has severe renal dysfunction (i.e. creatinine clearance <30 ml min^{-1}), the pharmacokinetics of DOACs are reasonably predictable and spinal anaesthesia can be provided after two half-lives have elapsed. The time of the last dose of DOAC should therefore be confirmed, and spinal anaesthesia can usually be undertaken on the following day (Fig. 1).

Conduct of spinal anaesthesia

Drawing on contemporary guidelines from the Association of Anaesthetists, the ASAP adopted a standard dose of bupivacaine ≤10 mg for use in spinal anaesthesia, and stated that, if used, intrathecal opioids should be limited to fentanyl.[9] Although there is a clear rationale for this approach to avoid complications, such as hypotension, delirium and urinary retention, the ASAP found that a median dose of 2.5 ml bupivacaine 0.5% (12.5 mg) was used, and 49.7% of patients received intrathecal diamorphine. This tendency to adopt a higher dose approach is likely to be attributable to concerns that the duration of spinal anaesthesia may not be sufficient for the proposed surgery when bupivacaine <10 mg is used.[8] However, the comparison of Ben-David and colleagues of two regimens for spinal anaesthesia demonstrated that both bupivacaine 4 mg plus fentanyl 20 μg, diluted with saline 0.9% to a total volume of 2 ml (described as 'mini-dose' spinal), and 2 ml glucose-free bupivacaine 0.5% (10 mg) without opioid are sufficient for hip fracture surgeries lasting up to 110 min after injection, with fewer interventions for hypotension required in the mini-dose group.[26] These findings suggest that lower

doses are both practical and desirable, particularly when used in combination with FICB, which provides additional analgesia in the event that surgery is prolonged. It is nevertheless useful to account for the likely duration of hip fracture repair surgeries (including that durations may be prolonged in teaching cases), and to note that procedures requiring fracture reduction before incision may require the anaesthetic to last substantially longer than the operating time itself (Table 3). The predicted operating time, and the time taken to position the patient and prepare the surgical field, should be communicated effectively during the 'team brief'. When surgery is unexpectedly prolonged, additional infiltration of local anaesthetic, cautious administration of systemic analgesics and conversion to GA are all acceptable strategies for maintaining the patient's comfort. This does not represent a 'failure' of low-dose spinal anaesthesia, but an adaptation to the intrinsic uncertainties of trauma surgery.

According to the ASAP, sedative drugs were given to 74% of patients who underwent spinal anaesthesia, with benzodiazepines, propofol, ketamine and opioids all commonly used.[9] Over sedation in patients with hip fracture is common, and the role of sedative and analgesic medications in postoperative delirium is well described. In one comparison of 'lighter' *vs* 'heavier' sedation (assessed clinically) during hip fracture repair, heavier sedation doubled the risk of postoperative delirium in patients with a low burden of comorbidity, although there was no significant difference in more unwell patients.[27] Considering that comfortable positioning for spinal anaesthesia can be reliably achieved with peripheral nerve block (e.g. FICB), and that many patients fall asleep once spinal anaesthesia has been established, sedative drugs can be avoided in most cases. We therefore suggest that sedatives should be used with caution and limited to short-acting, titratable agents; propofol by target-controlled infusion is ideal.

Conduct of GA

The aims of GA are similar to those of spinal anaesthesia: hypotension and deliriant drugs should be avoided if possible, and anaesthetic doses should be sympathetic to the limited physiological reserve of patients with hip fracture. Strategies to optimise anaesthetic dose include depth of anaesthesia monitoring, using age-adjusted minimum alveolar concentration values for volatile anaesthesia, and carefully titrating induction agents against clinical and EEG-based assessments of anaesthetic depth. Peripheral nerve blocks help to minimise the required dose of both anaesthetic agents and opioids by reducing nociception during surgery and providing effective postoperative analgesia, and should be performed before or shortly after the induction of anaesthesia.

Maintaining spontaneous respiration minimises the risk of atelectasis, barotrauma and any hypotension associated with positive-pressure ventilation. This can be achieved with either an inhalational or titrated i.v. induction, either manually or by using a target-controlled infusion. Because patients may not be able to give a history of risk factors for aspiration, the effects of trauma and opioid analgesia may delay gastric emptying, and there is often limited access to the airway because of patient positioning (Table 3); there is an argument for adopting a low threshold for tracheal intubation. This can be achieved in combination with spontaneous breathing by using deep inhalational induction or topical anaesthesia of the airway. If intubation is deemed to be not required, using a second-generation supraglottic airway that provides additional protection against aspiration is an appropriate approach.

Postoperative recovery

Despite improvements in outcomes in recent years, hip fracture surgery remains high risk.[1] This raises the question of whether patients with hip fracture should receive high-dependency care after surgery, as would now routinely be the case for patients with a similar predicted mortality risk after emergency abdominal surgery. Adopting this approach on a universal basis would require resources that, at present, are unavailable in many healthcare systems. Other drawbacks include environmental factors in the critical care unit (e.g. monitors, alarms and frequent night-time interruptions), which may make delirium more likely in susceptible patients. We therefore suggest that postoperative critical care should be considered case-by-case for the management of specific reversible conditions, after risk assessment and in consultation with the multidisciplinary team.

It is very important to provide a structured postoperative management pathway, aiming for early remobilisation, rehabilitation and maintenance of the patient's prior cognitive function.[7] This approach is probably more important than providing postoperative critical care. The early involvement of orthogeriatricians, occupational therapists and physiotherapists is important, and postoperative screening for delirium as specified in the English BPT (Table 1) facilitates the early management of cognitive problems. Anaesthetists should be mindful of enabling postoperative recovery through their anaesthetic technique. To this end, there is an argument for providing anaesthesia in a consistent way on an institutional basis, so that those involved in recovery and rehabilitation after hip fracture are better able to anticipate patients' postoperative needs.

Consent and hip fracture anaesthesia

Informed consent for hip fracture anaesthesia presents several challenges; cognitive impairment is commonplace and mental capacity may fluctuate. Patients may not always wish to engage in a comprehensive discussion of risk, as this may provoke unnecessary anxiety at an already stressful time.[8] It is often appropriate to involve family members or other advocates in the consent process, and to establish how much the patient wishes to know at an early point in the discussion. Any discussion of risk should be individualised to address 'material risks' (i.e. those important to the patient), being mindful of the specific complications associated with hip fracture surgery (e.g. the high rate of postoperative cognitive complications).[28] Risk stratification tools, such as the Nottingham Hip Fracture Score, may be useful, including by providing a basis for reassurance in lower-risk cases.[29]

Patients should be offered a choice of the 'reasonable options' for their management (and the option to do nothing).[28] This may involve a discussion of both general and spinal anaesthesia, and peripheral nerve blocks and sedation. Whilst patients should have a free choice, we suggest it is reasonable

for the anaesthetist to explain what technique is usually provided at their institution, and the benefits that this may offer in terms of integrating peri- and postoperative care.

The patients' experience of hip fracture anaesthesia has been studied, and qualitative research suggests that postoperative complications (e.g. pain, delirium and reduced mobility) are more important to patients than the mode of anaesthetic itself.[8] This indicates a need to routinely follow up patients, perhaps by measuring their experience of anaesthesia using tools, such as the Bauer questionnaire, and screening for complications, so that anaesthetists are able to optimise their practice accordingly.

Conclusion

Outcomes after hip fracture have improved in recent years, and anaesthetists should be congratulated for their contribution to this success. However, there remains room for improvement; the number of hip fractures is projected to increase in coming decades, and the complexity of hip fracture cases appears also to be increasing. Future work should focus on meeting these challenges by improving the quality and consistency of anaesthetic care, and providing trainees with specific education in hip fracture anaesthesia. By building capacity and expertise in anaesthesia for the elderly, we will enable our specialty to accommodate the changing demographics of patients with hip fracture and address the challenges that this presents.

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Declaration of interests

CS is a former member of the editorial board of *BJA Education*. SW is a member of the Association of Anaesthetists working party on the management of hip fractures.

MCQs

The associated MCQs (to support CME/CPD activity) will be accessible at www.bjaed.org/cme/home by subscribers to *BJA Education*.

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