

Controversies in anaesthesia for noncardiac surgery in older adults

S. Murthy^{1,*}, D. L. Hepner², Z. Cooper³, A. M. Bader² and M. D. Neuman¹

¹Department of Anesthesiology and Critical Care, The University of Pennsylvania, 6 Dulles, 3400 Spruce Street, Philadelphia, PA 19104, USA, ²Department of Anesthesiology, Perioperative and Pain Medicine, and ³Department of Surgery, Brigham and Women's Hospital, 75 Francis Street, Boston, MA 02115, USA

*Corresponding author. E-mail sushila.murthy@gmail.com

Abstract

As the population of the world is rapidly ageing, the amount of surgery being performed in older patients is also increasing. Special attention is required for the anaesthetic and perioperative management of these patients. The clinical and non-clinical issues specific to older surgical patients are reviewed, with a special emphasis on areas of debate related to anaesthesia care in this group. These issues include the role of frailty and disability in preoperative assessment, choice of anaesthesia technique for hip fracture, postoperative delirium, and approaches to shared decision-making before surgical procedures.

Key words: ageing; anaesthesia; frail elderly; geriatric anaesthesia; hip fracture

Editor's key points

- Measures of frailty can predict a range of adverse outcomes after surgery and might ultimately help guide care to minimize complications and accelerate recovery.
- Substantial uncertainty remains regarding the advantages and disadvantages of neuraxial anaesthesia compared with general anaesthesia as the primary anaesthetic for hip fracture surgery in the elderly.
- The aetiology and long-term outcomes of postoperative delirium remain to be described in high-quality studies.
- Shared decision-making can make explicit the critical decisions required in the perioperative management of elderly patients with significant comorbidities.

The average age of the population of the world, particularly in Western countries, is increasing. According to the US Census, the population age 65 yr and older is expected to more than double between 2014 and 2060, increasing from 47.8 million

(14.8% of the total population) to 98.1 million (23.6%). Those 85 and older are projected to more than triple from 6.3 million (2.0%) to 19.7 million (4.7%).¹ The US National Hospital Discharge Survey showed that in 2010, patients age 65 yr and older constituted 33% of hospital discharges and 44% of days of inpatient care.² Moreover, the amount of surgery performed in older patients is increasing at a rate greater than the aging of the population.^{3,4} As such, the care of older surgical patients is of increasing importance.

In the context of anaesthesia and perioperative care, the older adult population has been the focus of intense debate over the past decade with regard to optimal approaches to care, both from the perspective of clinical outcomes and regarding appropriate utilization of health-care resources.⁵ We review current work on the following four areas of active debate in the research literature related to geriatric anaesthesia: (i) the role of frailty in preoperative assessment; (ii) approaches to anaesthesia for hip fracture surgery; (iii) the effects of anaesthesia on the ageing brain; and (iv) shared decision-making in the perioperative setting (Table 1).

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Table 1 Guidelines and practice suggestions pertinent to the perioperative care of older adults

Preoperative assessment of older adults

1. Optimal preoperative assessment of the geriatric surgical patient: a best practices guideline from the American College of Surgeons National Surgical Quality Improvement Program and the American Geriatrics Society (2012)¹⁷

Frailty

1. Frailty for surgeons: review of a National Institute on Aging conference on frailty for specialists (2015)²³

Management of hip fractures

1. NICE Guidelines: hip fracture: the management of hip fracture in adults (2011)⁴⁹
2. Falls and fragility fracture audit programme national hip fracture database; Anaesthesia Sprint Audit of Practice (2014)⁴⁴
3. The American Academy of Orthopaedic Surgeons evidence-based guideline on management of hip fractures in the elderly (2015)⁵⁵

Postoperative delirium

1. Postoperative delirium in older adults: best practice statement from the American Geriatrics Society (2015)⁶⁵

Decision-making

1. Beyond 30-day mortality: aligning surgical quality with outcomes that patients value¹⁰²
2. A values-based conceptual framework for surgical appropriateness: an illustrative case report⁹⁰

Frailty and disability in preoperative assessment for older adults

Concepts of preoperative risk assessment for older surgical patients have changed markedly over time.⁶ Before the late 1970s, assessments typically focused on general concepts of risk related to the overall health of the patient and physicians' judgements regarding survival prognosis. Beginning with the publication of Goldman's landmark Cardiac Risk Index in 1977, preoperative risk assessment took on a more quantitative and organ-specific focus, with subsequent proliferation of risk scoring systems for cardiac,⁷ pulmonary,⁸ renal,⁹ and neurological¹⁰ events. Alongside these risk-stratification systems, expert guidelines on risk assessment in the perioperative setting have largely focused on characterizing and mitigating the risk of specific organ-based complications, such as perioperative myocardial infarction.¹¹

A growing integration of concepts drawn from geriatrics and gerontology into surgical and anaesthetic practice has led to a recognition of the role of progressive, systemic geriatric syndromes, such as frailty and baseline disability, in providing prognostic insights for older surgical patients not captured by organ-based risk scoring systems.¹² In this context, 'frailty'—defined as a syndrome of progressive multisystem decline leading to decreased physiological reserve and poor ability to respond to physiological stressors—has emerged as a central concept in research on surgical outcomes for older patients. In a general sense, frailty exists as a concept separate from both co-morbidity and disability and does not represent a consequence of normal or healthy ageing (Figure 1).^{13–15} In non-surgical populations, frailty is predictive of poor health outcomes, including falls, reduced mobility, hospitalizations, institutionalized discharge, and mortality.^{16–17}

More recently, researchers have begun to translate frailty concepts from the medical literature to the perioperative setting, finding that available measures of frailty predict a range of adverse outcomes after surgery, including postoperative medical complications,^{18–20} increased length of stay,¹⁸ and short- and long-term mortality.^{21–22} As a result of the growing recognition of the potential importance of frailty as a marker of adverse postoperative outcomes, the American Geriatrics Society (AGS) and the National Institute on Aging (NIA) carried out a major consensus conference in 2015 on 'Frailty for Specialists', which defined

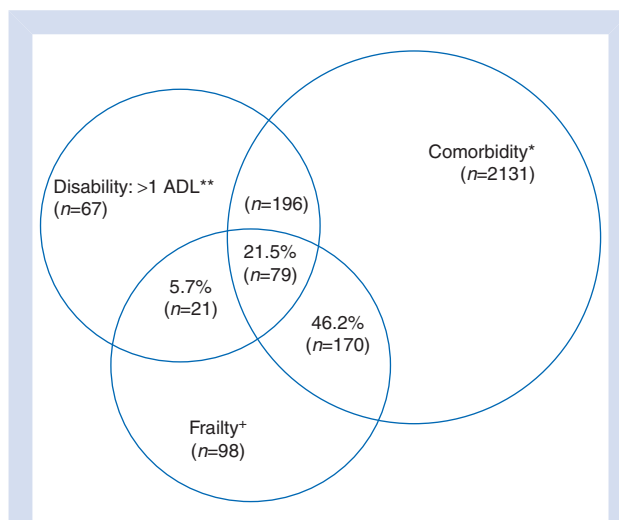


Fig 1 Prevalences—and overlaps—of co-morbidity, disability, and frailty among community-dwelling men and women aged 65 yr and older participating in the Cardiovascular Health Study. Percentages listed indicate the proportion among those who were frail ($n=368$), who had co-morbidity, disability, or both, or neither. Total represented: 2762 participants who had co-morbidity, disability, frailty, or a combination of these. * $n=368$ frail participants overall. * $n=2576$ overall with two or more of the following nine conditions: myocardial infarction, angina, congestive heart failure, claudication, arthritis, cancer, diabetes, hypertension, and chronic obstructive pulmonary disease. Of these, 249 (total) were also frail. ** $n=363$ overall with an activity of daily living (ADL) disability; of these, 100 (total) were also frail. Reprinted from Fried and colleagues, by permission from Oxford University Press on behalf of the British Journal of Anaesthesia.¹⁴

an ultimate long-term goal of 'incorporating frailty assessments into the preoperative flow'.²³ Moreover, the American College of Surgeons-National Surgical Quality Improvement Program (ACS-NSQIP/AGS) 2012 Guidelines for the Optimal Preoperative Assessment of the Geriatric Surgical Patient specify a baseline frailty evaluation as a critical component of preoperative care for older adults.¹⁷

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