

## Commentary: Optimizing perioperative care for elderly patients with a hip fracture: future directions?

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The annual prevalence of hip fractures rises to more than 1.5 million worldwide and ranges between 307 to 1269/ 100 000 in European countries<sup>1</sup>. In Belgium, around 15 000 hip fractures are recorded each year, associated with significant morbidity and mortality rates<sup>2</sup>. The prevalence is expected to increase with the aging population, making it a growing public health issue as mentioned by the World Health Organisation, WHO ("decade of healthy ageing"; <https://www.who.int/ageing>)<sup>1</sup>. Hip fractures principally concern the elderly population with 80% of patients aged 70 and over and reporting at least one comorbidity<sup>1</sup>. More, at least two-thirds of elderly patients with a hip fracture fulfill criteria for American Society of Anesthesiologists (ASA) status III and 10% have criteria of ASA status IV (life-threatening comorbidities). By consequence, anesthesia that is necessary to fix the fracture in these fragile patients may be challenging.

The benefits of hip fracture operative repair include reduced complication rate (i.e., pulmonary complications, cognitive dysfunctions...) and decreased mortality, improved mobility and better long-term pain control. In other words, hip fracture fixation improves patient outcome. It is worth noting that in older people, age and ASA status do not predict adverse postoperative outcomes, mortality and quality of life after surgery. Morbidity and mortality in older patient are better predicted by frailty status<sup>3,4</sup>. Frailty is a preoperative risk factor for poor surgical outcomes in older adults and is associated with increased length of stay, functional decline, delirium, adverse cardiovascular outcomes and mortality<sup>3,4</sup>. Frailty average prevalence in elderly patients over 70 years old stands around 10 to 14% and as regards hip fracture, more than 50% of the patients could be categorized as frail. In the recent literature, preoperative frailty has been associated to a 5-time higher risk of experiencing severe postoperative pain, suggesting that frail older patients may need additional resources to improve postsurgical pain outcomes<sup>5</sup>.

Hip fractures cause moderate to severe pre- and post-operative pain which poorly relieved may negatively affect patient's outcome. Several barriers like polypharmacy and modified drugs metabolism, are present that may prevent the optimal management of pain in geriatric patients. More, cognitively impaired patients receive later and lower doses of analgesics than elderly patients with intact cognitive function when presenting to the Emergency Department with an acute hip fracture<sup>6</sup>. Awareness of these problems is mandatory.

In this issue, the PROSPECT (Procedure-Specific Postoperative Pain Management) group questions the optimal perioperative management of elderly patients presenting with hip fracture<sup>7</sup>. The available literature from 2005 until 2021 has been reviewed by a group of experts including both anesthesiologists and surgeons. In this review, the balance between the benefits and the risks of each proposed analgesic drug or technique has been taken into account. The present PROSPECT recommendations also point out important questions. First, the recommendations are based on the available literature and rely on the quality

of published studies. As highlighted by the authors, hip fracture repair includes various surgical techniques with different invasiveness depending on the type of fracture (e.g., percutaneous pinning, dynamic hip screw, intramedullar nailing, hemiarthroplasty and total hip arthroplasty). However, the available literature does not take into account the hip fracture location and the best analgesic intervention to control the associated pain. Furthermore, the presence or not of pre-operative frailty status has not been considered when assessing the benefit of a determined perioperative analgesic treatment. Finally, there is currently a major need for a better understanding of older adults quality of life and recovery after surgery<sup>5</sup>. Beyond postoperative pain control after hip fracture repair, the real benefits of the proposed analgesic interventions have not been assessed in specific geriatric domains like cognition and function<sup>3,4</sup>. These limitations certainly argue for further well designed studies on the topic.

By example, contrasting to other PROSPECT recommendations, perioperative administration of corticoids is not discussed in the context of hip fracture repair due to a lack of evidence<sup>7</sup>. Neuroinflammation however plays a major role in delirium and perioperative cognitive dysfunctions associated with hip fracture in elderly patients. Recent studies seem to demonstrate a reduction of postoperative delirium severity but not delirium occurrence (15% in the treatment group versus 23% in the placebo group) in patients with hip fracture who have received perioperative dexamethasone<sup>8</sup>. Targeting an optimal perioperative pain control might also affect persistent pain and even chronic postsurgical pain. Chronic pain is very common after hip fracture repair (60% at 3 months and 45% at 6 months)<sup>9</sup>. Severe pain related to mobilization and pain catastrophizing seem to predict the risk of persistent pain<sup>10</sup>. As survival rate may increase in this population thanks to an optimized multidisciplinary management, the problem of persistent pain on the rehabilitation and the quality of life might become more prominent and should deserve more attention .

To conclude, in this issue, Pissens et al have summarized the current literature on the best perioperative management for elderly patient undergoing hip fracture repair<sup>7</sup>. Nevertheless, it is mandatory to remember that many of these patients are frail. In addition to adequate analgesia, targeting frailty improvement (i.e., treating anemia, correcting malnutrition) with a multidisciplinary approach may affect the patient postoperative recovery. More, future studies should assess the impact of perioperative analgesic interventions on specific geriatric domains, mostly cognition, function and autonomy.

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