

Persistent Perioperative Cognitive Impairment: Prevention, Management and Sharing With Patients

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Persistent perioperative cognitive impairment (POCI) is an emergent but well-documented phenomenon, especially among older people undergoing surgery and anaesthesia. Estimates of POCI are variable but generally of appreciable clinical significance. In a 2008 study the syndrome was present in 41.4% of patients aged 60 or older undergoing non-cardiac surgery: at 3 months it persisted in one-eighth of this group¹. Higher rates of death were associated with POCI in the first year postoperatively.

The International Studies of Postoperative Cognitive Dysfunction studies and subsequent studies demonstrated that up to one quarter of older patients undergoing non-cardiac surgery displayed cognitive impairment at week 1 post-operatively and 10% at 3 months²: rates are considerably higher with cardiac surgery. As well as substantial distress to patients and their families, transient and persistent POCI is associated with a higher six-month mortality rate, longer hospital stays, increased cost and institutionalisation.

This has significant implications on urgent and elective surgery in terms of prevention and management as well as informing older people so that they have the opportunity to factor in this possible complication in the consent process. There is emerging concern that this complication of surgery is not adequately outlined to patients in current practice³.

The main syndromes underlying POCI are delirium, persistent brain injury short of a dementia syndrome, and the emergence or exacerbation of a dementia syndrome. A recent international working group proposed using the DSM V terminology of neurocognitive deficit, but this term has not yet had notable traction in clinical practice in the British Isles⁴. There can be significant interaction between these syndromes on the basis of diminished cognitive reserve.

Delirium is a medical emergency and should be treated accordingly, although it can be difficult to separate a delirium from persistent POCI until assessment and treatment of risk factors for delirium have been completed, and recovery to baseline occurs.

Persistent POCI can be defined as a non-resolving cognitive impairment following a surgical procedure. The impairment ranges from subtle impairment in memory, concentration and the processing of information to more substantial deficits. Diagnosis relies on a high index of clinical suspicion for a relatively common complication, use of cognitive screening tools, and routine use of informant history to establish baseline cognition and function as well as change from baseline and recovery.

The aetiology of POCI is multi-factorial, with risk factors including increasing age, lower educational level, previous stroke, and a history of delirium, mild cognitive impairment or dementia. Inflammation⁵ and pain postoperatively are two major contributory factors representing potential targets for prevention and treatment⁶. A newly recognized phenomenon is perioperative covert stroke affecting almost one in fourteen of a large series of patients over the age of 65. At 1 year follow-up POCI was found in 42% of patients with covert stroke, a higher proportion than among those who did not suffer a covert stroke⁷.

The most important imperative in prevention and management of POI is the development of closer working practices of perioperative disciplines with those with expertise in ageing and the management of neurocognitive disorders. This has been recognized by the Association of Anaesthetists of Great Britain and Ireland (AAGBI), and there is an increasing interest in the development of perioperative medicine as a sub-specialty in geriatric medicine⁸. The AAGBI guidelines recommend a clearly defined lead in each department of anaesthesia for perioperative care of cognitively impaired adults and engagement with relevant disciplines (surgery, geriatric medicine, old age psychiatry, specialist nursing and allied health professionals).

A key change in practice is the inclusion of the risk of POI as a potential complication in discussion and consent processes prior to surgery. The first step in preventing POI is the decision to undertake surgery. Before surgery is undertaken the benefits must be shown to outweigh the possible risks, including POI. A concern that needs thoughtful consideration is the management of fear surrounding the risk of POI which might lead patients to refuse surgery that otherwise had benefits to their health.

Pre-operative assessment for older people should include assessment of function for the detection of cognitive impairment and establishing a baseline. A comprehensive geriatric assessment (CGA) and intervention approach yields significant reductions in length of stay, delirium, cardiac complications, bladder/bowel complications and nursing home discharge⁹. It is unclear whether there is any valid shorter screen that might triage those most likely to benefit from CGA, although this would potentially be worthwhile¹⁰.

There is no convincing evidence that any one anaesthetic drug or technique is superior in reducing risk of POI. Nor indeed is there strong evidence to support a regional technique over general anaesthesia. Common sense would dictate that careful titration of anaesthesia drug doses may reduce likelihood of over-exposure and there is some evidence that monitoring the depth of anaesthesia with bispectral index may be helpful in this regard. In addition to direct effect of drugs on the brain there is increasing interest in the role of the inflammatory response to surgery and anaesthesia⁵ as an important aetiological factor.

In the absence of any one proven strategy to reduce POI we must continue to ensure that careful attention is paid to adequate anaesthesia and pain control, avoiding sedating medications such as benzodiazepines, and scrupulous management of fluid balance avoiding both hypovolaemia and fluid overload. This may be facilitated by adapting a Goal Directed Fluid Therapy strategy. These and other measures are incorporated into Enhanced Recovery After Surgery (ERAS) programmes which have been shown to reduce stress and inflammatory response to surgery and are now accepted as best practice

POI is an important consideration for patients undergoing surgery and should be considered as part of the preoperative assessment and consent process. In patients over 65 years we must focus our efforts on identifying those at risk of POI, optimizing perioperative risks factors through use of ERAS programmes. and early detection in the post operative period. This will be best facilitated in the context of a perioperative medicine team approach. In addition, POI should be factored into major audits and prospective studies of surgical care.

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