

(NHIRD) started to enrol patients. For those who received anaesthesia, the date of their first anaesthesia exposure after 2004 was used as the index date. Each exposed/unexposed matched set had the same index date, and was tracked for the emergence of dementia for the same period of time, until the end of 2010. Therefore, the results of our study would not be biased by excluding those with diagnoses of dementia at any time prior to 31 December 2007 from being potential controls. *In vitro* and animal studies provided evidence that anaesthetic agents might accelerate the onset and progression of Alzheimer's disease. However, whether anaesthesia and surgery contribute to the development of long-term cognitive decline in humans remains controversial. Some human studies showed a positive association between anaesthesia and the development of dementia,^{1,2} whereas others suggest a lack of association,^{3,4} just as Sprung *et al* mentioned. This is a difficult topic to study in humans, and all observational studies in this area have substantial limitations. In our study, the analysis of large population-representative data-sets could provide statistically sound information. The NHIRD has been used extensively in many epidemiological studies in Taiwan.^{5,6} However, as we stated,⁷ several caveats merit attention in the interpretation of our results. First, age and the prevalence of comorbidity were higher in the anaesthesia group than in the control group. Solely adjusting for these factors might not have fully controlled for group differences. Second, it is possible that patients who underwent surgery were followed up more frequently, which could have allowed more opportunities for dementia diagnosis. Third, the NHIRD is a medical claim database, and it is possible that some people with Alzheimer's disease were misdiagnosed. However, such diagnoses were established mostly by board-certified neurologists or psychiatrists after laboratory, neuropsychological tests and brain imaging to exclude dementia due to other causes and accepted in light of applications for reimbursement for dementia prescription medication. Additionally, variability in diagnosis of dementia would be expected to be similar in both the anaesthesia and control groups.

Our study showed a positive association between anaesthesia and surgery and dementia, but caution must be exercised in asserting causality. There are some possibilities; first, as supported by evidence of *in vitro* and animal studies, anaesthesia and surgery accelerate the onset of dementia development. Anaesthesia and surgery are inseparable in clinical settings. Thus, it is difficult to establish whether the increased risk of dementia was attributable to anaesthesia *per se*, the surgical process or both. Second, surgery

with anaesthesia shares some common features with dementia pathology, such as old age and involvement of inflammatory processes. The other possible explanation for the positive association is that patients are more susceptible to surgical illness prior to a clinical diagnosis of dementia. Thus, some comorbidities associated with Alzheimer's disease might cause patients to be more prone to surgical intervention.

Sprung *et al* argued that some minor procedures, such as ophthalmological and dermatological surgery, were associated with risk, but major surgery such as cardiac and respiratory procedures were not. The interpretations of this result were limited because the case numbers in these surgery subgroups were small ($n = 5-36$). As to the mode of anaesthesia, there has been an ongoing debate as to whether regional anaesthesia is superior to general anaesthesia in relation to the incidence of cognitive decline; previous studies have shown inconsistent results. Therefore, further studies need to be conducted to address all of the above-mentioned controversial issues.

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Correction

The Maudsley Reader in Phenomenological Psychiatry (book review). *BJP*, 204, 84. The fourth sentence, third paragraph should read: First, they sketch the philosophical prehistory with extracts from such thinkers as Franz Brentano, Wilhelm Dilthey, Max Weber and Henri Bergson, all of whom broadly felt that the natural sciences were unable to provide a full explanation of humanity.

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