

# Anesthesia, surgery linked to decline in memory and thinking

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In adults over 70, exposure to general anesthesia and surgery is associated with a subtle decline in memory and thinking skills, according to new Mayo Clinic research. The study analyzed nearly 2,000 participants in the Mayo Clinic Study of Aging and found that exposure to anesthesia after age 70 was linked to long-term changes in brain function. The results appear in the *British Journal of Anaesthesia*.

Although the decline in [brain function](#) was small, it could be meaningful for individuals with already low cognitive function or pre-existing [mild cognitive impairment](#) who are considering surgery with [general anesthesia](#), the researchers note. In [older adults](#) with borderline cognitive reserve that is not yet clinically obvious, exposure to anesthesia and surgery may unmask underlying problems with memory and thinking.

"We need to be sure that patients considering surgery, and their families, are properly informed that the risk of cognitive dysfunction is possible," says Juraj Sprung, M.D., Ph.D., a Mayo Clinic anesthesiologist, who is the study's senior author.

"In addition, alternative strategies should be discussed with patients before surgery is undertaken for those deemed to be at high risk. This study provides further reasons for clinicians to start performing routine preoperative cognitive evaluations of the elderly to further clarify an individual's risk of exposure to surgery and anesthesia. This initiative has been endorsed by the American Geriatrics Society but was not widely put into clinical practice."

The link between exposure to anesthesia and surgery, and [cognitive decline](#) in older adults has been debated for many years. Animal studies have suggested that exposure to inhaled anesthetics may be related to brain changes linked to Alzheimer's disease; however, most previous studies in humans have not consistently shown association between anesthesia and impaired brain function.

In this study, researchers used resources from the Mayo Clinic Study of Aging, a long-term epidemiologic and population-based prospective study about cognitive changes related to aging. Participants in Olmsted County, Minnesota, undergo cognitive assessments at roughly 15-month intervals. The group included 1,819 participants, ages 70 to 89 at the time of study enrollment. The researchers analyzed whether exposure to surgery and anesthesia during the period 20 years before enrollment was associated with cognitive decline and whether exposure to anesthesia after study enrollment as an older adult was associated with a cognitive change. While older adults often experience cognitive decline associated as part of the normal aging process, decline following [exposure](#) to anesthesia and surgery was found to be slightly accelerated beyond that associated with normative aging.

The authors emphasized that it is not possible to determine whether anesthesia, surgery or the underlying conditions necessitating surgery caused

the decline.

**More information:** P.J. Schulte et al. Association between exposure to anaesthesia and surgery and long-term cognitive trajectories in older adults: report from the Mayo Clinic Study of Aging, *British Journal of Anaesthesia* (2018). [DOI: 10.1016/j.bja.2018.05.060](https://doi.org/10.1016/j.bja.2018.05.060)

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