

Anaesthetic technique important to prevent damage to brain

March 31 2014, by Kate Bourne

(Medical Xpress)—Researchers at the University of Adelaide have discovered that a commonly used anaesthetic technique to reduce the blood pressure of patients undergoing surgery could increase the risk of starving the brain of oxygen.

Reducing blood pressure is important in a wide range of [surgeries](#) - such as sinus, shoulder, back and [brain](#) operations - and is especially useful for improving visibility for surgeons, by helping to remove [excess blood](#) from the site being operated on.

There are many different techniques used to lower [patients'](#) blood pressure for surgery - one of them is known as hypotensive anaesthesia, which slows the arterial blood pressure by up to 40%.

Professor PJ Wormald, a sinus, head and neck surgeon from the University's Discipline of Surgery, based at the Queen Elizabeth Hospital, led a world-first study looking at both the effectiveness of hypotensive anaesthesia from the surgeon's point of view and its impact on the patients.

The study followed 32 patients who underwent endoscopic sinus surgery. The results have now been published online in the journal *The Laryngoscope*.

"There is an important balance in anaesthesia where the blood pressure is lowered so that the surgeon has good visibility and is able to perform

surgery safely. There are numerous sensitive areas in sinus surgery - the brain, the eye and large vessels such as the carotid. However, if the blood pressure is lowered too far this may cause damage to the brain and other organs," says Professor Wormald.

"We know from previous research that a person's brain undergoing anaesthesia has lower metabolic requirements than the awake brain, and therefore it can withstand greater reductions in blood flow.

"There is also a widely accepted concept that the brain has the ability to autoregulate - to adapt and maintain a constant blood flow as needed, despite a wide range of blood pressure conditions. Our studies challenge this; they show that the brain can only autoregulate up to a point, and cannot completely adapt to such low blood pressures.

"This drop in [blood pressure](#) poses a risk of starving the brain of much-needed [oxygen](#) and nutrients, which could result in injury. There have been cases, for example, where patients have reported memory loss following surgery.

"Given that hypotensive anaesthesia is a widely used technique, not just in [sinus surgery](#) but in many different types of surgery, we've made recommendations in our paper that suggest a safer approach to this technique. This would reduce risk to the patient while enabling the surgeon to carry out their work effectively," Professor Wormald says.

More information: onlinelibrary.wiley.com/journal/10.1002/ISSN291531-4995

Provided by University of Adelaide

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