



Ramp-Control Anaesthesia Technique Holds Promise



A new study published in *Anaesthesia & Analgesia* suggests that a simplified anaesthesia procedure can enable a more widespread use of preoperative testing to demonstrate the cause of airway obstruction in patients with severe sleep apnoea. Dr. Joshua H. Atkins and Dr. Jeff E. Mandel of the University of Pennsylvania have developed a new ramp control anaesthesia technique that puts patients to sleep for a brief amount of time. During this time, doctors can gauge the obstructive anatomy that might be responsible for sleep apnoea. This is a simple procedure that requires no significant expertise and limits drops in blood oxygen level during testing.

To date, a procedure called drug-induced sleep endoscopy (DISE) is performed to visualise the site of obstruction in the upper airway before apnoea surgery. During this procedure, stepwise doses of aesthetic are given to put the patient to sleep and to reproduce the airway obstruction causing apnoea. While this technique is effective, it sometimes becomes challenging to achieve the right dose which is just sufficient to cause sleep-related obstruction without causing prolonged unconsciousness or oxygen saturation. This procedure is also quite time-consuming and is not considered to be well-suited for widespread clinical use.

The ramp control technique, developed by the researchers at University of Pennsylvania, uses a computerised algorithm to calculate the two-dose sequence of anaesthetic administration necessary to produce sedation. The traditional DISE technique uses up to nine doses to achieve the same goal.

This anaesthetic technique was tested in 97 patients with a median of 48 apnoea-hypopnea events per hour and who participated in a robot-assisted surgery severe sleep apnoea. The patients had received no benefit from continuous positive airway pressure (CPAP). By using this new technique, doctors were able to photograph the obstructive anatomy in all 97 patients and were able to put them to sleep and demonstrate the cause within four minutes. In addition, the level of sedation was achieved without any undue drop in oxygen saturation levels. The median lowest oxygen saturation level was approximately 91% which is very close to the normal oxygen saturation of 95 to 100%.

The study showed that the ramp-control DISE technique was efficient and allowed doctors to successfully administer just enough anaesthetic to produce the desired level of sedation. This new technique was also safe with small drops in oxygen saturation levels. According to Dr. Atkins, "the effective sedation seen in this study with a low rate of desaturation and infrequent need for airway support is an important result."

It is believed that this new and simplified anaesthetic technique can be more widely used for patients that are being evaluated for sleep apnoea surgery. There is however still a need for further research to determine how effectively this technique can be used in everyday clinical practice. It is important to remember that this procedure is still used by a limited group of anaesthesiologists. There is always

a possibility of overshooting the anaesthetic dose leading to a higher drop in oxygen saturation. However, if used safely and effectively, the ramp-controlled DISE approach does hold promise for better evaluation of sleep apnoea surgery patients.

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