

The Physiometrix PSA 4000 Decreases Propofol Usage and Hastens Discharge in Gynecological Day Surgery Procedures.

Cassingham S.F., Hebert T., Lemaire R., Cook R., McPherson P.K. *Anesthesiology* 2002; 96: A5.

Introduction

The Physiometrix PSA 4000 is a processed Quantitative EEG (QEEG) monitor. The EEG is processed to render the Patient State Index (PSI), a whole number between 100 (full consciousness) and 0 (EEG burst suppression). A PSI at or below 50 is indicative of an anesthetic depth adequate to ensure amnesia. The sensing array receives input from the frontal cortex, as well as the central and posterior parietal cortices, allowing for more complete cortical monitoring. The Aspect BIS™ monitor's QEEG interpretation is limited to the frontal cortex. This preliminary study compared the impact of PSA 4000 monitoring versus routine clinical monitoring on Propofol use and patient recovery time during gynecological laproscopic procedures. No studies of this type were found on a Medline search. In addition, Propofol reductions obtained with PSA monitoring were compared to previously published reductions in Propofol obtained with the BIS™.

Method

23 consenting patients, ages 19-41, ASA 1 or 2, undergoing outpatient laproscopic gynecological surgery, participated in this study. Group 1, n=10, had a Propofol/N₂O/O₂ anesthetic titrated by routine clinical methods. Group 2, n=13, had a Propofol/N₂O/O₂ anesthetic with depth titrated by the PSI alone, targeting PSIs between 38-50. Both groups received 0.05mg/kg Midazolam and 30mg Ketorolac as premedicants. All patients were induced with 1.75mg/kg Propofol, 0.75mg/kg Esmolol, 5mg Morphine, and 0.1mg/kg Vecuronium. Anesthesia was maintained with Propofol infusions and 65%/35% N₂O/O₂. Muscle relaxants were reversed, Propofol was D/Ced, and 5mg Morphine was administered as trocars were removed. All patients were extubated within 5 minutes.

Results

Group 1 had an average Propofol consumption of 0.131 mg/kg/min, including induction Propofol. Group 2 had an average Propofol use of 0.089 mg/kg/min, including induction Propofol. Group 1 had an average time to OR discharge of 10.5 minutes after completion of surgery. Group 2 had an average time to OR D/C of 7.9 minutes. Group 1 had a time to eligibility for PACU discharge of 35 minutes. Group 2 had a time to eligibility for PACU D/C of 28.3 minutes.

Discussion

In this limited study, a 32% Propofol reduction was obtained through anesthetic depth guided by the PSA 4000. Previous studies employing the BIS™ monitor documented 23%¹ and 22%² reductions in Propofol use. The PSA 4000 produced a 29.7% greater Propofol reduction compared with the average Propofol reduction (22.5%) in BIS™ studies. PSA monitoring produced a 25% reduction in time to OR discharge and a 19% reduction in time for PACU discharge eligibility. Further study with a larger sample size and wider range of surgical procedures will be required to establish the impact of PSA 4000 monitoring on ambulatory anesthesia.

References: 1) *Anesthesiology* 87:808-15, 1997; 2) *Anesth Analg* 88:S53, 1999