

Title: COMPARISON OF PROPOFOL AND THIOPENTAL ANESTHESIA IN OUTPATIENT SURGERY: SPEED OF RECOVERY

Authors: Yung-Fong Sung, M.D., Stephen Freniere, M.M.Sc., Twila Tillette, C.R.N.A., R. Waldo Powell, M.D.

Affiliation: Department of Anesthesiology, Ambulatory Surgery Center, Emory University School of Medicine, Atlanta, Georgia

INTRODUCTION

Propofol (Diprivan, 2,6-diisopropylphenol) is a new intravenous hypnotic agent that has been shown to be effective for induction and maintenance of anesthesia. Propofol has a rapid distribution phase followed by a rapid elimination phase, potentially useful properties for an intravenous agent to be utilized in the maintenance of anesthesia. Thiopental is an excellent hypnotic drug and can also be used for general anesthesia maintenance for short procedures. The purpose of this study was to compare propofol and thiopental as induction as well as maintenance agents administered with nitrous oxide in oxygen.

METHODS

This study was approved by the Human Investigation Committee. Fifty-eight females, who were not pregnant or nursing mothers, ASA Class I and II patients, who needed to have breast biopsies consented to participate in the study. The age range was from 19 to 70. This was a double-blind, third party open parallel randomized study. The study drug was given by the principal investigator. Two researchers were blinded as to the anesthetic the patient received: one was in the O.R. to monitor the patient's vital signs and other parameters; the second was in the Recovery Room to evaluate the recovery parameters. An intravenous line was established in the preoperative area in the non-dominant hand. Without preoperative sedation, the patient was asked to do post box test prior to induction as a baseline of psychomotor performance. The test was readministered after the patient was oriented and able to sit up (time 0) and again after 30 and 60 min. The patients were randomly assigned to one of the two anesthetic groups. In both groups, anesthesia was induced by intravenous injection: propofol 2.5mg/kg or thiopental 5 mg/kg administered over 20 sec. After 3.0 min. of observation, the anesthesia was maintained with repeat bolus doses of propofol 25mg or thiopental 50mg, indicated by clinical response: changing of vital signs or tearing of the patient. These drugs were supplemented with nitrous oxide 70% in oxygen and 0.1% succinylcholine drip. All anesthetics were stopped as soon as the last stitch was in place. Recovery from anesthesia was repeatedly assessed until the patient was discharged from the Recovery Room. The following times were recorded: time to spontaneous opening of eyes, orientation to name, place, and date of birth, and ability to sit independently. Discharge parameters: Patient must achieve an Aldrete score of 10;

maintain stable vital signs for 30 min. while sitting in a chair in a step-down area; take and retain fluids; and void. Statistical Methods: Frequency data calculated by chi square test, other data by Student's t test. The latter data presented as mean \pm S.E.

RESULTS

Of the 58 patients, 30 had thiopental and 28 had propofol. Age and height of both groups were similar, however, thiopental group had slightly higher weight than the propofol group: 66.9 ± 2.8 kg versus 58.5 ± 1.5 kg. ($P < 0.05$) Propofol group took significantly shorter time to recover vs. thiopental group for each measure (Table 1). Post box test: baselines were similar in both groups: propofol 69.5 ± 2.9 sec vs. thiopental 71.3 ± 2.1 sec, however, in each post operative test (0, 30, 60 min.) the propofol group completed the test significantly faster than thiopental group relative to their respective baseline ($P < 0.01$). Nausea and vomiting: 2/28 in propofol group and 14/30 in thiopental group had nausea and/or vomiting. ($P < 0.005$)

DISCUSSION AND CONCLUSION

Our study showed that propofol had the following advantages over thiopental in the ambulatory surgical patients: 1. Patients who received propofol spent a shorter time in the recovery room. 2. They recovered psychomotor activity more rapidly. 3. They had less nausea and vomiting. Therefore, the group that received propofol was able to return to their more productive activity earlier in comparison with thiopental group.

TABLE I

RECOVERY PARAMETER	PROPOFOL MINUTES (MEAN \pm S.E.)	THIOPENTAL (MEAN \pm S.E.)
SPONTANEOUS OPENING EYES	1.1 ± 0.5 $P < 0.01$	6.3 ± 1.8
ORIENTED TO PERSON/PLACE/DATE	2.5 ± 0.6 $P < 0.05$	14.0 ± 5.0
SIT WITHOUT HELP	16.1 ± 2.5 $P < 0.01$	39.2 ± 5.5
ALDRETE SCORE "10"	23.0 ± 2.7 $P < 0.01$	47.5 ± 8.2
SUITABLE FOR DISCHARGE	87.2 ± 4.2 $P < 0.01$	121.4 ± 8.7