

**Title:** RETROGRADE AMNESIA, ANTEROGRADE AMNESIA AND RECALL BY USING EITHER THIOPENTAL OR PROPOFOL AS INDUCTION AND MAINTENANCE ANESTHESIA AGENTS

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INTRODUCTION

Propofol (2,6-diisopropylphenol, Diprivan) has been used clinically in Europe and in the United Kingdom since 1977. Propofol appears to produce the anesthetic state in essentially the same period of time as seen with methohexital. There are numerous studies using propofol as induction agent as well as an agent for maintenance of anesthesia. Thiopental has been in use for more than fifty years. Repeated doses reliably maintain unconsciousness and amnesia. This study used repeated dosages of propofol or thiopental and evaluated the contributions of each of these drugs to the development of retrograde amnesia, anterograde amnesia, and recall of events during anesthesia.

METHODS

This study was approved by the Human Investigation Committee. Fifty-six females, who were not pregnant or nursing mothers, who needed to have breast biopsies consented to participate in this study. The age range was from 19 - 70. This was a double blind, third party open parallel study, computer randomized. The study drug was given by the principal investigator to the patient. Two other 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, and to administer the memory recall test, and the second one was in the recovery room to evaluate the recovery parameters, test the patient's memory, and to do the 24-hour followup. Patients, unpremedicated, were shown six pictures preoperatively and were told to remember them. During induction when the patient started to have intravenous injection of the study drug, the patient was told to begin counting aloud from 100 backwards and the last number counted out was recorded. After 3.0 min. of observation, the anesthesia was maintained with repeat bolus dosage of propofol 25 mg or thiopental 50 mg (indicated by changing of vital signs or tearing of the patient), 70% N<sub>2</sub>O in oxygen and 0.1% succinylcholine drip. After induction, the patient was ventilated by mask and told to remember the name of a color. When the surgical incision was made the patient was told to remember the name of an animal. After the procedure was finished and the nitrous oxide and succinylcholine drip were discontinued, the patient was told to remember the name of a month. During emergence, the mask was removed and the patient was told to remember the name of a season.

Intraoperative recall and retrograde amnesia assessment: 30 min. after the patient was awake and oriented, she was asked to recall the number counted during induction, and the color, animal, month, and season. The patient was also asked to recall and name the six pictures shown preoperatively. The patient was shown two additional pictures just prior to going home. Data were analyzed for statistical significance by the chi square test.

RESULTS

Twenty-seven patients received propofol and 29 received thiopental. 18/27 propofol patients (66%) and 15/29 thiopental patients (51%) remembered correctly 6 out of 6 pictures. Only 2/27 propofol patients and 5/29 thiopental patients remembered the exact number they counted. The rest remembered a higher number than they actually counted and statistically did not differ from each other. None of the patients recalled any events during maintenance of anesthesia. Anterograde amnesia: 24 hrs later 27/27 (100%) of propofol patients remembered they were shown two pictures just before they left the premises, whereas only 22/29 (76%) thiopental patients did (P < 0.025). 26/27 (96%) of propofol patients and only 21/29 thiopental patients (72%) recalled both pictures correctly (P < 0.05). (Table 1)

CONCLUSION

1. 34% of propofol patients and 49% of thiopental patients had retrograde amnesia. This is statistically insignificant between the groups.
2. No recall of the events during anesthesia, therefore, both study drugs were amnestic agents in combination with nitrous oxide.
3. Thiopental patients had significantly more anterograde amnesia than did propofol patients, 28% vs. 4%.

TABLE I  
ANTEROGRADE AMNESIA: 24 HR RECALL OF  
PICTURES SHOWN PRIOR TO DISCHARGE

	PROPOFOL	THIOPENTAL
Recall both Correctly	26/27 (96%) (P < 0.05)	21/29 (72%)
Recall one Correctly	1/27 (4%)	0/29 (0%)
None or Incorrect Recall	0/27 (0%) (P < 0.025)	8/29 (28%)