

Forane Increases Bleeding in Therapeutic Suction Abortion

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Because of its low solubility, ease of administration, and relatively low incidence of side effects, Forane, a new inhalation anesthetic, might well be the ideal anesthetic for outpatient procedures. However, any agent that promotes uterine bleeding is unsuitable as an anesthetic for therapeutic abortions. We undertook the following study to determine the magnitude of blood loss in patients anesthetized with Forane and undergoing suction therapeutic abortion.

METHODS

The methodology used in this study was similar to that used by Cullen *et al.*¹ Thirteen women who ranged in age from 19 to 36 years and were eight to 13 weeks pregnant were selected for study. After informed consent had been obtained, these unpremedicated women were anesthetized by inhalation of either Forane-oxygen (four patients) or Forane-nitrous oxide-oxygen (nine patients). The tracheas of all patients were intubated without the use of muscle relaxants. Depth of anesthesia was monitored by infrared analysis of end-tidal concentrations and maintained at 1.4 per cent Forane in the four patients who received Forane-oxygen. (MAC is 1.27 for this age group.) Of the nine patients in whom 70 per cent nitrous oxide was used, the Forane concentration was maintained at 1.0 per cent in seven and at 0.5 per cent in two (Forane MAC with 70 per cent nitrous oxide is 0.5 per cent). No patient moved in re-

sponse to operative stimulation. The suction technique² was used in all 13 patients, and the blood collected in a trap bottle and corrected for amniotic fluid¹ was assumed to equal the blood loss each patient experienced. The data was analyzed by unpaired analysis. We accepted as statistically significant $P < 0.05$.

RESULTS AND DISCUSSION

The average blood loss was 208 ± 43 ml (SE) (Table 1). In ten of the 13 women, blood losses exceeded 100 ml. We found no statistical correlation between the amount of

TABLE 1. Estimated Blood Losses in Therapeutic Abortions Using Forane Anesthesia

	Age (Years)	Estimated Weeks Pregnant	Syntocinon	Estimated Blood Loss (ml)
Forane alone				
Patient 1	23	8	—	50
Patient 2	24	8	Yes	110
Patient 3	22	9	—	95
Patient 4	26	9	—	85
Group average				85 ± 13 (SE)
Forane with 70 per cent nitrous oxide				
Patient 5	24	8	Yes	100
Patient 6	30	8.5	—	150
Patient 7	24	9	Yes	280
Patient 8	36	9	Yes	575
Patient 9	28	10	—	450
Patient 10	26	10.5	Yes	298
Patient 11	30	10.5	Yes	188
Patient 12	19	12	Yes	150
Patient 13	23	12	Yes	170
Group average				262 ± 53 (SE)
Overall average				208 ± 43 (SE)

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bleeding and length of gestation, whether or not nitrous oxide was used, or with the age of the patient. In pregnancies of less than ten weeks' duration, blood losses amounted to 181 ± 61 ml (SE), as opposed to 251 ± 55 ml when the patients had been pregnant for ten weeks or more. There was a tendency toward less bleeding (85 ± 13 ml) in the four patients who received Forane without nitrous oxide, compared with the group who received Forane with nitrous oxide (262 ± 53 ml), and perhaps the difference would have been significant if we had studied more patients. In the last seven patients studied, Syntocinon, 40 to 80 units, was added to 1,000 ml of intravenous solution and infused rapidly before and during evacuation of the fetus by suction. No reduction in the amount of bleeding was seen.

Cullen *et al.* found corrected mean blood losses from 145 to 283 ml when studying various concentrations of halothane anesthesia

and also 5 per cent fluroxene. They found significantly less bleeding with both 80 per cent nitrous oxide plus intravenous thiopental and meperidine (blood loss averaged 58 ml) and paracervical block anesthesia (25 ml loss). We conclude that Forane is in the same category as halothane and fluroxene, increasing uterine bleeding during suction abortion, and, therefore, is not suitable for this procedure. Nitrous oxide supplemented with intravenous thiopental, and regional anesthesia, remain the best choices for therapeutic suction abortion.

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REFERENCES

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Literature Briefs

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Literature Briefs were submitted by Drs. R. B. Clark, R. Dunbar, P. Hallowell, M. B. Laver, and E. Lowenstein. Briefs appearing elsewhere in this issue are part of this column.

Renal Function

CHEST X-RAYS AND DIALYSIS Ten patients were studied clinically and radiologically before and after peritoneal dialysis (6) and hemodialysis (4) to determine the nature and incidence of subsequent radiologic changes in the chest. There was a marked reduction in congestive appearance, as judged by a decreased cardiothoracic ratio and reduced pulmonary vascular filling, accompanied by the disappearance of clinical signs and symptoms

of congestive heart failure present before dialysis. The weight losses necessary to accomplish this ranged from 7 to 20 pounds (mean 10 pounds). (Mehbod, H., and Gutman, E.: *Changes Seen on Chest Films Following Dialysis, Radiology* 100: 41 (July) 1971.) **ABSTRACTER'S COMMENT:** A simple well-conceived demonstration of the benefits to be accrued from dialysis in the face of pulmonary vascular congestion. Accompanying respiratory improvement makes this technique valuable in treating many patients who have excess pulmonary water and are in frank renal failure. Data on blood-gas exchange and pulmonary mechanics before, during and after dialysis are needed to supplement these findings.