

A9

Title: INHALATIONAL INDUCTION WITH DESFLURANE (D): THE EFFECTS OF PREMEDICATION (P) ON ANESTHETIC REQUIREMENT, SPEED OF INDUCTION AND AIRWAY ACTIVITY.

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Introduction: Inhalational inductions may obviate the use of and subsequent recovery from intravenous induction agents. Both slower induction and airway irritability, however have discouraged inhalation induction. We studied the induction characteristics of the new agent D along with the effects of P with intravenous fentanyl (F) and midazolam (M) on such an induction.
Method: Thirty-five patients gave written consent to a protocol approved by institutional review board. Inhalational induction with D in 60% N₂O/40% O₂ was randomized to a conventional (C) technique (0.5 MAC D in incremental doses every 3-5 breaths) or single breath (SB) technique (2 MAC D after a vital capacity exhalation). Patients in each group received either no P or intravenous F 1mcg/kg and M 0.04 mg/kg five minutes prior to induction. Time was measured from the first breath of D until loss of response to verbal command (T_{Loc}) and until cessation of D(T_{Anes}). Inspired and end tidal D concentration were recorded at LOC, as was maximal inspired concentration of D. The presence of coughing [mild (1-2), moderate (3-5), or severe (>6)] during induction was recorded. Data analysis was done using Student's t test and Chi Square analysis, with p≤0.05 considered significant.

Results:

	Conventional				Single Breath			
	no premed	premed	P		no premed	premed	P	
n	8	10			7	10		
Age (years)	53.5 ± 6.3	53.7 ± 5.2	NS		52.9 ± 7.5	56.2 ± 5.1	NS	
wt (kg)	82.7 ± 2.7	76.5 ± 4.7	NS		76.8 ± 6.9	82.1 ± 4.5	NS	
Tanes (min)	24.9 ± 2.8	26.1 ± 4.1	NS		35.6 ± 6.7	32.2 ± 7.8	NS	
T _{Loc} (sec)	109 ± 6.8	104 ± 8.1	0.01	64 ± 13.1	49 ± 3.3	NS		
% D _{T_{Loc}}	14.1 ± 1.0	8.9 ± 0.5	0.01	14 ± 0.6	9.6 ± 0.5	0.01		
% E _{T_{Loc}}	6.5 ± 0.8	5.3 ± 0.7	0.05	10.1 ± 0.6	7.8 ± 0.6	0.05		
% D _{Max}	16.5 ± 0.6	11.1 ± 0.5	0.01	14.0 ± 0.6	10.7 ± 0.4	0.01		
Cough	8/8	3/10	0.02	3/7	3/10	NS		

All data are mean ± SEM

Discussion: P with M and F resulted in a decrease in inspired and E_T D at LOC regardless of induction technique. P had no effect on induction time in the SB group and was statistically but not clinically significant in shortening induction in the C group. The frequency of airway irritability was increased using the C technique, but most was mild to moderate and would not preclude clinical use of desflurane in this fashion. This irritability was markedly decreased by the use of P. The SB technique was associated with less airway irritability and was unchanged by P. The low solubility of D allows rapid achievement of deep levels of anesthesia during SB induction which suppress airway reflexes. When D was given by the slower C method, airway irritability was manifest but was suppressed by P. Induction with either technique was so fast that P did not hasten it further. In conclusion, we found that inhalational induction with using both C and SB techniques was safe. P with M and F significantly decreased anesthetic requirement and airway irritability.

A10

TITLE: DESFLURANE VERSUS PROPOFOL FOR OUTPATIENT LAPAROSCOPIC SURGERY

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INTRODUCTION: Desflurane, a volatile anesthetic with rapid uptake and washout, is felt to have promise in outpatient anesthesia. We compared recovery characteristics for patients receiving desflurane and/or propofol.

METHODS: After informed consent and IRB approval, 80 ASA I and II women undergoing outpatient laparoscopic tubal ligation were randomized to one of four groups (table 1).

Patients were unpremedicated; fentanyl (2 µg/kg) was given prior to induction with propofol (2.5mg/kg) or desflurane in 100% O₂ or in 60% N₂O/40%O₂. Intubation was facilitated with succinylcholine (1.5 mg/kg). Maintenance was desflurane(6-7.25% in O₂ or N₂O/O₂) or propofol infusion (6-9 mg/kg/hr) with N₂O. Vecuronium (.01 mg/kg) was given for relaxation and reversed with glycopyrrolate and neostigmine. Propofol or desflurane were titrated downward as the depth of anesthesia allowed and discontinued along with N₂O with the last suture. Recovery parameters are shown in Table 2. P-deletion and digit substitution tests were performed preop and at 30, 60, and 90 minutes postop. Data were analyzed using ANOVA and Chi-square tests.

RESULTS: Initial emergence (eye opening, squeezing fingers) was more rapid in patients who received desflurane for both induction and maintenance (table 2). These groups were also oriented earlier but the difference did not reach statistical significance. There were no differences between groups for any of the other recovery parameters or in psychomotor tests. Group IV had significantly fewer and group III had significantly more emetic sequelae. Incidence of requirement for supplemental narcotics in the PACU was similar among groups; total doses varied as noted below (Table 3).

CONCLUSION: In our study, desflurane showed more rapid emergence and equivalent recovery when compared to propofol. Patients anesthetized with desflurane in oxygen had a low incidence of nausea and vomiting.

Table 1: Anesthetic Regimens

Group	I	II	III	IV
Induction	PRO	PRO	DES/N ₂ O	DES/O ₂
Maintenance	DES/N ₂ O	PRO/N ₂ O	DES/N ₂ O	DES/O ₂

Table 2: Emergence Parameters(minutes)

Group	I	II	III	IV
Eyes open	4.95	5.80*	3.75*	4.15*
Squeezes finger	5.45	6.15*	4.15*	4.55*
Knows DOB	7.90	7.95	6.30	6.55
Sitting	54.5	57.0	55.1	55.1
Standing	56.1	57.8	57.6	56.1
Discharge	104.6	94.8	98.4	95.0

Table 3: Emetic Sequelae and Narcotic Need in PACU

Group	I	II	III	IV
% pts with N/V	25.0	22.2	38.9*	13.9*
% needing narcotic	24.2	29.0	22.6	24.2
Av. fentanyl (µg)	132	91	53	71

*P<0.05 considered statistically significant. This investigation was supported by a grant from Anaquest.