

Title: WHEN IS OUTPATIENT SURGERY SAFE IN PRETERM INFANTS?

Authors: P.H. Mestad, M.D., J.A. Glenski, M.D., R.E. Binda, Jr., M.D.

Affiliation: Department of Anesthesiology, Children's Mercy Hospital, Kansas City, MO 64108

**Introduction.** Previous reports offer varying recommendations regarding the timing of outpatient surgery in preterm infants.<sup>1-3</sup> Practically, the studies indicate that on one extreme, outpatient surgery for certain of these infants may be safe during the first month of life, while on the other extreme it is not safe during the infant's first six months of life. The present study examines the incidence of apnea in preterm infants following minor surgery, and attempts to define factors that may aid in identifying those patients that can safely be handled as outpatients.

**Methods.** One hundred infants with a gestational age(GA) of 36 wks or less and a postconceptual age(PCA) of 46 wks or less who were undergoing inguinal herniorrhaphy or lacrimal duct probing were prospectively studied. The study conformed to the requirements of the IRB. The choice of anesthetic technique was left to the discretion of the attending anesthesiologist. Postoperatively, infants were admitted and observed in the hospital for a minimum of 18 hrs with continuous cardiorespiratory monitoring. Apnea was defined as cessation of breathing for 20 sec, or for a shorter period if bradycardia occurred prior to 20 sec. The relationship between the occurrence of apnea and various clinical variables (history of apnea or lung disease; PCA < 40 wks; type of anesthetic; use of muscle relaxants; and requiring home oxygen) was tested with Chi-square analysis. The difference in PCA, GA, patient weight, surgical time, and time in the PAR between apnea and no apnea groups was tested with a student t-test. Values are presented as means ± standard deviation.

**Results.** Eighteen infants experienced apnea following discharge from the PAR. The table lists the clinical variables that were significantly different between the post-operative apnea and no post-operative apnea groups. The only group of infants that did not develop apnea post-operatively were those with a PCA of ≥ 40 wks without a prior history of apnea or lung disease (Figure). Apnea occurred in 27 infants in the PAR: 13 had apnea only in the PAR, 14 had apnea following discharge from the PAR, and 4 infants had no apnea in the PAR but developed apnea following discharge from the PAR. Ninety-seven infants received halothane and 7 infants received isoflurane. A muscle relaxant was used in 57 infants. There were no significant differences between the apnea and no apnea groups in type of anesthetic used or use of muscle relaxant.

**Discussion.** The results of this study suggest that 1) outpatient surgery may safely be performed on preterm infants when PCA ≥ 40 wks and there is no history of apnea or lung disease; 2) preterm infants with PCA < 40 wks or that have a history of either apnea or lung disease are at risk for post-operative apnea and should be hospitalized and

monitored as currently recommended; 3) the presence or absence of apnea in the PAR does not predict its development later; and 4) individual circumstances may dictate special consideration and care.

**References.**

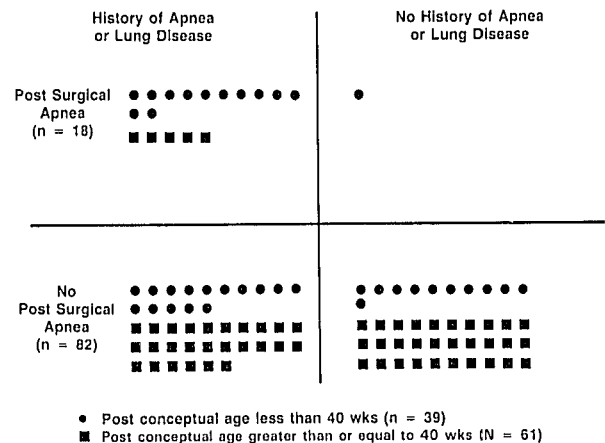
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**Table.** Significant clinical differences between apnea and no apnea groups

	Apnea Group	No Apnea Group
PCA (wks)*	38.4±2.0	40.8±2.6
GA (wks)*	28.2±1.8	32.1±3.2
Weight (kg)*	2.3±0.3	3.3±1.2
History of apnea <sup>#</sup>	89%	35%
History of lung disease <sup>#</sup>	72%	38%

\* p<0.05 by student t-test

<sup>#</sup> p<0.05 by Chi-square analysis



**Figure.** The relationship between PCA, history of lung disease or apnea and the development of post-operative apnea