

*Clowns as Treatment for Preoperative Anxiety in Children:
A Randomized Controlled Trial*

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Introduction

The perioperative environment, often anxiety-provoking for adults, may be quite frightening for children. The detrimental effects of preoperative anxiety are not confined to the preoperative period. Anxiety during induction of anesthesia is correlated with increased distress early in the postoperative period, (Holms Knud, Kain) and maladaptive behavior will follow for the first 2 weeks following surgery in up to 54% of children. (Kain).

Many preoperative systems allow parental, pharmacologic, and anticipatory interventions to facilitate a relaxed perioperative environment for children. Unfortunately, scheduling conflicts, side effects, and limited resources conspire to limit their usefulness. For example, only 10% of respondents in a recent survey used parental presence during induction of anesthesia (PPIA) for a majority of their patients. (Kain) This may be due to the belief by some that parental anxiety may in fact increase children's anxiety. (Bevans) According to the same survey, only 50% of children undergoing surgery receive sedating premedication. (Kain). Distraction techniques, such as the use of toys or video games, may also decrease perioperative anxiety, (patel) however their effectiveness during induction of anesthesia is not well characterized. (kain music , patel) The efficacy of toys and video games is somewhat dependent upon the child reaching certain developmental milestones. Anesthesiologists continue to search for an easy and comprehensive method for anxiety reduction in the pediatric surgical population. We propose that specially trained professional clowns may allay preoperative anxiety and result in a smooth anesthetic induction.

Material and Methods

This randomized, controlled study was conducted with children undergoing general anesthesia and elective outpatient surgery. Consecutive patients aged 3–8 years of age, ASA physical status I–II, scheduled to undergo general anesthesia and elective outpatient surgery were considered for enrollment. Children were excluded from participation if they had a history of previous anesthesia or chronic illness, prematurity, developmental delay, or significant hearing or visual impairments. The Institutional Review Board approved the study protocol, and informed consent was obtained from the parents of each child.

The primary end-point of this study was the anxiety manifested by children during the induction of anesthesia. Patients were assigned to one of three groups by using computer-generated random assignment: Group 1 children did not receive midazolam or clown presence; group 2 children received 0.5 mg/kg oral midazolam 30 minutes before surgery up to a maximum of 15 mg; and group 3 children had two specially trained clowns present upon arrival to the preoperative holding area and throughout operating room (OR) entrance and mask application for inhalation induction of anesthesia.

The clown intervention and distraction techniques were semi-structured; they began in the holding area and lasted for approximately 20-30 minutes. All variation in session length was due to OR timing constraints. The clowns used various methods for entertaining the child according to the child's age (e.g., magic tricks, gags, music, games, puppets, word games, bubbles, etc) The clowns then accompanied each child into the OR and stayed until the anesthetic induction was complete.

Children's parents were present in the preoperative holding area, during entrance to the OR, and during mask application. Children and parents remained in private areas within the ambulatory surgery unit before transfer to the OR. Parents were given descriptions of what to expect when they entered the OR and were dressed in appropriate OR attire while in the ambulatory surgery unit.

Each child was videotaped at three different locations: the preoperative holding area, entrance to the OR, and during application of the anesthesia mask. Videos were edited into three separate two minute clips, coded, and then randomly presented to the evaluators.

Evaluators were trained by using videotapes of children undergoing the induction of anesthesia to reliably measure children's anxiety using the modified Yale Preoperative Anxiety Scale (m-YPAS). All children in the study were videotaped in the holding area until the induction of anesthesia. These blinded evaluators then used the videotapes to rate children's anxiety for this study. The same evaluator ranked the child's anxiety at the various time points.

The m-YPAS (kain, kain), an observational instrument, quantifies children's anxiety in the preoperative area and during the induction of anesthesia. The instrument distributes 27 items into 5 categories that suggest preoperative anxiety in children: activity, emotional expressivity, state of arousal, vocalization, and use of parents. The m-YPAS has good-to-excellent reliability and validity (kain, kain). The State-Trait Anxiety Inventory (STAI), a self-reportable anxiety inventory, contains 2 separate 20-item subscales that measure trait (baseline) and state (situational) anxiety. It has been used in more than 1000 studies published in peer-reviewed literature (Spielberger CD). After

