Parental Presence in Pediatric Anesthesia
Cons

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Disclosure of Conflict of Interest

The Child’s Perception of Surgery

• 180 children from the Cincinnati Public School System
• Pre-K through 4th grade (4-10 yr)
• Assignment:
  - Given a blank piece of paper
  - “Pretend you are going to have an operation”
  - “Please draw me a picture of the operating room”
This is Scary
(They have big weapons)
Frequency of Parental Presence During Induction of Anesthesia (PPIA) Practice in the US


PPIA - Disadvantages

- Not beneficial (except in certain circumstances)
- May be counterproductive by increasing child anxiety
- Does not reduce the magnitude of post operative behavioral changes
- Disruption of the OR routine
- Crowed OR's
- Parent’s possible adverse reactions
- Prolonged anesthesia induction
- Additional stress on the anesthesiologist
PPIA- Effectiveness on Outcomes

- Child anxiety and cooperation with induction
- Parental anxiety
- Postoperative Maladaptive Behaviors
- Unintended consequences
- Parental Satisfaction

PPIA: Child and Parental Anxiety and Cooperation on Induction

PPIA – Not Beneficial

- Early RCT studying parental presence : 1996, Kain et al, Anesthesiology
  - 84 children
  - Randomized to Parent present or Parent absent group
  - Multiple behavioral and physiological measures of anxiety (including child plasma cortisol levels)
  - Predictors examined using multivariate linear regression analysis
- No differences in behavioral or physiological measures between the control or interventional group
- Using regression analyses, only children who benefited from PPIA were:
  - Children > 4 yrs.
  - Children with low baseline level of activity
  - Child with a parent with low trait anxiety level

Anesthesiology 1996;84:1060-7
**PPIA – Less Effective than Midazolam**

- RCT: 1998, Kain et al, Anesthesiology
- 88 children randomly assigned to three groups:
  - Premedication group (0.5 mg/kg midazolam)
  - PPIA
  - Control group (no premedication or PPIA)
- Anxiety levels measured in the holding area, entrance to OR and at induction
- Children in the midazolam group exhibited significantly less anxiety and increased compliance on induction as compared with PPIA and the non-intervention group
- No differences between the anxiety level of the PPIA group and the non-intervention group
- Parental anxiety scores after separation were significantly lower in the midazolam group

*Anesthesiology 1998; 89:1147-56*

**PPIA + Midazolam vs. Midazolam alone**

- Hierarchical Study: 2000, Kain et al, Anesthesiology
  - 103 children randomly assigned to premedication (0.5 mg/kg midazolam) vs. premedication with PPIA group
  - PPIA in addition to premedication had no additive effects in terms of reducing child anxiety.
  - Parents who accompanied their child were less anxious and more satisfied.

*Anesthesiology 2000; 92:939-46*

**Motivation and Maternal Presence during Induction**

2005, Caldwell-Andrews AA, Anesthesiology
- 289 dyads, mothers and children enrolled
- Motivation for parental presence during induction was measured
- Child anxiety and compliance measured on induction
- Children of mothers who were highly motivated (high desire and low hesitancy) to enter the OR were more anxious when compared to children whose mothers were less motivated

*Anesthesiology 2005 Sep; 103(3):478-83*
Evidence-Based Review of PPIA

- Purpose was to examine PPIA on parents’ and children’s anxiety
- MEDLINE (1950-2008) and EMBASE (1980-2008) were searched
- Studies restricted to RCT and comparative studies only (levels of evidence I-III)
- 14 studies fit criteria (9 RCTs, 4 prospective comparative and 1 retrospective comparative)

Evidence-Based Review of PPIA (Contd)

- 9 Studies examined children’s anxiety:
  - compared PPIA to no intervention (majority, 5 found no difference in child anxiety, 2 mixed results, 2 parental presence fared better)
- 9 studies evaluated parental anxiety by comparing PPIA with no intervention
- Of these a majority (6 studies) found no difference between the two

Systematic Review of Non-Pharmacological Interventions

- 2009, Yip P, Cochrane Database Systematic Review:
  - Search: MEDLINE, psyINFO, CINAHL, DISSERTATION ABSTRACTS, Web of Science and EMBASE
  - Only RCT's included
  - 17 trials included, 1796 children involved
  - 8 trials assessed parental presence
  - NONE showed significant differences in anxiety or cooperation of children during induction
  - 1 study showed PPIA was significantly less effective than midazolam in reducing child anxiety
PPIA and Postoperative Maladaptive Behaviors

- Postoperative behavioral assessment using the post-hospitalization behavioral questionnaire (PHBQ)
- General anxiety, nighttime crying, separation anxiety, enuresis, and temper tantrums occur in 54% of children up to 2 weeks and 20% of children at 1 year
- PPIA found not to impact the incidence or magnitude of maladaptive postoperative behavioral outcomes in children
- Efficacy as a treatment modality not been established


Unforeseen Peril of PPIA

- 2012, Johnson Y, Anesthesia and Analgesia Case Report
- Case described is the first reported episode where a parent attempted to remove her anesthetized child from the induction room after induction of general anesthesia
- Report illustrates that PPIA can be associated with unforeseen and untoward effects to parents and medical personnel that can add undue risk to the patient
Does the Number of Parents Present at Induction Matter?

- 2009, Kain Z. Paediatr Anaesth
  - Compared one and two parents present at induction
  - Child and Parent anxiety measured
  - Child anxiety and compliance on induction was not different between the two groups
  - Parents in the one-parent group reported significantly higher anxiety levels than parents in the two-parent group
  - Possible that the provision of social support accounts for differences between one-parent and two-parent groups

Paediatr Anaesth 2009 Mar; 19 (3): 244-9

When are Parents helpful?

- 2010, Wright KD, Can J Anesthesia
  - RCT with restricted age range 3-6 yrs.
  - Effect of PPIA was studied at different time points including separation from parents and placement of face mask
  - Child anxiety at separation was significantly higher in the parental absence group
  - No significant group differences at induction

Can J Anaesth 2010 Aug; 57 (8):751-8

Which Child could potentially benefit from PPIA?

Cerebral palsy:
- Preoperative management a challenge due to communication difficulties
- Sedative premedication maybe helpful, but should be used with caution in those with respiratory impairment

Autism and Behavioral disorders:
- May exhibit repetitive stereotyped behavior patterns and hyperactivity
- Change in routine may precipitate panic attacks or temper tantrums
- Drugs used for disease may occupy same pathways as premedicants making premedication ineffective

Pediatric Anesthesia, 2005 15:421-425