Dexmedetomidine in Pediatric Cleft Lip and Palate Surgery: Impact on Recovery & Perioperative Narcotic Use

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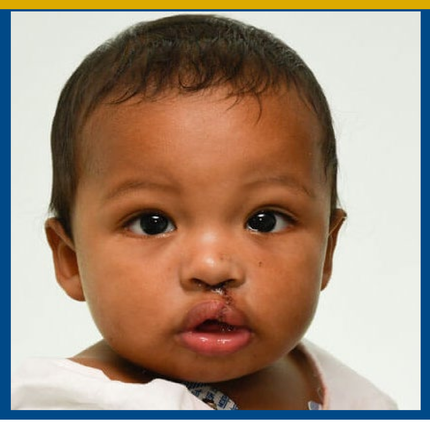

Introduction

Dexmedetomidine (DEX), a highly selective alpha-2 adrenergic receptor agonist, known for its sedative, anxiolytic, and analgesic effects. It has hemodynamic stability, respiratory-sparing and opioid-sparing effects[1].

- Potential advantages include:
  - Decreases opioid requirements and provides anti-nociceptive effects for somatic and visceral pain[2].
- Potential disadvantages include:
  - Associated with delayed emergence[3].
  - Increased intraoperative hypotension[3].
  - Prolonged PACU stay[4].
- Resource limited countries face challenges when it comes to providing safe anesthesia, amplifying the surgical burden on fragile healthcare systems[5,6,7].
- Anesthesia-related challenges include decreased availability of medications, equipment and lack of adequate training[5,6,7].
- Rotaplast International is an organization that brings together a multidisciplinary team including surgeons and anesthesiologists to provide free reconstructive surgery to children (Rotaplast.org).
- In this study we sought to explore the effect of DEX on post-operative recovery and perioperative analgesia requirements in a pediatric population

Design/Sample

- With IRB approval, de-identified data was obtained from the records of pediatric patients in Venezuela, Tanzania, Bangladesh, Guatemala, Colombia, Peru, Myanmar, and the Philippines
- Cases were reviewed retrospectively to identify patients who had undergone cleft lip repairs and revisions as well as cleft palate repairs and revisions.
- Data extracted and analyzed included patients' age, weight, and gender, the type of procedure (cleft lip, cleft lip revision, cleft palate and cleft palate revision), intraoperative drug amounts, and perioperative complications (hemodynamic changes, etc.).

Results

DEMOGRAPHICS				
Case	**Dex Use**	**Total Cases**	**Age (months)**	**Weight (kg)**
Lip Repair & Revision	**Dex**	157	74 (+/- 82)	19 (+/- 16)
	No Dex	223	60 (+/- 83)	17 (+/- 16)
Palate Repair & Revision	**Dex**	185	70 (+/- 60)	19 (+/- 11)
	No Dex	109	65 (+/- 63)	18 (+/- 12)

Summary

- In patients who received intraoperative DEX:
  - There was a ***clinically and statistically significant decrease in postoperative analgesia*** requirement in patients who underwent primary lip surgery.
  - There was ***no*** clinically significant increase in emergence time or PACU duration.
  - There was ***no*** clinically significant overall decrease in intraoperative narcotic use.
  - There was ***no*** clinically significant increase in intraoperative hypotension or other complications.

Conclusions/Further Study

The unstructured use of dexmedetomidine did not significantly impact overall perioperative narcotic use in this sample of cleft lip and palate repair and revision patients. However, patients undergoing primary lip repair required significantly less postoperative analgesia, suggesting a potential clinical benefit in this subset. These findings highlight the need for further research to evaluate structured clinical protocols for dexmedetomidine use, particularly in low-resource settings and international surgical contexts, to better assess its potential opioid-sparing effects and overall safety in pediatric populations.

References

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