

Minimal Sedation Agents for Facial Laceration Repair in the Pediatric Emergency Department

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BACKGROUND

- Painful procedures, including laceration repair, are common in the Pediatric Emergency Department (ED)
- Minimal sedation agents (MSA) are often used for anxiolysis, analgesia, and/or amnesia
- Minimal sedation is less invasive and less resource intensive than moderate or deep sedation
- Robust comparison of success rates and adverse events among minimal sedation agents in the pediatric ED is lacking



METHODS

- Design – A retrospective cross-sectional study of patients aged 1 to 8 years undergoing facial laceration repair with assistance of a single MSA
- MSAs studied: oral (PO) midazolam, intranasal (IN) midazolam, IN dexmedetomidine, PO hydrocodone-acetaminophen
- Setting – 3 pediatric EDs in free-standing children's hospitals in the same network with ~150,000 visits annually
- Data collected included pharmacy reports, patient demographics, provider type, length of stay (LOS), adverse events (AE) and procedure specific data
- Patients were captured from January 1, 2017 to December 31, 2019

RESULTS

	Minimal Sedation Agent: N (%) or Median (IQR)			
	PO Midazolam N = 105 (8.0%)	IN Dexmedetomidine N = 224 (17.1%)	IN Midazolam N = 679 (51.9%)	PO Hydrocodone- acetaminophen N = 301 (23.0%)
Procedure Success	102 (97.1%)	208 (92.9%)	641 (94.4%)	299 (99.3%)
Age in years (sd)	3.6 (2.3, 5.5)	3.5 (2.3, 4.9)	3.7 (2.5, 5.1)	5.1 (3.4, 6.7)
Gender: Male	61 (58.1%)	139 (62.1%)	425 (62.6%)	192 (63.8%)
Initial Dose (/kg/dose)	0.50 mg (0.43, 0.51)	2.02 mcg (1.99, 3.01)	0.20 mg (0.20, 0.30)	0.14 mg (0.13, 0.16)
Sutures placed (n)	3.0 (2.0, 4.0)	3.0 (2.0, 5.0)	3.0 (2.0, 5.0)	3.0 (3.0, 5.0)
ED LOS (min)	173.0 (147.0, 226.0)	221.5 (181.5, 274.0)	195.0 (157.0, 244.0)	161.0 (128.0, 209.0)
Sedation to Discharge (mins)	78.0 (64.5, 99.0)	89.5 (74.0, 128.0)	69.0 (54.0, 92.0)	90.0 (75.0, 114.0)
Adverse Events	2 (1.9%)	3 (1.3%)	12 (1.8%)	4 (1.3%)
Nausea/Vomiting	2 (1.9%)	0	11 (1.6%)	4 (1.3%)
Respiratory	0	1 (0.4%)	0	0
Bradycardia	0	1 (0.4%)	1 (0.1%)	0
Hypotension	0	1 (0.4%)	0	0

CONCLUSIONS

- Overall high laceration repair procedural success when using a MSA (95.5%)
- Hydrocodone-acetaminophen had almost 9 times the odds for a successful laceration repair, while IN dexmedetomidine had a decreased odds of procedural success
- AEs were rare: 1.6% of patients, with no association between any AEs and MSA
- Majority of AEs (62%, n=13) occurred in patients who had procedural failure which led to intravenous sedation with ketamine as the second agent
- PO midazolam and IN dexmedetomidine increased the ED LOS by ~30 minutes
- No difference in outcomes between high and low dose IN midazolam (>0.3 vs ≤0.3mg/kg)

LIMITATIONS/FUTURE DIRECTIONS

- Sedation success defined as procedural completion is limited in a retrospective study and may not correlate with quality or patient/parent satisfaction
- AE capture relies on thorough provider documentation
- This study highlights the need for further optimization to systematically capture AEs
- Randomized blind studies are needed to further explore this important topic

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