Implementation of an Opioid Free Pediatric Hernia Repair Protocol

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INTRODUCTION

Surgery most often provides children with their first exposure to opioids which may lead to misuse and overuse. Protocolizing pain management perioperatively can reduce opioid exposure in children while still providing adequate pain management.

METHODS

A multi-modal, non-narcotic pain control protocol was created using a multidisciplinary team involving pediatric general surgery, anesthesia, and child life services.

The protocol was implemented for 7 months during 2023. Patients <18 years old undergoing ambulatory umbilical, epigastric, or inguinal hernia surgery were included. These patients were compared to a retrospective 7 month equivocal cohort prior to implementation in the year 2017.

Adherence to the protocol was stratified by level of opioid usage: high, medium, and low.

PROTOCOL

Pre-Operative Interventions

Surgeon	Reiterates plan for opioid free surgery +/- ultrasound guided block
Child Life	Supports and redirects patient and family in coping and breathing techniques
Anesthesia	Gives PO acetaminophen (15 mg/kg) +/- administers block
Nursing	Allows 1 parent to go to OR if desired

Intra-Operative Interventions

	Open Inguinal	Lap Inguinal	Umbilical	Epigastric
< 1yo	Single caudal shot		-	-
> 1yo	Ilioinguinal block	TAP block	Rectus sheath block	Subcostal TAP block
	Ropivacaine 0.25% 0.3-0.5 mL/kg/side			
> 2yo	Dexmedetomidine 0.5-1 mcg/kg			
> 6mo	Ketorolac 0.5 mg/kg (max 30mg)			

Post-Operative Interventions

Surgeon	Ensure appropriate home medications
Child Life	Helps with pain management
Anesthesia	Repeats acetaminophen dose
Nursing	Reaches out to anesthesia for opioid order if needed

RESULTS

	Pre-Implementation (n = 103) n (%)	Post-Implementation (n = 72) n (%)	P-value	Use After Implementation
Pre-Operative and Intra-Operative Medication Usage				
Acetaminophen (PO/IV)	1 (1.0)	15 (20.8)	**< 0.0001**	Increased
Ketorolac	23 (22.3)	49 (68.1)	**< 0.0001**	Increased
Dexmedetomidine	0 (0.0)	30 (41.7)	**< 0.0001**	Increased
Fentanyl	89 (86.4)	8 (11.0)	**< 0.0001**	Decreased
Post-Operative Medication Usage				
Acetaminophen (PO)	33 (32.0)	37 (51.4)	**0.010**	Increased
Ketorolac	1 (1.0)	1 (1.4)	> 0.999	No Change
Dexmedetomidine	0 (0.0)	1 (1.4)	0.408	Increased
Fentanyl	52 (51.0)	22 (30.6)	**0.012**	Decreased
Hydrocodone/ Acetaminophen	25 (24.2)	0 (0.0)	**< 0.0001**	Decreased

Table 1. Analgesic use. There was an increase in non-opioid analgesics and decrease in opioids in all phases of care.

Post-Operative Complications

	Pre-Implementation (n = 103) n (%)	Post-Implementation (n = 72) n (%)	P-value
Postop N/V	3 (2.9)	1 (1.4)	0.6444
Postop Complications	5 (4.9)	2 (2.8)	0.7014
Reoperation	1 (1.0)	1 (1.4)	1.0000
ER visit	1 (1.0)	2 (2.8)	0.5692
Readmission	0 (0.0)	1 (1.4)	0.4114

Table 2. Post-operative complications. There was no significant difference in complication rates between groups.

Protocol Adherence

	n (%)
LOW Opioid usage in the pre/intra op period	8 (11%)
MEDIUM No opioid usage pre/intra op, but opioid usage in the PACU	18 (25%)
HIGH No opioid usage both pre/intra op and in the PACU	46 (64%)

Table 3. Protocol Adherence. Overall protocol adherence was good with 89% of cases having either medium or high adherence.

Demographics
A total of 175 patients were analyzed. The median age was 4 years and the mediate weight was 17.6 kg. There was no significant difference in the demographics between pre- and post-implementation groups.

Type of procedure performed
There is no significant difference in procedure type between groups.

CONCLUSIONS

Creation of an opioid free protocol for routine pediatric surgical procedures is feasible. Overall reduction in opioid use in the perioperative period with no difference in post-operative complications or maximum PACU pain scores were observed. Protocol adherence was overall good with most either medium or high adherence.

REFERENCES