

ANTICIPATED INTERCOSTAL PERCUTANEOUS CRYOANALGESIA FOR NUSS PROCEDURE REPLACES EPIDURAL ANALGESIA AND POSTOPERATIVE OPIOIDS: A PRELIMINARY STUDY

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Background: Correction of Pectus Excavatum (PE) can be performed with Nuss procedure, a minimally invasive repair of PE (MIRPE) that involves placement of a transthoracic, retrosternal metal bar under thoracoscopic guidance. MIRPE is a painful procedure that causes *prolonged hospitalization* and *high opioid consumption*. Our traditional pain relief protocol was based on epidural analgesia (EA) associated with systemic analgesia (SA). Since July 2022 *Intercostal ultrasound-guided Percutaneous Cryoanalgesia* (IPC) has been introduced in our center.

Aim: To evaluate feasibility of IPC; to compare its efficacy to previous pain relief protocol; to compare Lengths Of hospital Stay (LOS).

Patients and Methods: A single center retrospective study. 35 patients included of age 15 [14-16]. Three groups without any difference in demographic or clinical characteristics were evaluated: Group 1 (G1): 17 patients received EA + SA. Group 2 (G2): 11 patients underwent IPC the day of surgery (+ EA + SA). Group 3 (G3): 7 patients anticipated IPC at least 48 hours before surgery (+ SA only). **Fig. 1**

Results: IPC was feasible in all patients (100%). Pneumothorax was diagnosed in 1 patient after IPC. He underwent MIRPE after 48h, with EA also, thus was excluded for not matching any group criteria.

1. Ropivacaine dose (mg/kg) required in postoperative period was higher in G1 than in G2* (23.2 ± 7.2 vs 15.3 ± 6.9).

2. Acetaminophen was discontinued earlier in G3* (3rd POD). **Fig.2**

3. LOS (days) was shorter* in G3 (4[4-5]) compared to G2 (6[5.5-7]) and G1 (7[6-8]). **Fig.3**

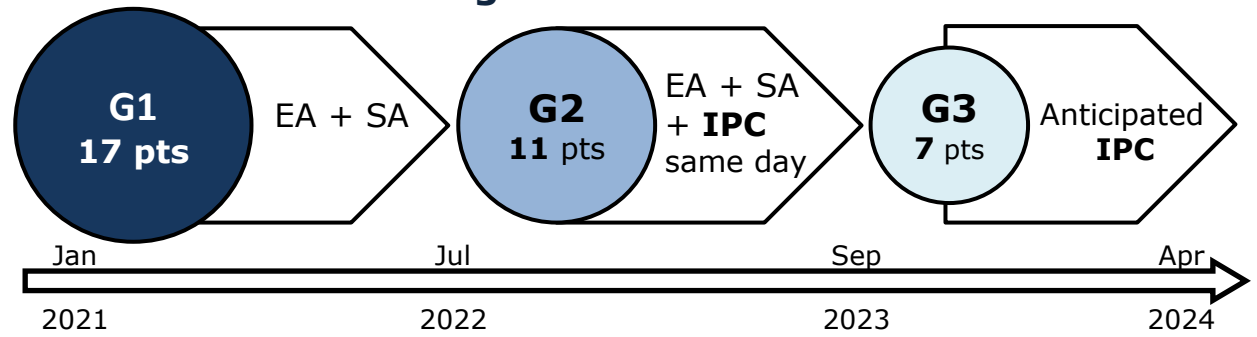
4. G3 patients never required postoperative opioids, as did every G1 & G2 patient.

* $p < 0,05$

Conclusion: IPC was feasible and according our preliminary data its timing seems to be crucial. Anticipated ICP was superior to both EA and intraoperative cryoanalgesia in terms of drug consumption and LOS.

There is no need for epidural catheters or postoperative opioids in our current practice.

Fig.1 - TIME LINE



SA	G1 (n=17)	G2 (n=11)	G3 (n=7)
	OPIOIDS		
Tapentadol			
N° of patients	7 (41,2%)	4 (36,4%)	0 (0%)
Dose (mg/kg)	3,3 [1,1-3,4]	7 [6,1-7,8] *	-
Tramadol (rescue)			
N° of patients	3 (17,6%)	2 (18,2%)	0 (0%)
Dose (mg/kg)	2 [1-2,9]	1 [1-1]	-
Codeine (rescue)			
N° of patients	17 (88,2%)	5 (45,5%)	0 (0%)
Dose (mg/kg)	1,6 [1-3,2]	1,5 [1,2-2]	-
NSAIDS			
Ibuprofen			
N° of patients	14 (82,3%)	10 (90,9%)	7 (100%)
Dose (mg/kg)	29,7 [17,9-47,8]	45,6 [22,2-50,7]	92,3 [53-105,4]
Ketorolac			
N° of patients	16 (94,1%)	4 (36,4%)	0 (0%)
Dose (mg/kg)	3,1 [2,4-3,9]*	1,5 [0,7-2,9]	-
ACETAMINOPHEN			
N° of patients	17 (100%)	11 (100%)	7 (100%)
dose (mg/kg)	227 [184-275]	315 [247-331] *	250 [174-308]

Fig. 2 Patients that used > 75% dose of acetaminophen

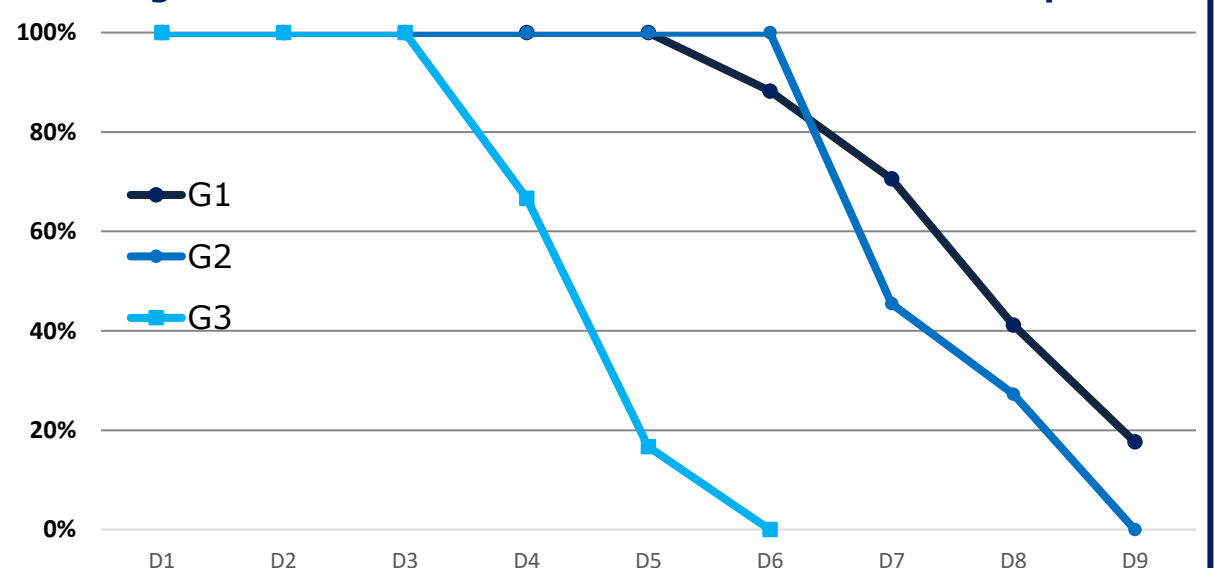


Fig. 3 Day of discharge

