

Intraoperative cryoanalgesia vs. epidural anesthesia in multimodal painmanagement after Nuss procedure

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Disclosures

- Proctor for cryotherapy at **AtriCure** Europe B.V.



Cryoanalgesia



Cryoanesthesia causes axonotmesis and temporarily blocks nerve conduction along peripheral nerve pathways



Within the range of -50 to -70 degrees Celsius, this technique allows for complete regeneration of structure and function of the affected nerve.



Thoracoscopy in Nuss; bilateral T3-T9 intercostal nerves, each 120 sec.





Aim of the study

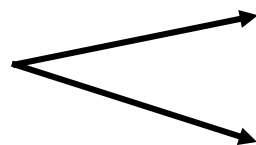
Comparing the effect of analgesia of cryoanesthesia and epidural anesthesia in multimodal pain treatment after Nuss surgery



Patients and methods



Retrospective study (n=66)



33 Nuss - Cryo anesthesia

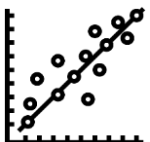
33 Nuss - Epidural anesthesia



Surgery between 2019-2022



All patients received Patient Controlled Analgesia (PCA) morphine



Chi-square, Fisher's exact, and Mann-Whitney U tests were used



Outcomes

Primary outcomes

- *Length of hospital stay (LOS)*
- *Opioid consumption*

Secondary outcomes

- *Visual analogue scale for pain (VAS, 0-10) at day 0, 1, and 2*
- *Operation time: from arrival at OR to sign out*



Patient characteristics

	Epidural (n=33)	Cryo (n=33)	P-value
Sex	82% (27/33)	88% (29/33)	0.733
Age*	16 (14-16)	16 (16-17)	0.009
Depth:			0.143
Light	3	8	
Moderate	23	22	
severe	7	3	
One bar	73% (24/33)	97% (32/33)	
Two bars	27% (9/33)	3% (1/33)	0.013

* Median (IQR)



LOS & opioid consumption

	Epidural (n=33)	Cryo (n=33)	P-value
LOS (days)	6 (5-8)	3 (3-4)	<0.001
Stop of PCA opioid (days)	4 (1-6)	1 (1-4)	<0.001
Opioid at discharge	97% (32/33)	30% (10/33)	<0.001
Opioid at discharge + 1w	45% (15/33)	6% (2/33)	<0.001
Opioid at discharge + 6w	3% (1/33)	3% (1/33)	1



VAS scores & operation time

	Epidural (n=33)	Cryo (n=33)	P-value
VAS day 0	3 (2-4)	2 (2-3)	0.063
VAS day 1	4 (3-6)	3 (2-4)	0.004
VAS day 2	4 (3-5)	2 (2-3)	0.001
Operation time (min) *	120 (100-134)	130 (121-145)	0.016

All in Median (IQR)

* Operation time 1 and 2 bars resp. 127 (111-138) and 132 (120-138), p=0.365



Extra pain management

	Epidural (n=33)	Cryo (n=33)	P-value
During hospital stay:	88% (29/33)	6% (2/33)	0.000
<i>Ketamin</i>	0/33	(1/33)	
<i>Clonidin</i>	19/33	(1/33)	
<i>Gabapentin</i>	26/33	(0/33)	
At discharge:			
<i>PCM</i>	100% (33/33)	100% (33/33)	1.000
<i>NSAID</i>	100% (33/33)	97% (32/33)	0.314
Six weeks after discharge:			
<i>PCM</i>	52% (17/33)	9% (3/33)	0.000
<i>NSAID</i>	21% (7/33)	6% (2/33)	0.149



Conclusion

Cryotherapy combined with PCA as multimodal postoperative pain management for Nuss procedure is more efficient than the combination of epidural anesthesia with PCA. Patients were discharged earlier, had better postoperative pain scores and a significant reduction in opioid use and use of other pain medication



Thank you for your attention!

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