

Fast track in VSD closure

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VietNam National Children's Hospital

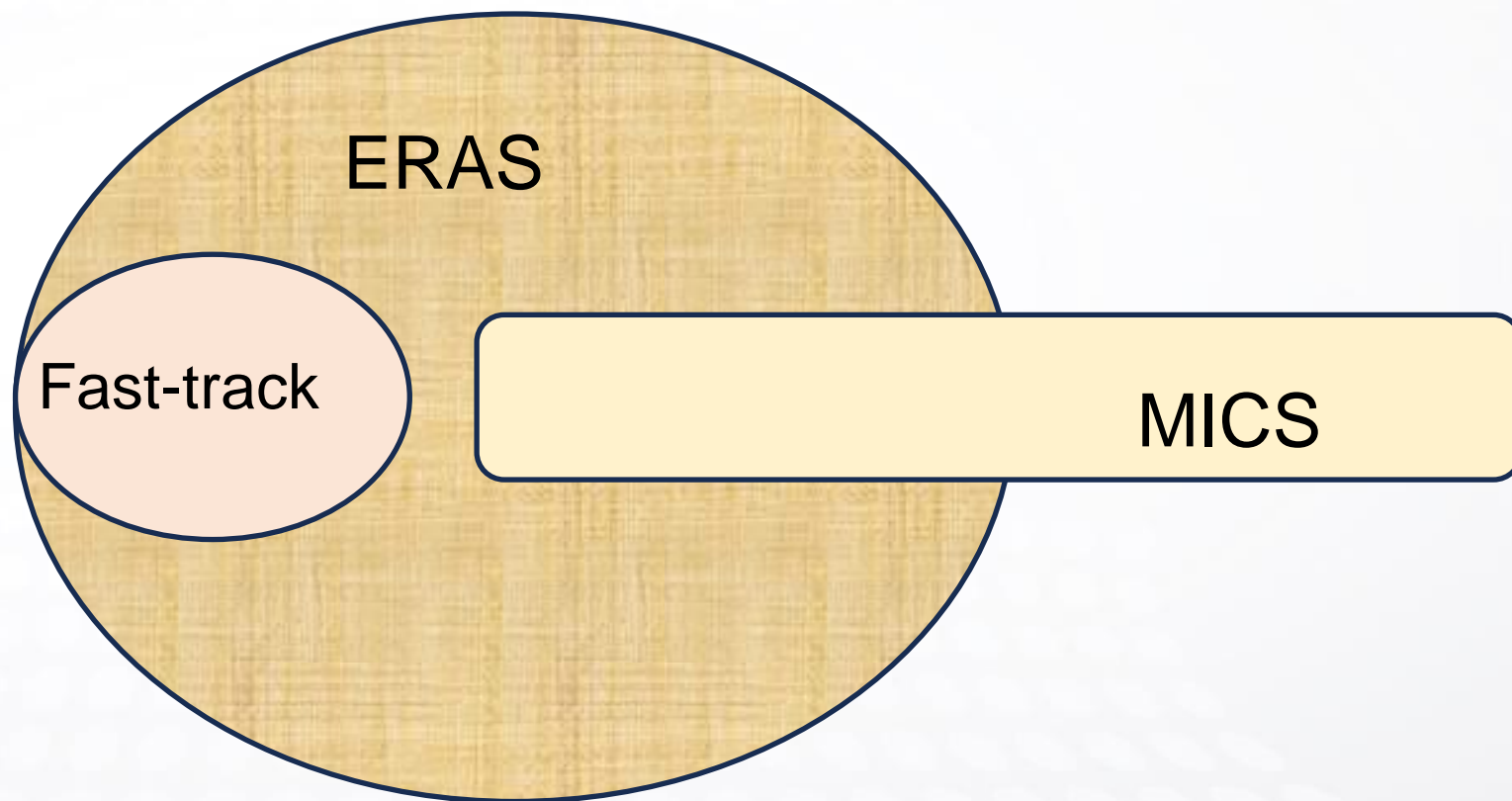
No conflict of interest

Outline



- Premise for fast track in VSD closure
- Patient's pathway
- Our results & learnt lessons

Premise for fast-track surgery

- Knowledge
- Skill & experience
- Pharmacology
- Instrument
- Leadership
- QI & auditing data
- Proactive team members working toward excellency



Should early extubation be the goal for children after congenital cardiac surgery?

[Kevin C. Harris, MD, MHSc](#)   • [Spencer Holowachuk, BHK](#) • [Sandy Pitfield, MD](#) • ... [Norbert Froese, MD](#) • [James E. Potts, PhD](#) • [Sanjiv K. Gandhi, MD](#) • [Show all authors](#)

[Open Archive](#) • Published: July 29, 2014 • DOI: <https://doi.org/10.1016/j.jtcvs.2014.06.093>

613 children (97 neonate)

71% Intra-op Extubation



89% Early Extubation (<24h)

Norwood is only procedure that don't have candidate for EE.

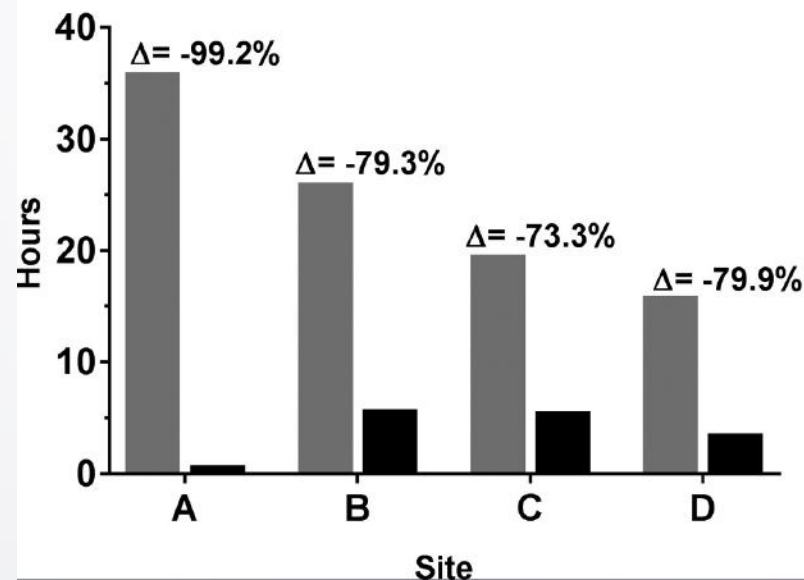
Early extubation strategy was associated with

- ✓ low rates of complications (5.1 per 10 procedures)
- ✓ short lengths of intensive care unit stay (median, 1 day; interquartile range, 1-3)
- ✓ short hospital stays (median, 4 days; interquartile range, 3-6).

Variation in Implementation and Outcomes of Early Extubation Practices After Infant Cardiac Surgery

Katherine E. Bates, MD, MS   • William T. Mahle, MD • Lauren Bush, MPH • ... Judy A. Shea, PhD • Donald S. Likosky, PhD • Sara K. Pasquali, MD, MHS • [Show all authors](#)

Median duration of intubation across sites in the pre- and post-CPG periods



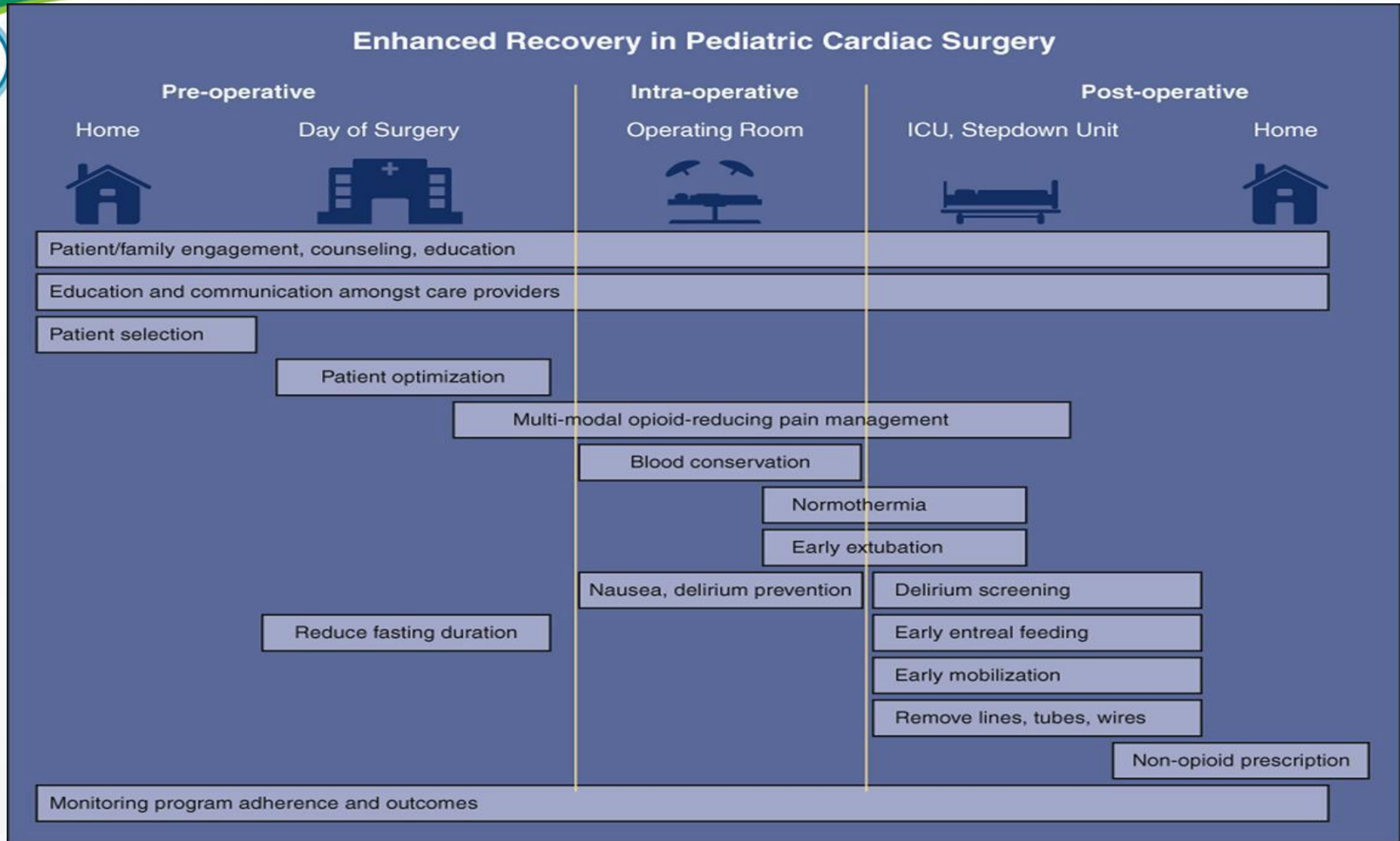
■ Pre-CPG Period
 ■ Post-CPG Period

Results

A total of 322 patients were included (4 active sites, 1 model site). Patient characteristics were similar across active sites, whereas pre-CPG median time to extubation varied from 15.4 to 35.5 hours. All active sites had a significant post-CPG decline ($p < 0.001$); however, there was variation in the post-CPG median time to extubation (0.3 to 5.3 hours, $p = 0.01$) and magnitude of change (-73.3% to -99.2%). Site A achieved the shortest post-CPG time to extubation and had the greatest percentage change. Two sites had significant decreases in medical ICU LOS in TOF patients; no hospital LOS changes were seen. All sites valued the collaborative learning strategy, site visits, CPG flexibility, and had similar core team composition. Site A used several unique strategies: inclusion of other staff and fellows, regular in-person data reviews, additional data collection, and creation of complementary protocols.

*CPG: Clinical practice guidelines

Enhanced Recovery in Pediatric Cardiac Surgery



STUDY PROTOCOL

Open Access



The protocol of Enhanced Recovery After Cardiac Surgery (ERACS) in congenital heart disease: a stepped wedge cluster randomized trial

Dou Dou¹, Yuan Jia¹, Su Yuan¹, Yang Wang², Yinan Li¹, Hongbai Wang¹, Jie Ding¹, Xie Wu¹, Dongyun Bie¹, Qiao Liu¹, Ran An¹, Haoqi Yan¹ and Fuxia Yan^{1*}

Appendix 1. ERAC strategy

Phase	Content	Recommendatio
Preoperative Strategies	patient education and counseling	explanations of
	preoperative oral intake of multidimensional carbohydrate beverages	oral administrati surgery
	sedation	parients' company and intranasal administration of dexmedetomidine 1 to 2 $\mu\text{g}\cdot\text{kg}^{-1}$ or oral administration midazolam 0.5 $\text{mg}\cdot\text{kg}^{-1}$
Intraoperative Strategies	continuous infusion of dexmedetomidine	inject dexmedetomidine intravenously at the rate of 0.2~0.7 $\mu\text{g}\cdot\text{kg}^{-1}\cdot\text{h}^{-1}$
	multimodal analgesia	local anesthesia around the incision, or ultrasound-guided nerve block
	blood conservation	tranexamic acid, cell saver, and use of modified ultrafiltration
	prevention of postoperative nausea and vomiting	0.15 $\text{mg}\cdot\text{kg}^{-1}$ dexamethasone or 0.1 $\text{mg}\cdot\text{kg}^{-1}$ ondansetron before anesthesia
Postoperative Strategies	early extubation	extubation immediately after surgery or within 6 hours of surgery
	multimodal analgesia	oral application of acetaminophen 4 times daily with a total daily dose of 30 mg/kg , ketorolac would be recommended to injected intravenously as needed, with a single dose of 0.5 to 1 $\text{mg}\cdot\text{kg}^{-1}$.
	goal-directed fluid therapy	goals (blood pressure, cardiac index, systemic venous oxygen saturation, and so on) to guide clinicians in administering fluids, vasopressors, and inotropes
	early feeding and physical exercise	drinking can be attempted 2 hours after extubation and sitting or exercising can be attempted 4 hours after extubation



Which modalities added value to MICS?



JAMA Network | **Open**

Original Investigation | Surgery

Association of Intraoperative Transesophageal Echocardiography and Clinical Outcomes After Open Cardiac Valve or Proximal Aortic Surgery

Emily J. MacKay, DO, MS; Bo Zhang, BS; John G. Augoustides, MD; Peter W. Groeneveld, MD, MS; Nimesh D. Desai, MD, PhD

N = 872,936 patients STS ACS database (2011-2019)

	TEE	NO TEE	Outcome
30-day mortality	3.81% ▼	5.27%	[O
Stroke or 30-day mortality	5.56% ▼	7.01%	[O
Reoperation or 30-day mortality	7.18% ▼	8.87%	[O

MacK

CARDIOVASCULAR ANESTHESIA: EDITED BY KLAUS MARKSTALLER

Transesophageal echocardiography in minimally invasive cardiac surgery

Prempeh, Agya B.A.; Scherman, Jacques; Swanevelder, Justiaan L.

Author Information

Current Opinion in Anaesthesiology 33(1):p 83-91, February 2020. | DOI: 10.1097/ACO.0000000000000807

Our VSD patient's pathway

- Screening:
 - Prenatal screening in OBG hospital
 - Occasional field-trips to remoted provinces
- Pre-op assessment:
 - x2 sonography to confirm diagnosis
 - Admission **1 day** before surgery & Anesthesia evaluation
- Intra-op: Lung isolation + PVBlock as regional analgesia
 - Dexmedetomidine infusion

Our results & learnt lessons

With the technical support from Okayama Hospital

17/8/2019: Our 1st case of VSD closure via right-thoracotomy

Until now >800 cases & getting more popular among patient families

Our results & learnt lessons

Criteria		Group		p
		Control Group (n = 35)	Levobupivacain Group (n = 35)	
Total Fentanyl Intra-operative (mcg/kg)	± SD	13,9 ± 4,8	3,9 ± 1,5	0,001
	Incidence of rescue Fentanyl at different phase			
	Skin incision n(%)	29/35(82.9%)	7/35(20,0%)	0,001
	Thoracotomy+ cannulae n(%)	5/35(14.3%)	5/35(14,3%)	1,0
	During CPB n(%)	13/35(37.1%)	5/35(14,3%)	0,01
	Close skin & Drainage n(%)	0	0	

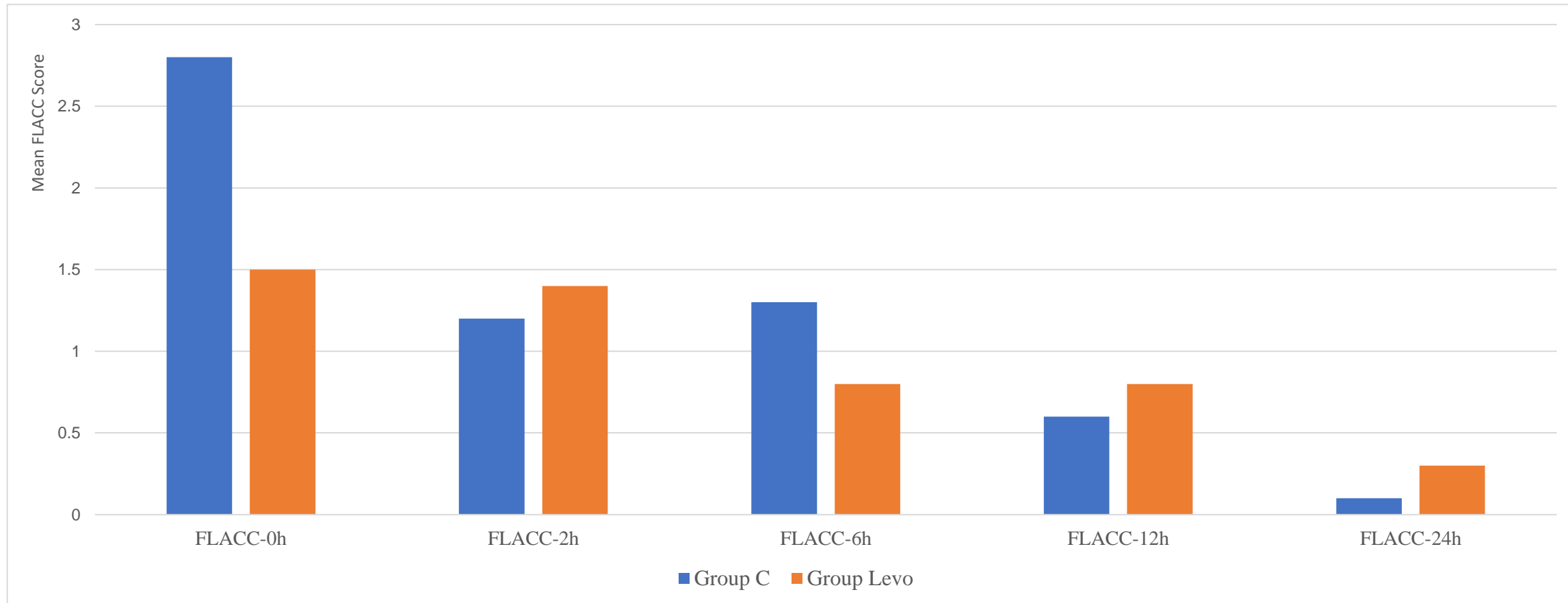
Our results & learnt lessons

Criteria	Group		p	
	Control Group (n = 35)	Levobupivacain Group (n = 35)		
Time to extubation (h)	<1h	1(2,9%)	30(85,7%)	0,001
	1-3.9h	14(40%)	1(2,9%)	
	4-5.9h	9(25,7%)	4(11,4%)	
	≥6h	11(31,4%)	0(0%)	
	± SD	303,9 ± 241,6	54 ± 92,9	

Our results & learnt lessons

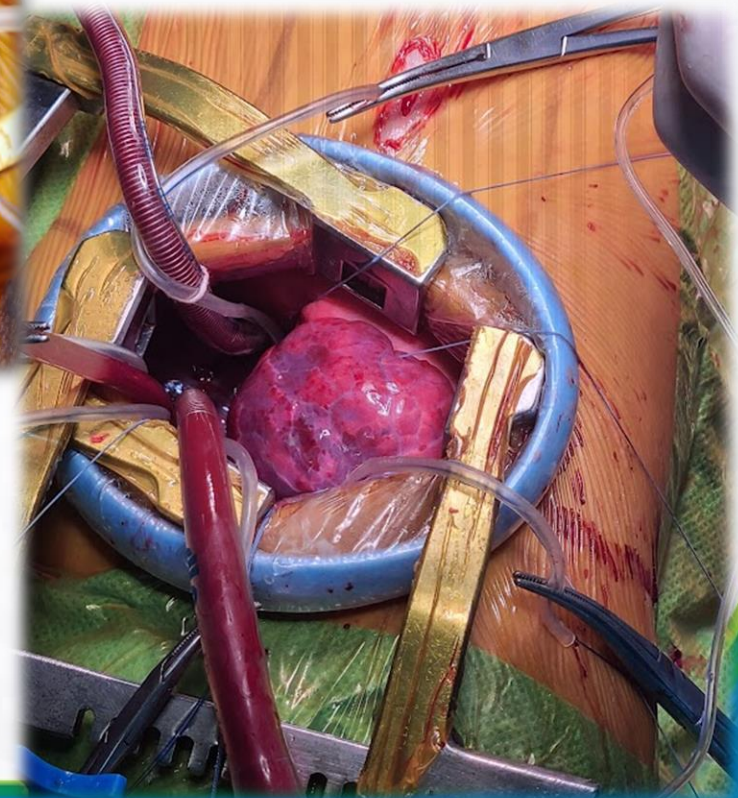
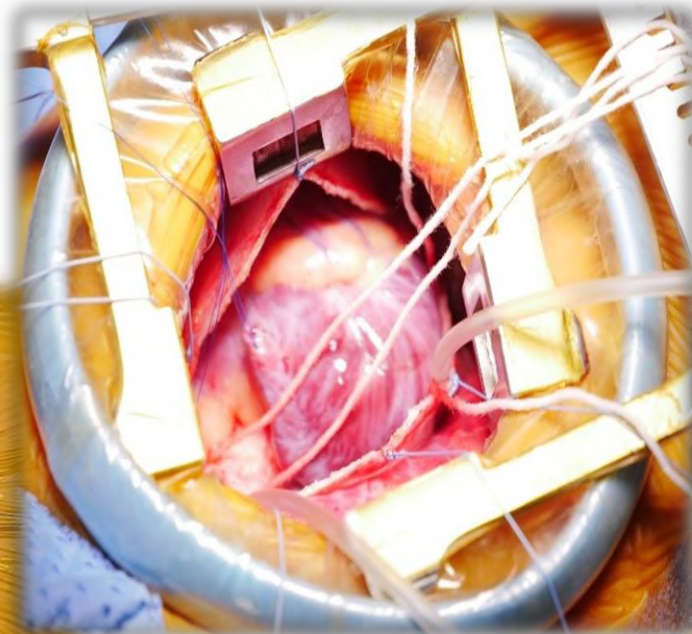
Criteria		Group		p
		Control Group (n = 35)	Levobupivacain Group (n = 35)	
Total Fentanyl 12h (mcg/kg)	± SD	17,5 ± 4,2	12,7 ± 1,6	<0,001
	Min-Max	0,5 - 2,6	0,5 - 6,1	
Time to rescue dose (hours)	± SD	1,2 ± 0,6	2,1 ± 1,4	<0,001
	Min-Max	0,5 - 2,6	0,5 - 6,1	
Rate of bolus fentanyl in 24h		30	24	<0,001

Our results & learnt lessons

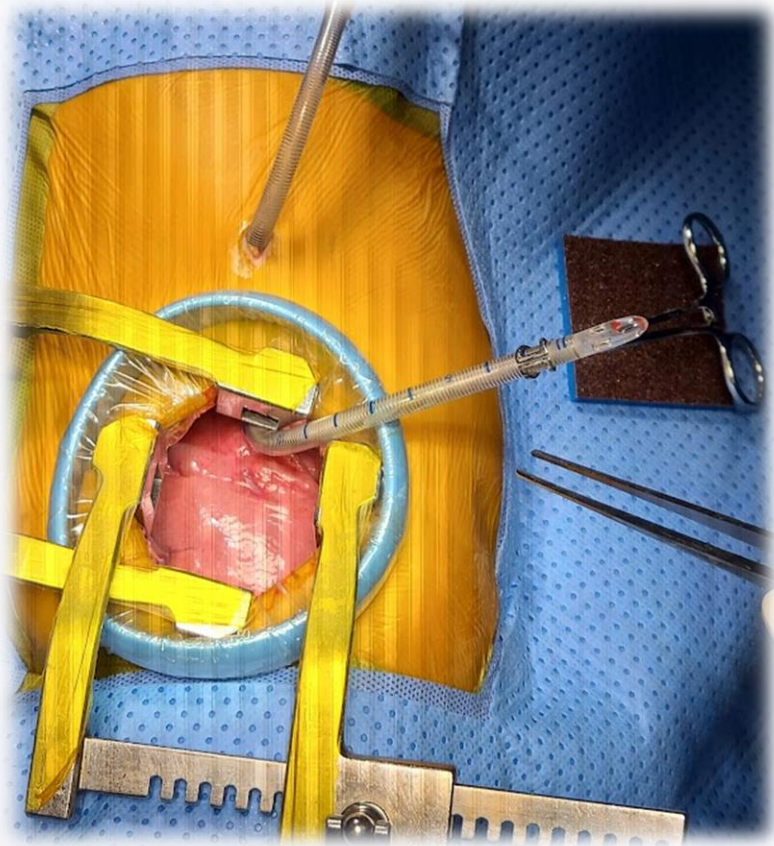


Unpublished data

Our results & learnt lessons



Our results & learnt lessons





Our results & learnt lessons




HỘI THẢO

N CƠ SỞ DỮ LIỆU QUỐC GIA VÀ CẬP NHẬT BỆNH TIM BẨM SINH PHỨC T

**WORKSHOP FOR COMPLEX CONGENITAL HEART DISEASE:
NATIONAL DATABASE PROJECT AND UPDATES ON COMPLEX CHD**

HÀ NỘI, NGÀY 22 THÁNG 3 NĂM 2024



MINIMALLY INVASIVE SURGICAL REPAIR THROUGH RIGHT VERTICAL INFRA-AXILLARY THORACOTOMY FOR SIMPLE CONGENITAL HEART DEFECTS

Truong NLT, Vinh TQ, Mai NT, Son HT, Duyen MD, Anh DV, Nam NT

Safety and efficacy of this approach for simple CHD repair?

Descriptive, retrospective study

Aug 2019 – Aug 2022



n = 382

Median age 16.2 months [IQR: 7.2 - 41.9]

Median weight 8.8 kg [IQR: 6.5 - 14]

Mean t.XAo : 45.4 ± 19.3 mins

Mean t.bypass 65.6 ± 23.1 mins

Mean t.operation 154,5 ± 29.7 mins

Two early reoperation/ One ECMO

One late reoperation

Morbidities: pleural effusion (0.8%),

pneumothorax (0.8%)

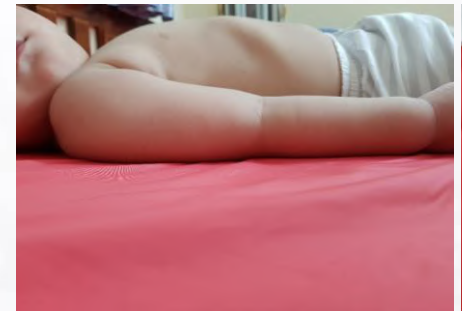
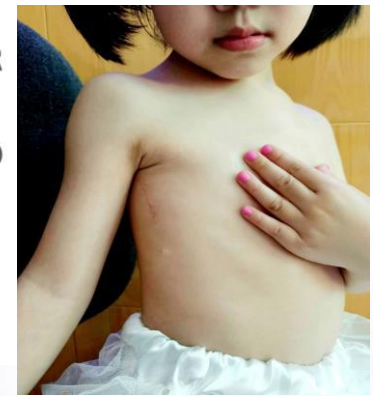
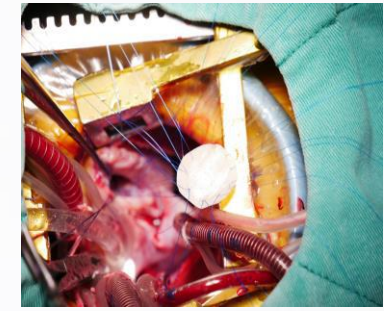
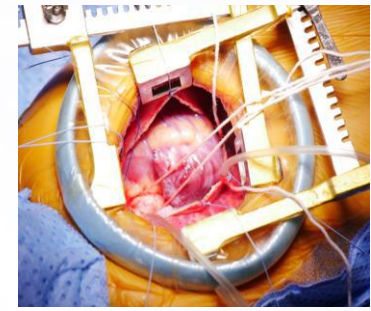
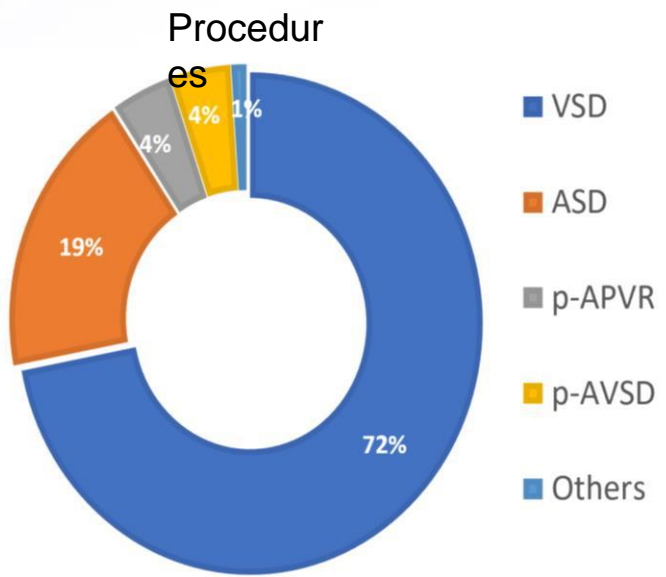
wound infection (1%)

Median follow-up 11.3 months

[IQR: 5.7 - 21.7]

Trivial residual shunt (23; 6%), 100%

NYHA 1



Safe and effective/ a good alternative to median sternotomy and cardiac intervention
Excellent cosmetic results

Thank for listening!



**VietNam National
Children's Hospital**



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HANOI MEDICAL UNIVERSITY