



EARLY RESULTS OF MODIFIED ABRAMSON TECHNIQUE IN THE TREATMENT OF PECTUS CARINATUM AT VIETDUC HOSPITAL IN 2023

Dr NGUYEN VIET ANH et al

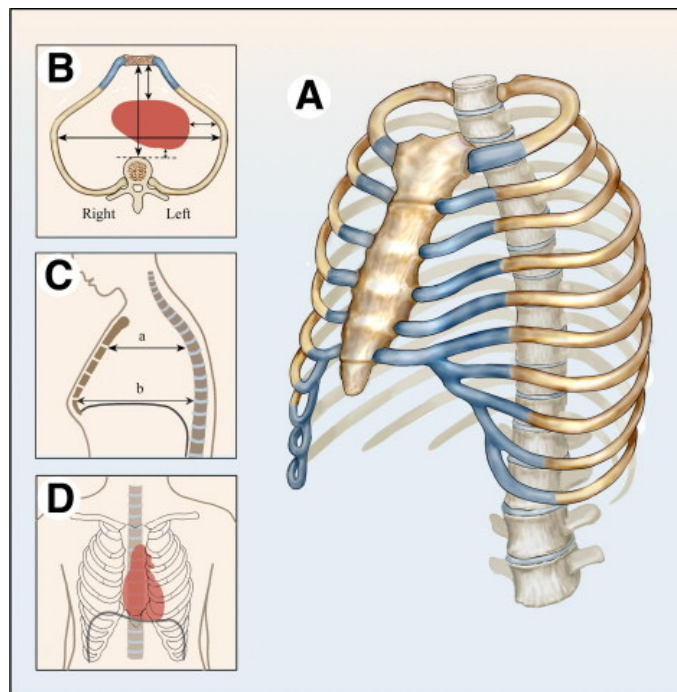
LECTURER – HANOI MEDICAL UNIVERSITY

CARDIOVASCULAR AND THORACIC CENTER– VIETDUC HOSPITAL

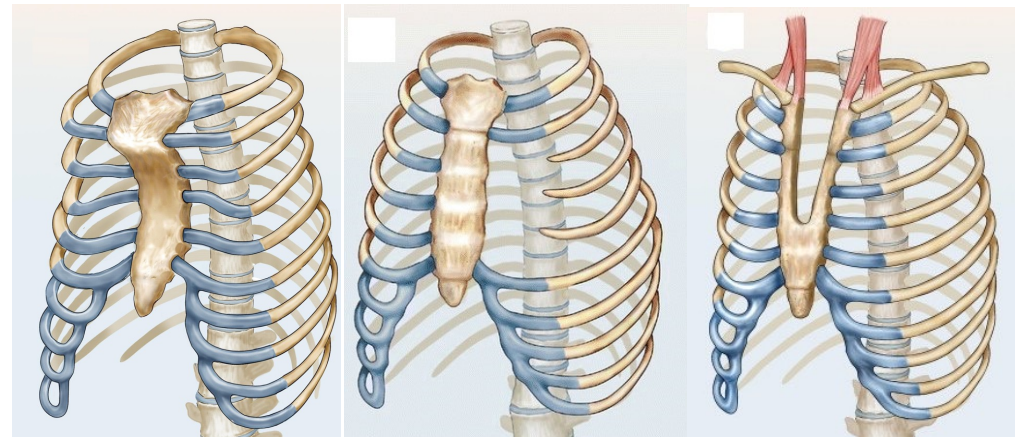
Ho Chi Minh City– ATCSA 16-18/11/2023

Background (1)

ANTERIOR CHEST WALL DEFORMITY



Pectus Carinatum



Pectus Excavatum

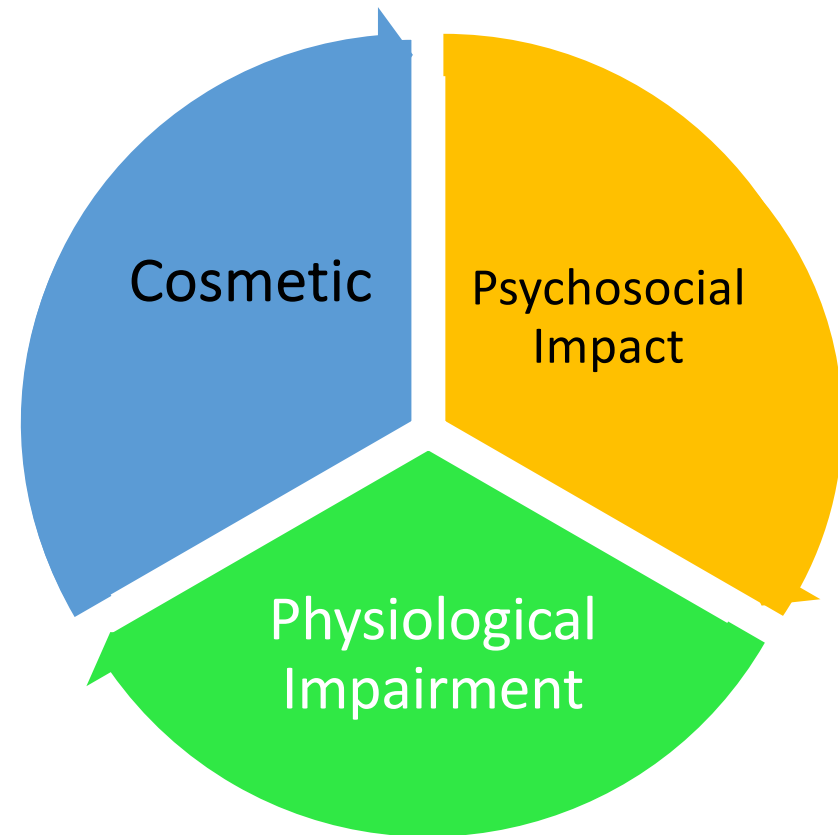
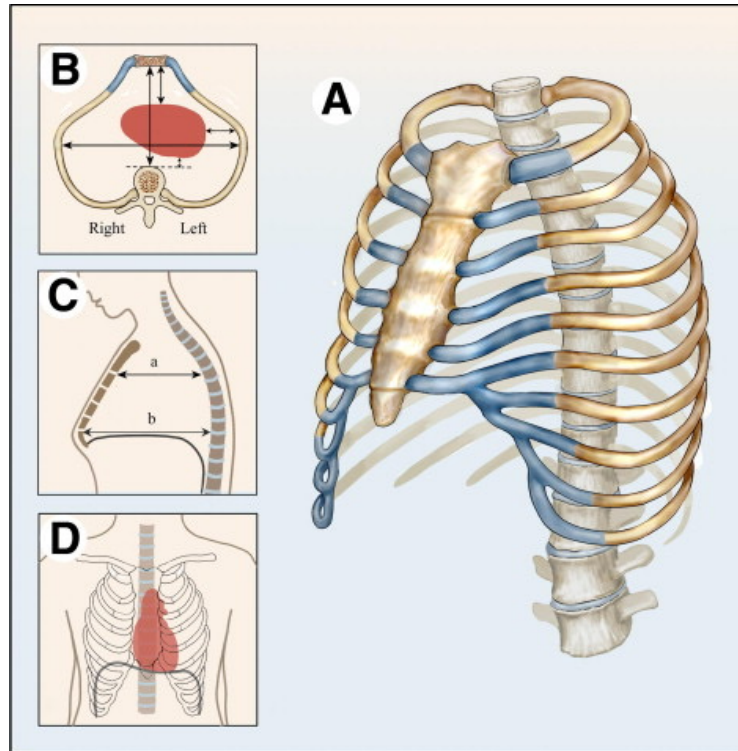
Poland Syndrome

Sternal Defects



Fokin, A. A., et al. (2009). "Anatomical, Histologic, and Genetic Characteristics of Congenital Chest Wall Deformities." Seminars in Thoracic and Cardiovascular Surgery 21(1): 44-57.

Background (2)

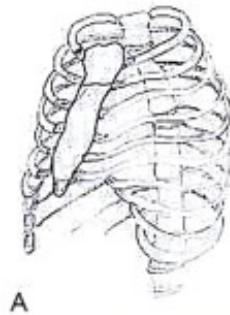


PECTUS CARINATUM

Fokin, A. A., et al. (2009). "Anatomical, Histologic, and Genetic Characteristics of Congenital Chest Wall Deformities." Seminars in Thoracic and Cardiovascular Surgery 21(1): 44-57.

Background (3)

- Most common type
- Protrusion of the middle of the sternum
- Lateral depression typically.

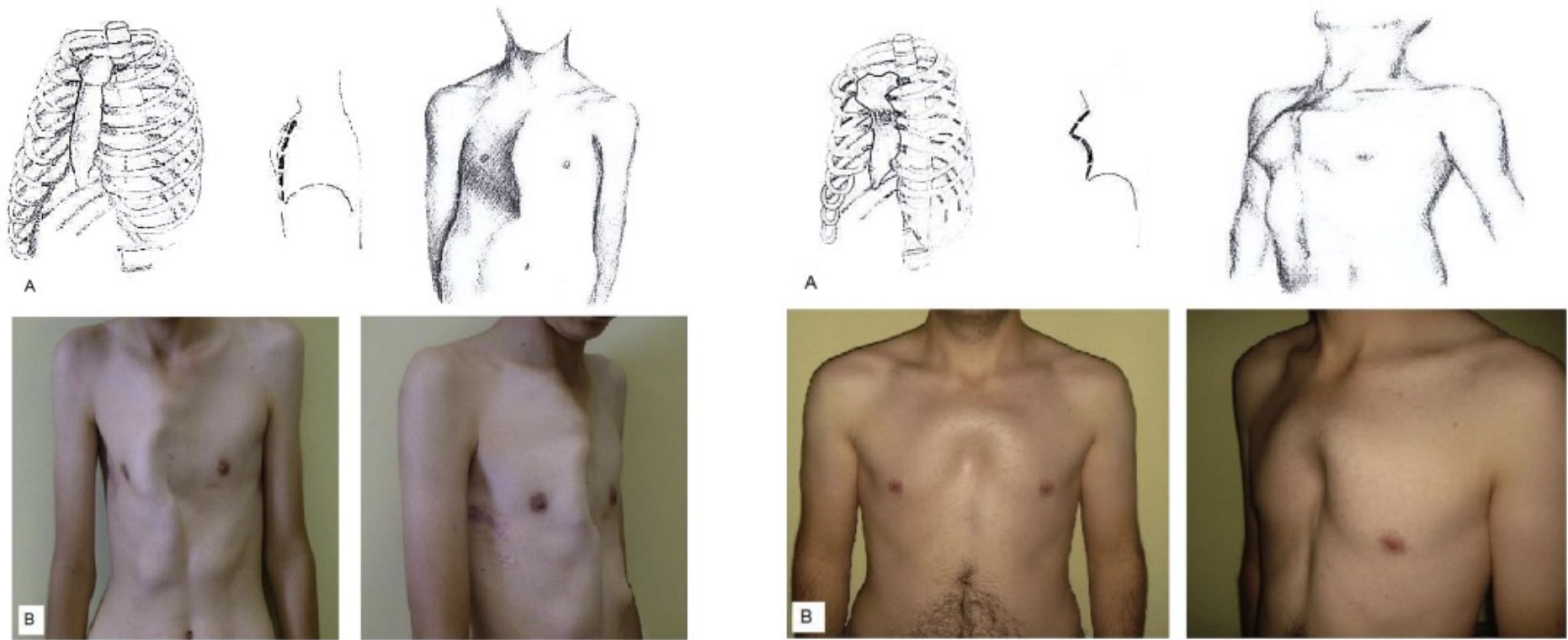


Chondrogladiolar Symmetrical

Yuksel M. *Minimally Invasive Repair of Pectus Carinatum.* *Ann Thorac Surg.* 2018 Mar;105(3):915-923.



Background (4)



Chondroglandiolar asymmetrical

CHONDROMANUBRIAL OR PIGEON CHEST

Yuksel M. Minimally Invasive Repair of Pectus Carinatum. Ann Thorac Surg. 2018 Mar;105(3):915-923.





Background (4)

Indication for surgery: Inconsistent

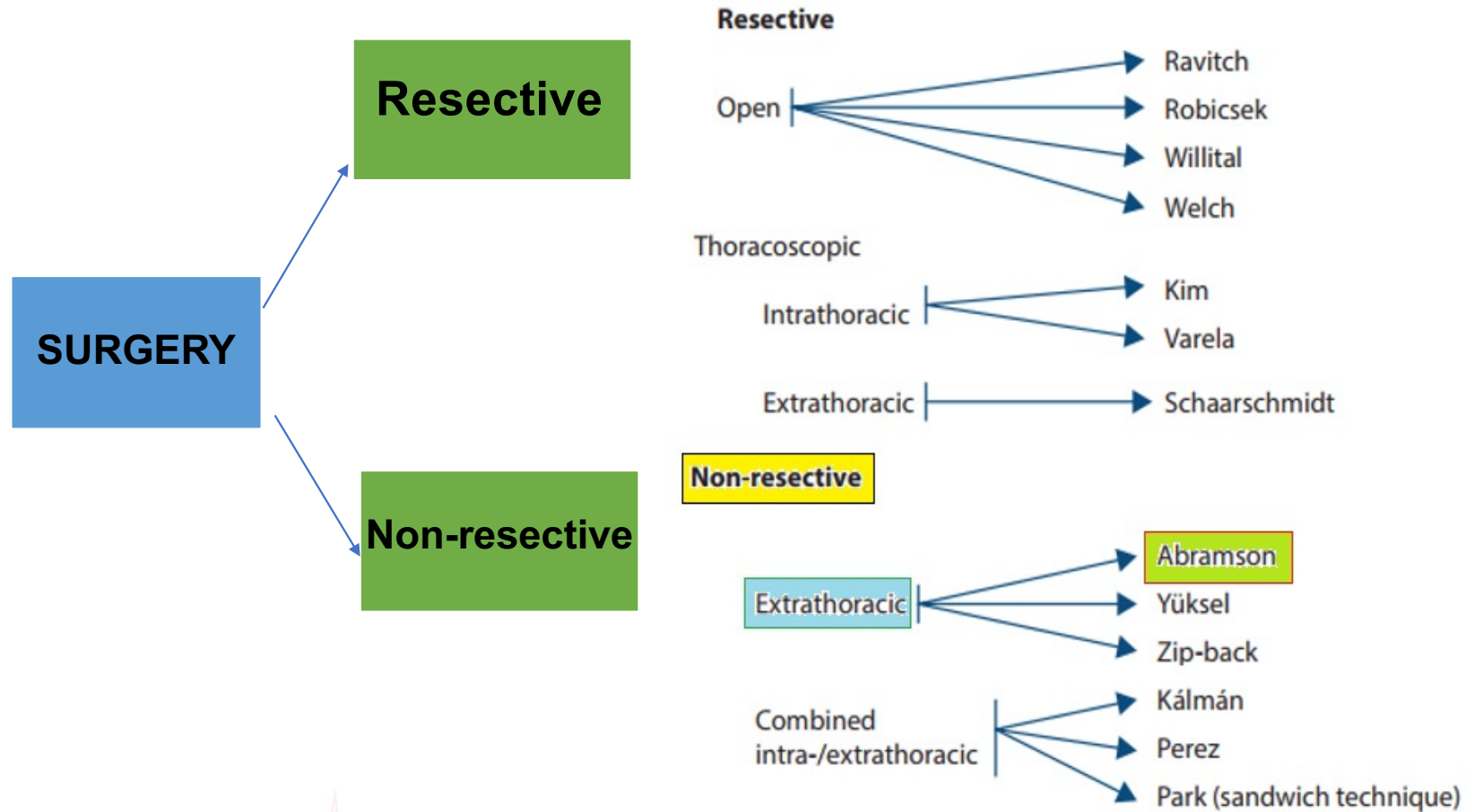
- Cosmetic
- Psychosocial impact.
- >10 years of age.
- The Haller Index ≤ 2.0



Yuksel M. Minimally Invasive Repair of Pectus Carinatum. Ann Thorac Surg. 2018 Mar;105(3):915-923.



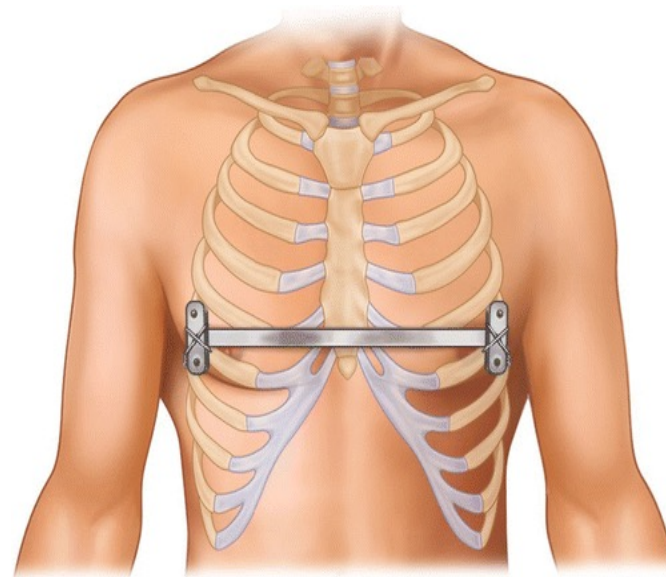
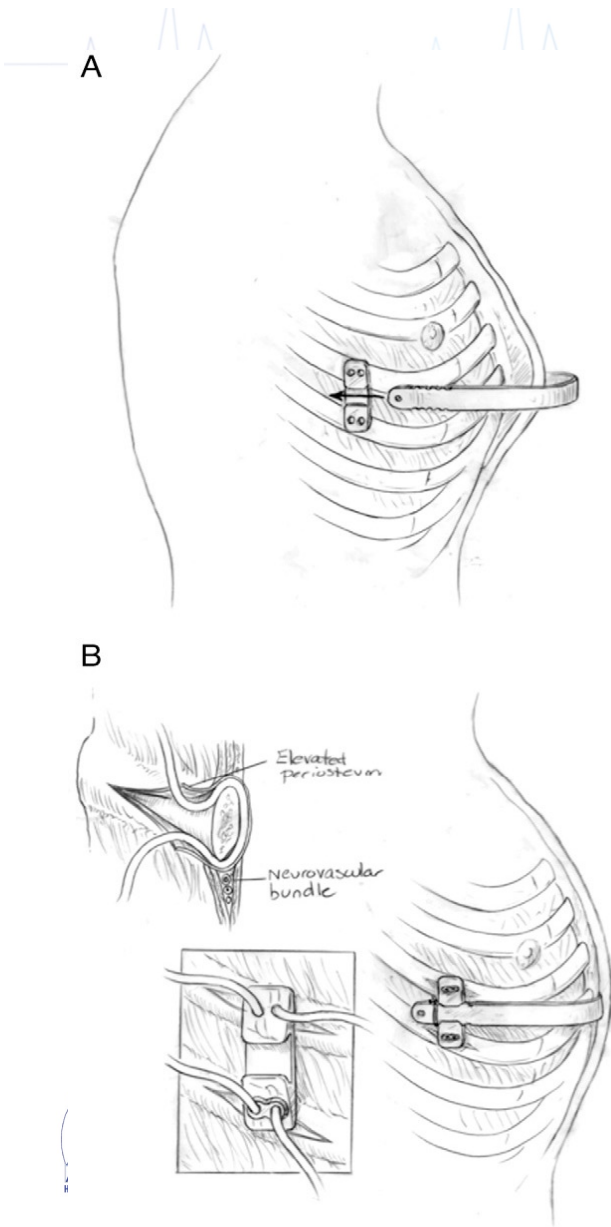
Background (5)



Martinez-Ferro M. Pectus carinatum: When less is more. Afr J Thorac Crit Care Med. 2019 Sep 17;25(3):10.7196.



Background (6)



Abramson Technique

Abramson H. A 5-year experience with a minimally invasive technique for pectus carinatum repair. J Pediatr Surg. 2009 Jan;44(1):118-23; discussion 123-4.



METHOD



- ❖ Study subjects: All patients were diagnosed with Pectus carinatum and were treated with the modified Abramson technique.
- ❖ Location: Cardiovascular and thoracic center, Vietduc Hospital
- ❖ Time: From January 2023 to August 2023.
- ❖ Method: cross-sectional description.



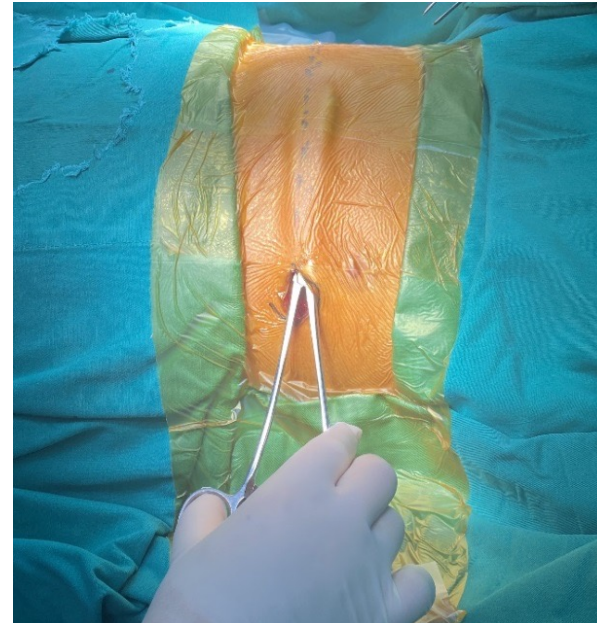
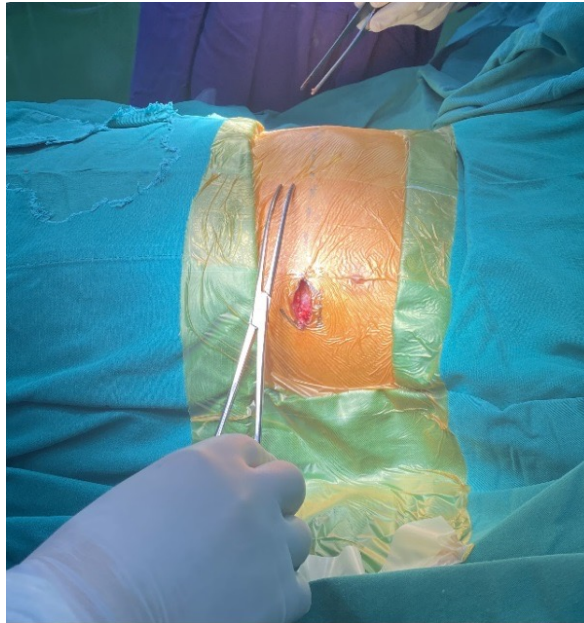
SURGICAL PROCEDURE AT VIET DUC FRIENDSHIP HOSPITAL (1)



Anesthesia and skin markings

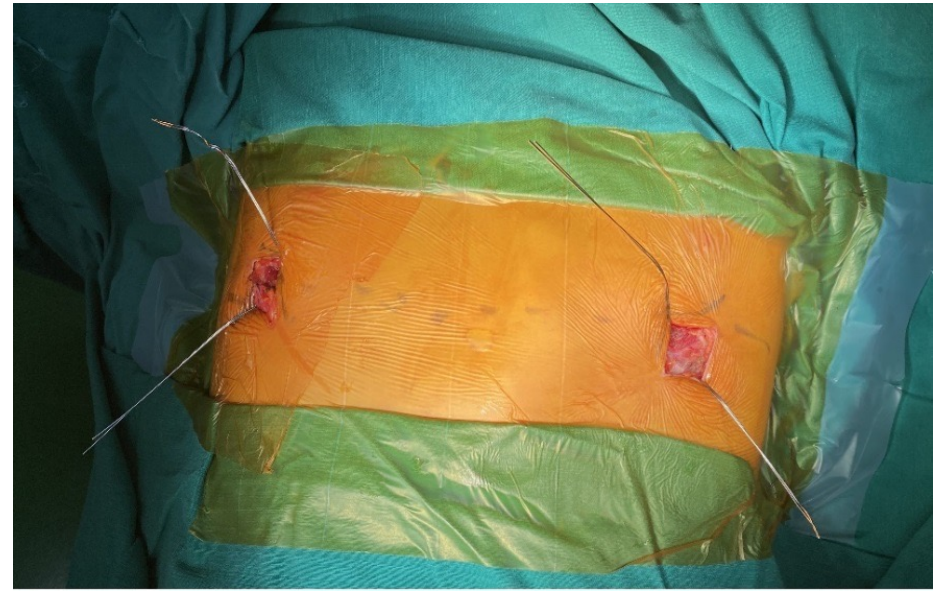
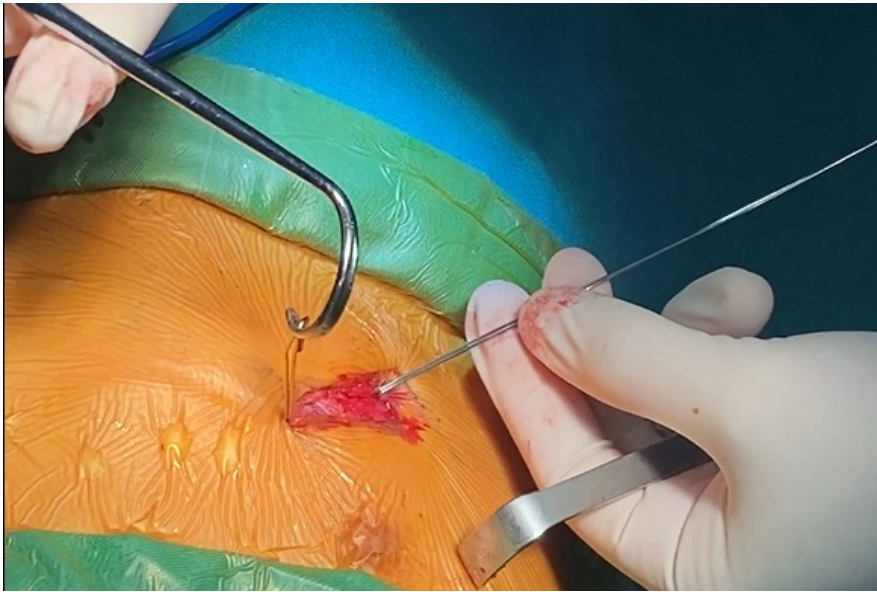


SURGICAL PROCEDURE AT VIET DUC FRIENDSHIP HOSPITAL (2)



Incisions and making a tunnel

SURGICAL PROCEDURE AT VIET DUC FRIENDSHIP HOSPITAL (3)



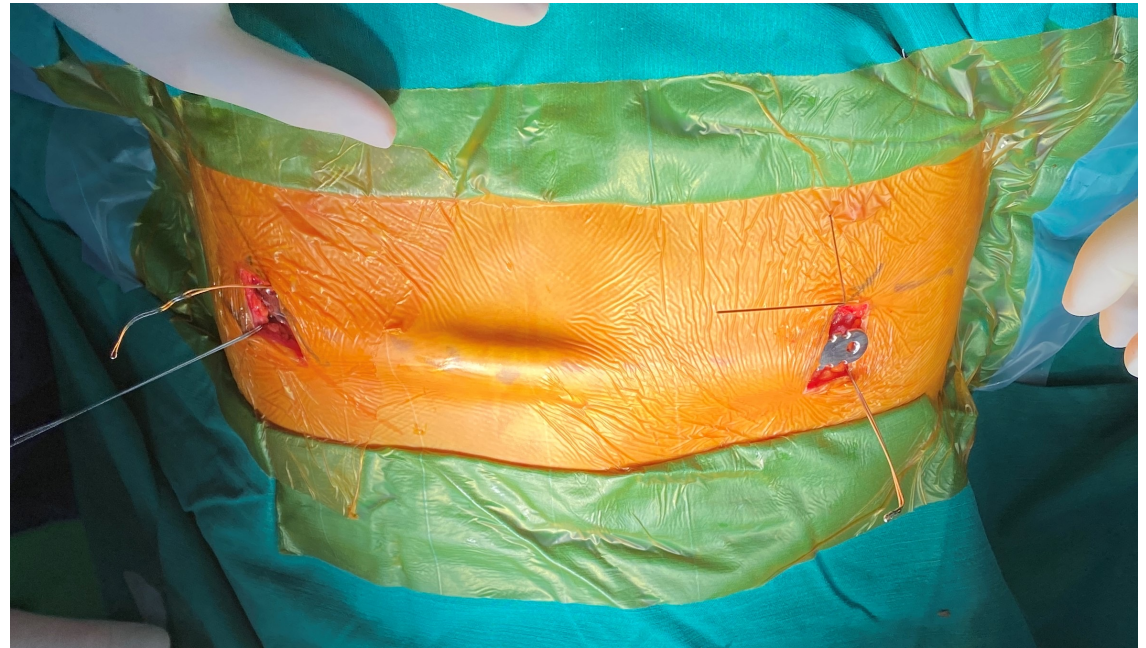
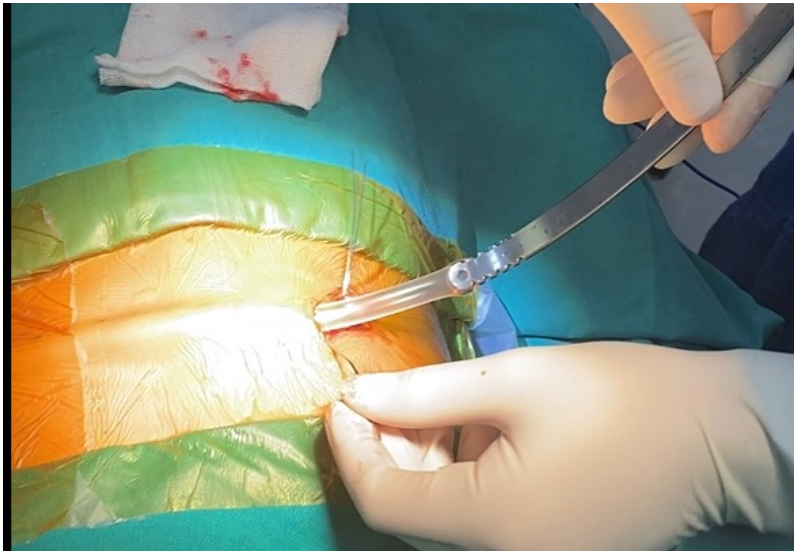
Dissection the rib at the both sides and sew steel wire
around the slected ribs

SURGICAL PROCEDURE AT VIET DUC FRIENDSHIP HOSPITAL (4)



32Fr chest tube is placed through the tunnel

SURGICAL PROCEDURE AT VIET DUC FRIENDSHIP HOSPITAL (5)



Insertion of the compressive bar



SURGICAL PROCEDURE AT VIET DUC FRIENDSHIP HOSPITAL (6)



Fix the bar with steel wires

SURGICAL PROCEDURE AT VIET DUC FRIENDSHIP HOSPITAL (7)



After surgery- Patient Do Gia B, 12yrs old



SURGICAL PROCEDURE AT VIET DUC FRIENDSHIP HOSPITAL (8)

Modified :

- Anesthesia with a laryngeal mask.
- Make a tunnel under the skin but above the chest wall muscle layers.
- Using a short bar (the distance between the anterior axillary line on both sides)
- Fixation with only steel wires.

Abramson technique:

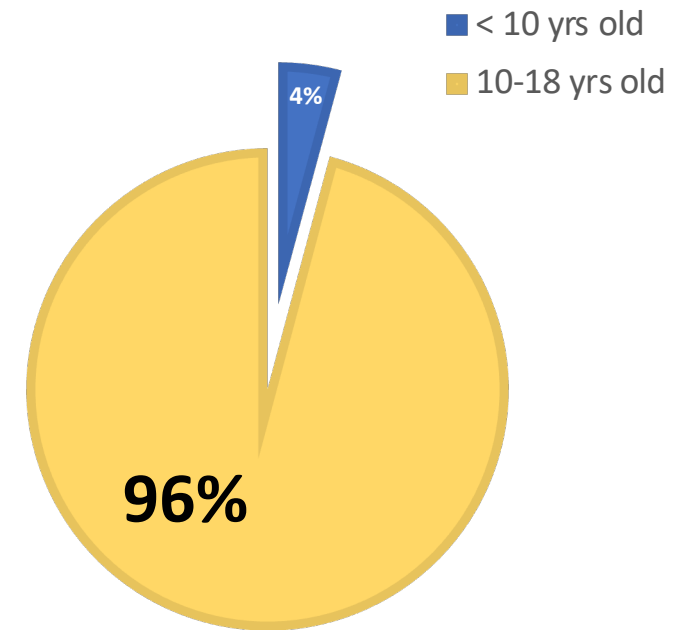
- General anesthesia with endotracheal intubation.
- Tunnel is underneath the pectoralis major muscle
- Bar length is the distance between the middle axillary line on both sides.
- Fixation with the stabilizers include the plate and wires.



Results and discussion (1)

From 1/2023 - 8/2023

- 48 Patients: 45 males and 3 females
- Age: $13,5 \pm 3,8$
- BMI: 16,1
- 100% Cosmetic issue
- 72,9% (35/48) Psychosocial Impact



Age group distribution of participants



*Yuksel M. Ann Thorac Surg. 2018 Mar;105(3):915-923.
Abramson H. J Pediatr Surg. 2009 Jan;44(1):118-23; discussion 123-4.
Apaydin, T. and M. Akkuş (2021). Current Thoracic Surgery 6: 21.*

Results and discussion (2)

Index	Research (n=48)	Yuksel 2018 (n=172)	Abramson 2009 (n=40)	Apaydin 2021 (n=64)
Male (%)	94	89,5	90	73,4
Average age	13,5	17,3	14,3	14.4
Age range	8-18	10-35	11-20	8-25
% (10-18 years old)	96	NA	92,5	NA
Cosmetic issue	100%	NA	NA	100%

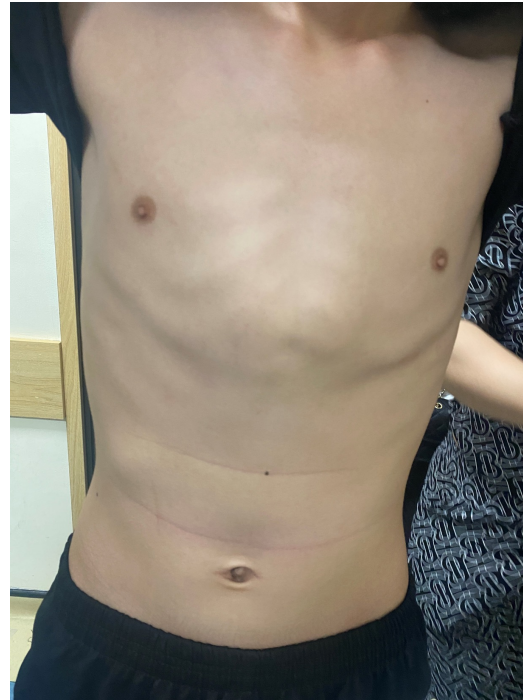
*Yuksel M. Ann Thorac Surg. 2018 Mar;105(3):915-923.
Abramson H. J Pediatr Surg. 2009 Jan;44(1):118-23; discussion 123-4.
Apaydin, T. and M. Akkuş (2021). Current Thoracic Surgery 6: 21.*



Results and discussion (3)

Classification

- Symmetrical : 64,6% (31)
- Asymmetrical : 29,2% (14)
- Mix: 3 patients

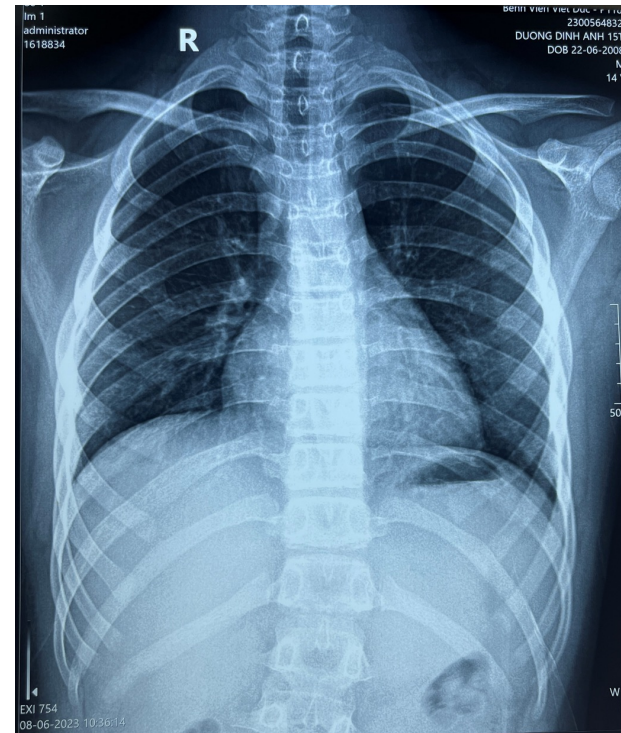


Patient Nguyen Duc M, 15yrs old

Results and discussion (4)

Combined birth defects

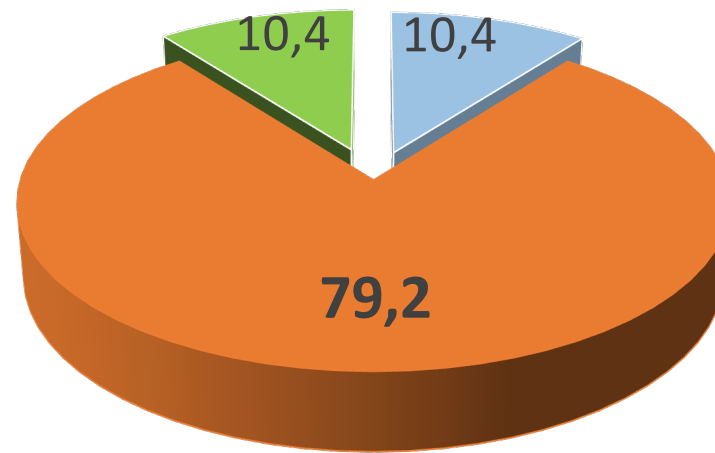
- 12,5% mild scoliosis
- 4,17% (2/48) have PFO on cardiac echography



Patient Duong Dinh A, 15 yrs old
COBB angle = 12 degree

Results and discussion (5)

Haller Index average : $2,1 \pm 0.59$ with 79,2% HI from 1,8 - 2,2



■ HI < 1.8 ■ HI 1.8 - 2.2 ■ HI > 2.2



Results and discussion (6)

Compare the Haller index with other studies.

Haller Index	Our research (n=48)	Park HJ 2016 (n=16)	Barbara DF et al. 2021 (n=14)	Xuefeng Zhang 2022 (n=112)
Average before surgery	2,1 ± 0.59	2.04 ± 0.34	1,97 ± 0,38	1.96 ± 0.22
Lowest	1,7	NA	1,6	NA
Highest	2,54	NA	2,7	NA
Average after surgery	NA	2.54 ± 0.29	2,16 ± 0,3	2.78 ± 0.35

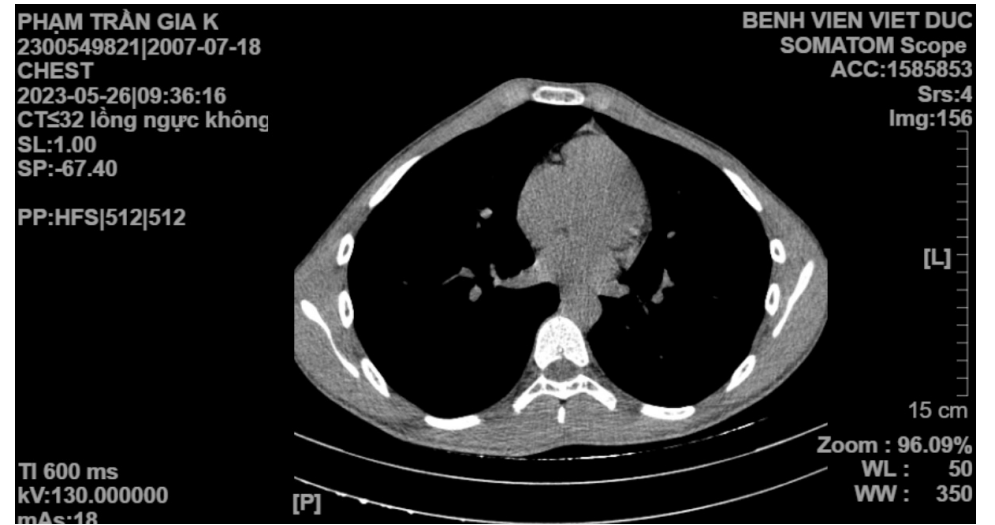
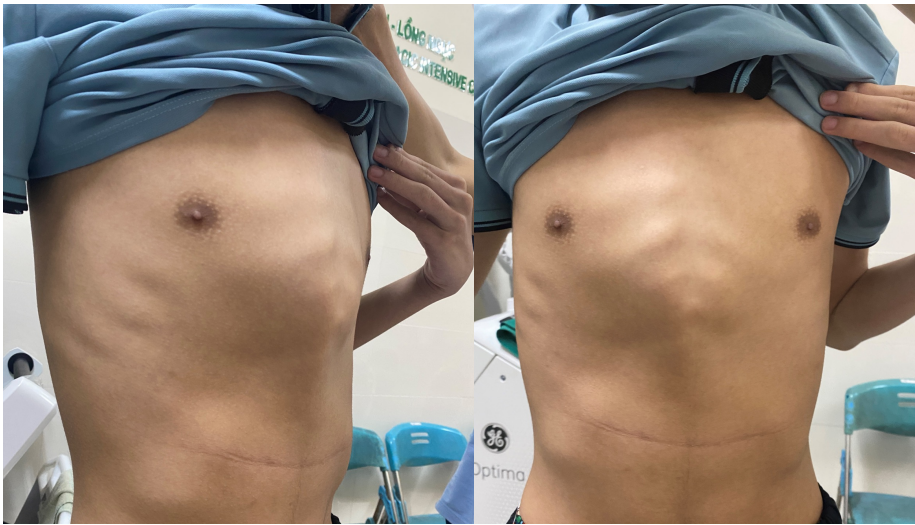
Park HJ, Kim KS.. Ann Cardiothorac Surg. 2016 Sep;5(5):434-439.

Zhang X. J Thorac Dis. 2022 Aug;14(8):2781-2790.

Del Frari B. Eur J Cardiothorac Surg. 2021 Jan 29;59(2):382-388.



Results and discussion (7)



Patient Pham Tran Gia K, 16yrs old

HI = 1,94



Results and discussion (8)

Intraoperative features

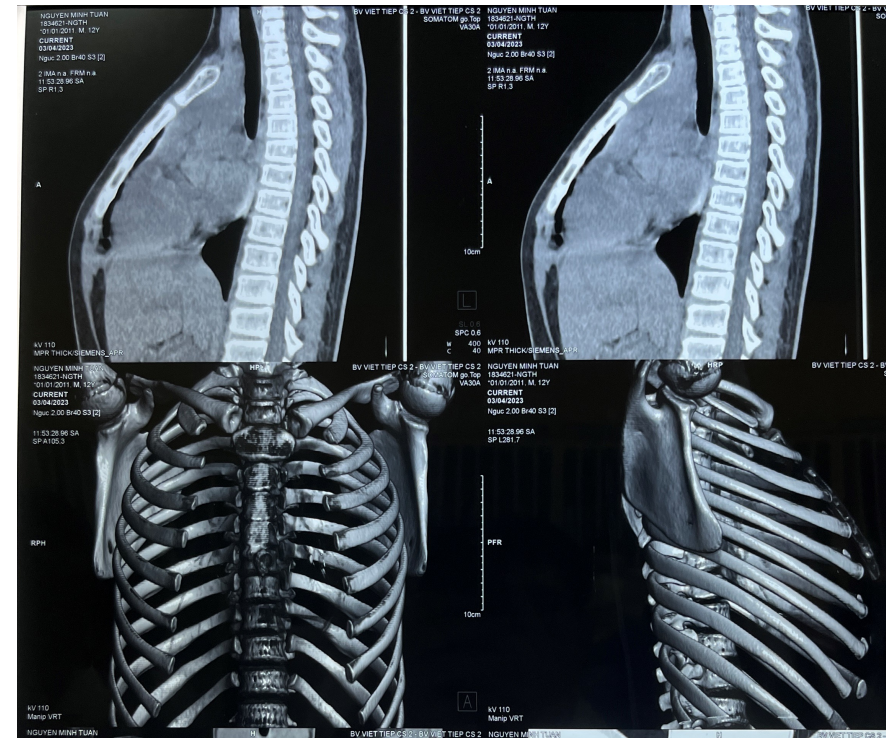
- Mean duration of operation : $31,6 \pm 16,2$ minutes
- Duration of hospitalization: $4,4 \pm 1,52$ days
- No complications in the postoperative period.

Thông số	Research (n=48)	Abramson H 2009 (n=40)	Apaydin 2021 (n=64)	Xuefeng Zhang 2022 (n=112)	Yuksel M 2018 (n=172)
Mean duration of operation (minutes)	$31,6 \pm 16,2$	NA	61	67,74	76
Duration of hospitalization (days)	$4,4 \pm 1,52$	3,8	$5,1 \pm 2,9$	3,64	3,7
Early complications (Pneumothorax)	6,35%	2,5%	4,6%	10%	7% -2,9%



[Yuksel M. Ann Thorac Surg. 2018 Mar;105\(3\):915-923.](#)
[Abramson H. J Pediatr Surg. 2009 Jan;44\(1\):118-23; discussion 123-4.](#)
[Apaydin, T. and M. Akkus \(2021\). Current Thoracic Surgery 6: 21.](#)

Results and discussion (9)



Patient Nguyen Minh T, 12 yrs old; HI=1,82



Results and discussion (10)



Patient Nguyen Minh T, 12 yrs old; HI=1,82

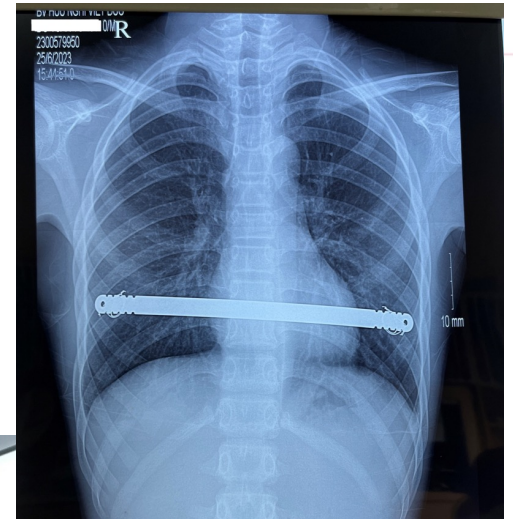


Results and discussion (11)



Patient Nguyen Minh T, 12 yrs old; HI=1,82





Before and 1 month after surgery
Patient Nguyen Tien D, 13yrs old



Before and 3 months after surgery





Conclusion

Surgical treatment of pectus carinatum using the modified Abramson technique:

- Anesthesia with a laryngeal mask.
- Using a short bar and Fixation with only steel wire.
- Highly effective and safe for patients.
- Low treatment cost.





THANK YOU FOR LISTENING

