

6 YEARS ON: OUR EXPERIENCE WITH PEDIATRIC CARDIAC SURGERY

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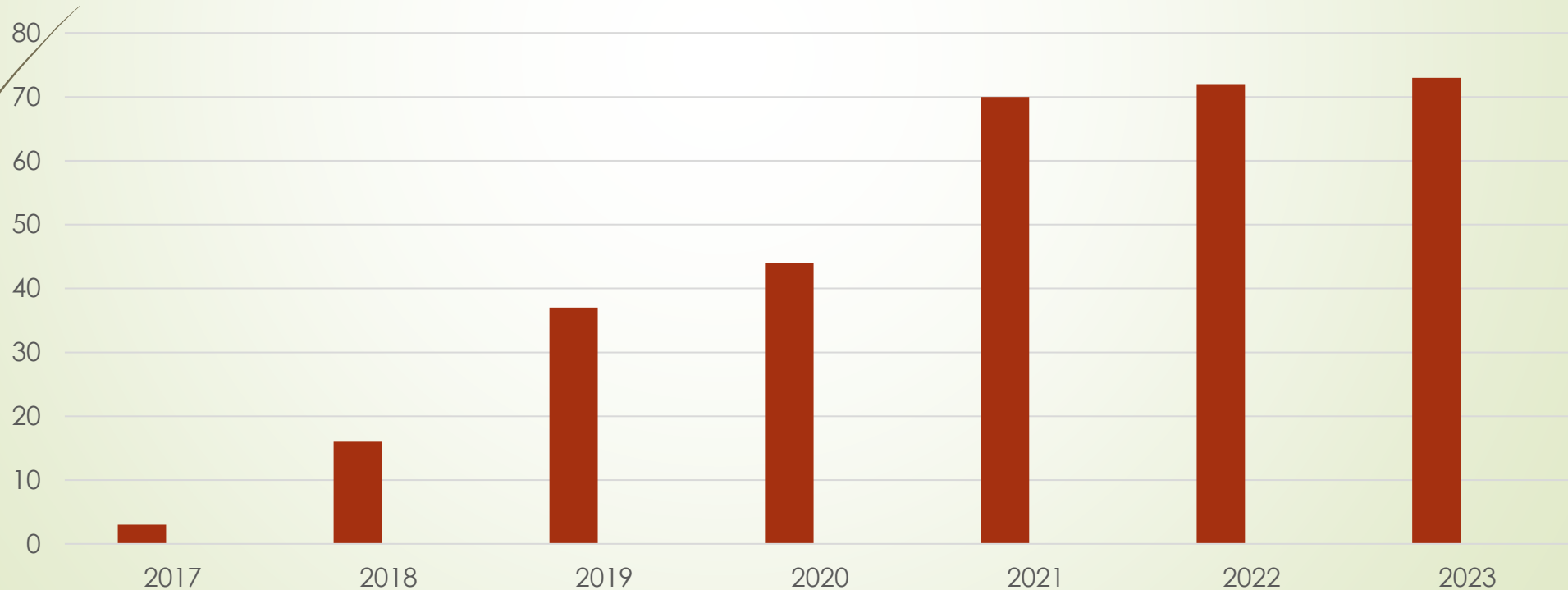
MBBS, MS, M.Ch (CVTS)

ASSISTANT PROFESSOR(CVTS)

OUR JOURNEY

- Department of CVTS started : 2017
- First open heart surgery : 01-09-2017
- First pediatric case: 21-09-2017
- Number of pediatric cases done till now:303

NUMBER OF CASES



Spectrum of cases

- ▶ Atrial septal defect
- ▶ Ventricular septal defect
- ▶ Patent ducts arteriosus
- ▶ Coarctation of aorta
- ▶ Tetralogy of fallot /Double outlet right ventricle
- ▶ Total anomalous pulmonary venous connection
- ▶ Ebstein anomaly
- ▶ AV canal defects
- ▶ Transposition of great arteries
- ▶ Single Ventricular physiology

Complex congenital

- Combination of lesions
- Hemitruncus
- Gerbode defect
- TGA
- TOF with pulmonary atresia
- TAPVC
- Tricuspid atresia
 - Glenn procedure
 - Fontan procedure
- HEART TRANSPLANT



OUR EXPERIENCE

- VSD CLOSURE: 95
- REPAIR OF TOF : 44 CASES
- ASD CLOSURE: 38 cases
- TAPVC repair: 31 cases
- PDA : 9
- PARTIAL AV CANAL DEFECT : 7
- COMPLETE AV CANAL DEFECT: 1
- COARCTATION OF AORTA: 7
- VSD WITH PS : 3
- VSD WITH AR : 4
- VSD WITH MR : 1
- VSD WITH TR : 1
- VSD WITH RVOTO : 2
- VSD WITH SUBAORTIC MEMBRANE: 1



OUR EXPERIENCE



- ▶ TRANSPOSITION OF GREAT ARTERIES:

- ▶ ARTERIAL SWITCH : 2

- ▶ BT SHUNT : 1

- ▶ TRICUSPID ATRESIA : 4

- ▶ BD GLENN: 3

- ▶ FONTAN PROCEDURE: 1

- ▶ TOF BT SHUNT : 3

- ▶ ASD + PS : 7

- ▶ ASD + LPA STENOSIS : 2

- ▶ ASD + PAPVC : 8

- ▶ OP ASD : 3

- ▶ SV ASD : 9

- ▶ DORV VSD PS : 2

- ▶ AORTA RIGHT ATRIAL TUNNEL: 1

- ▶ HEMITRUNCUS -1

- ▶ RA MYXOMA-1

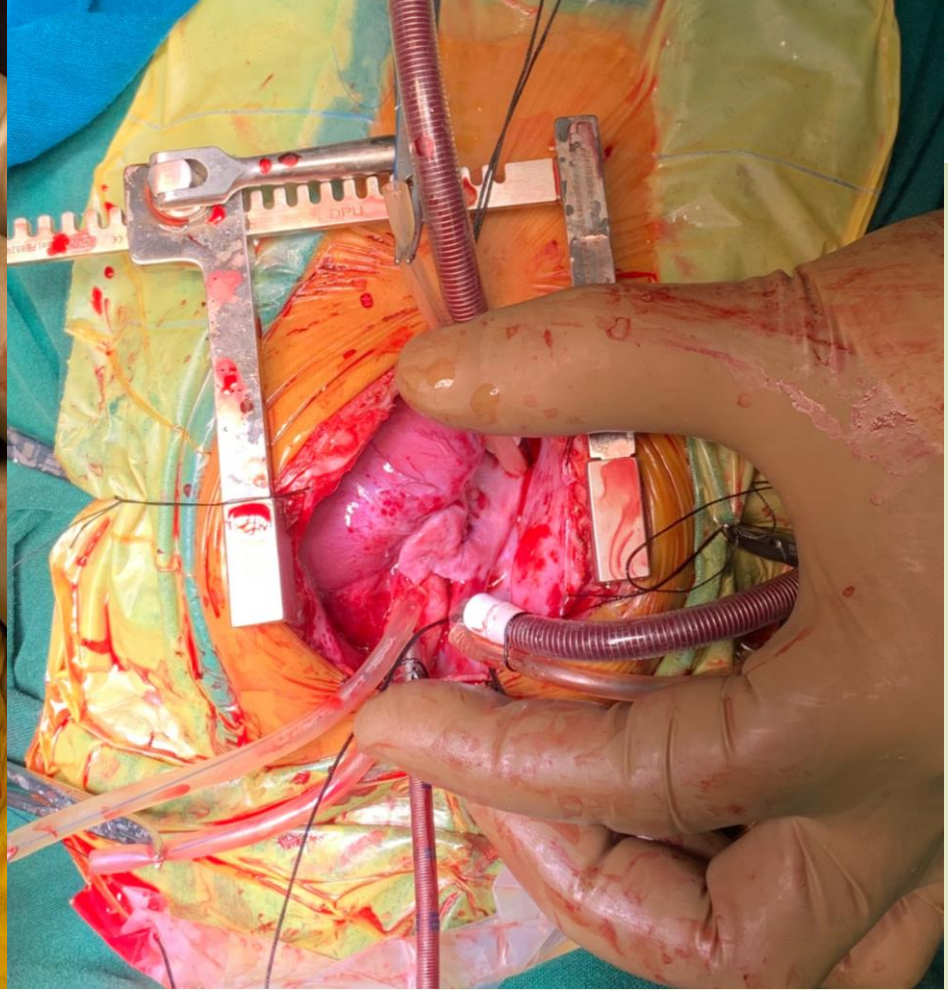
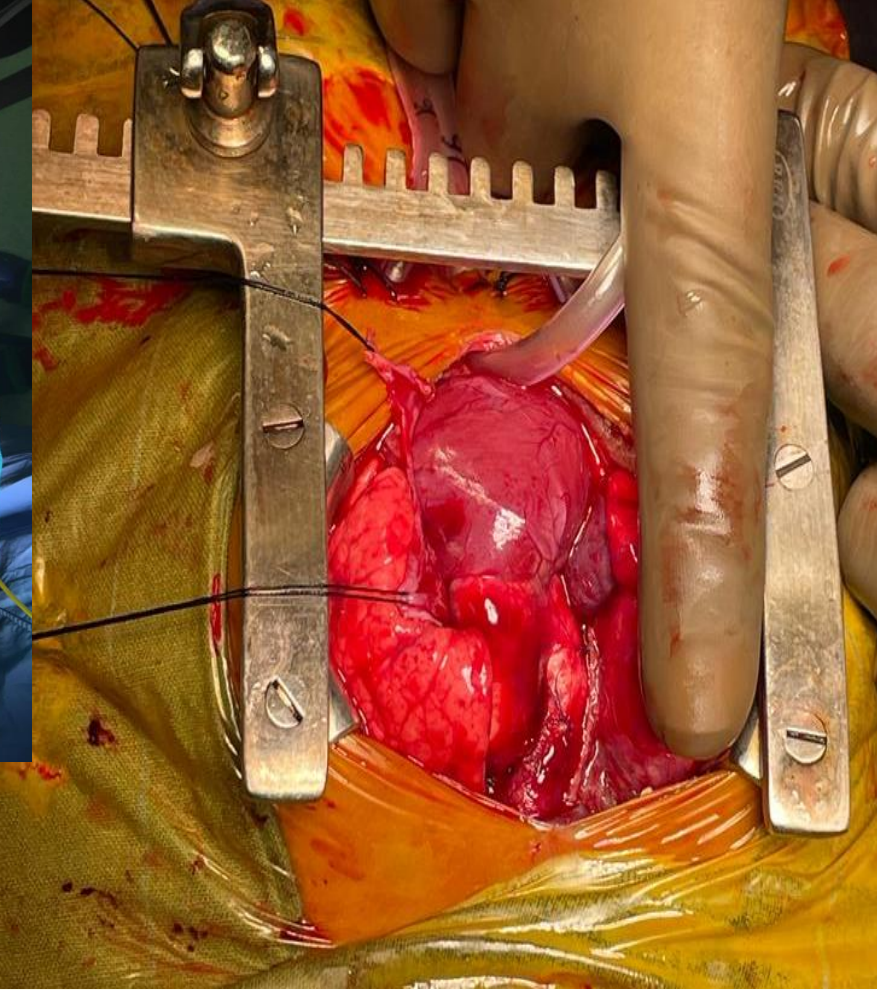
- ▶ RHABDOMYCOMA-1

- ▶ INFECTIVE ENDOCARDITIS WITH SEVERE TR -1

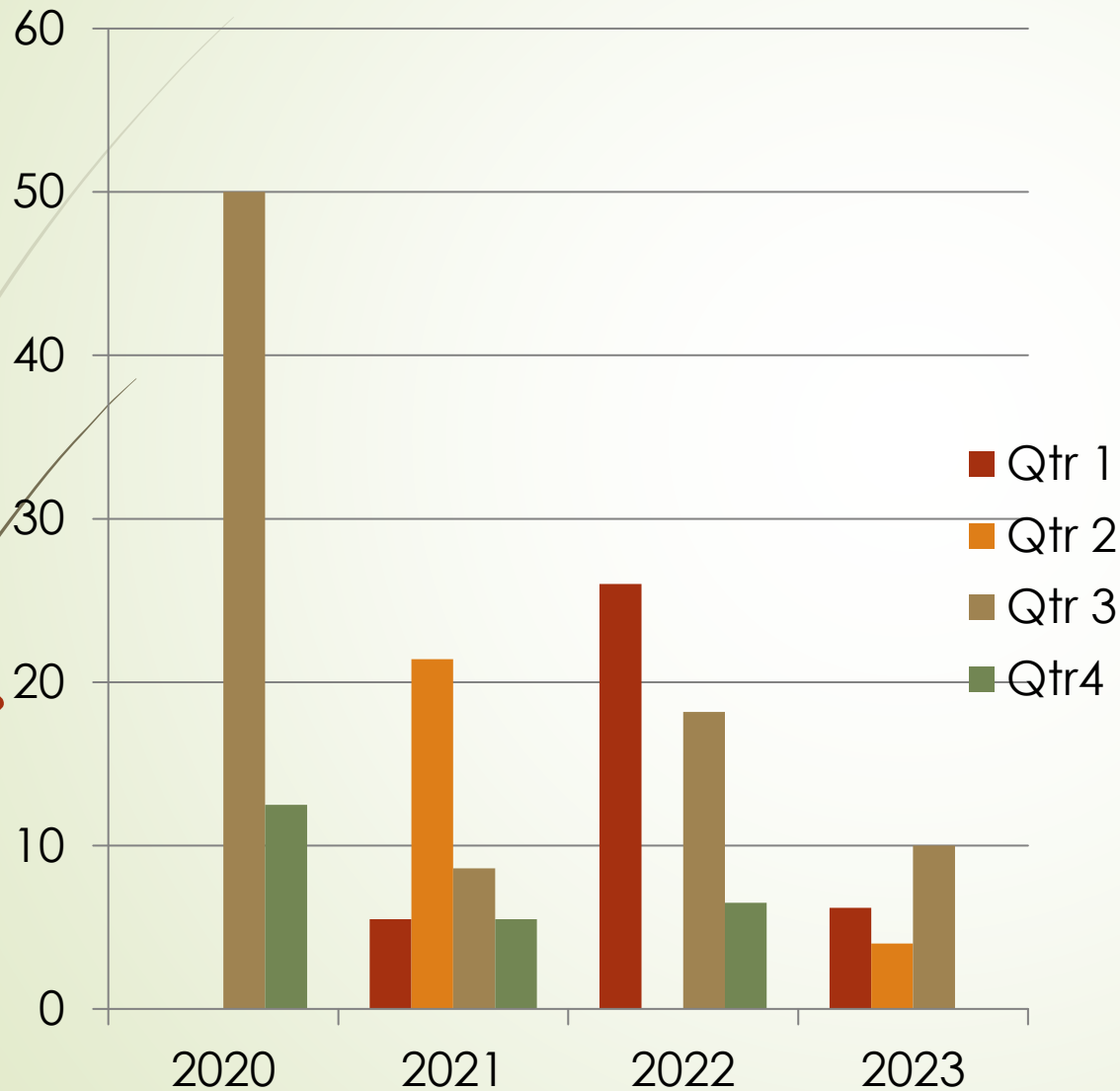
HEART TRANSPLANT -1 : in collaboration with KIMS,Hyderabad.

PATIENT PROFILE

- Age range : **1 day** to **16 years**
- Minimum Weight : **1.7 kg** (ON CARDIOPULMONARY BYPASS CASES)
- MINIMUM WEIGHT : **650gm**(WITHOUT CARDIOPULMONARY BYPASS CASES)



Mortality



Mortality has steadily reduced despite increase in complexity and total number of cases.

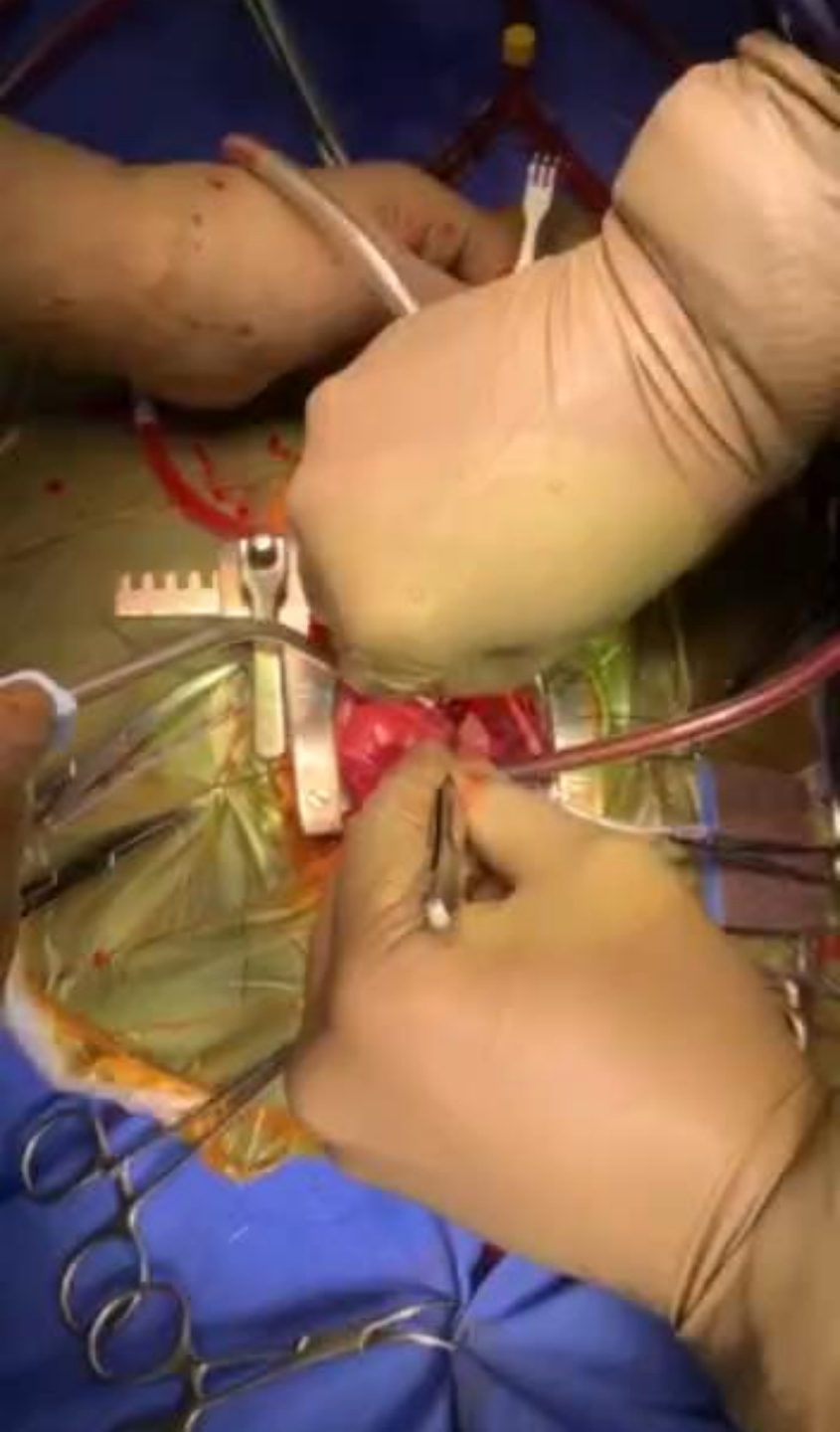
22 cases : 7.3%

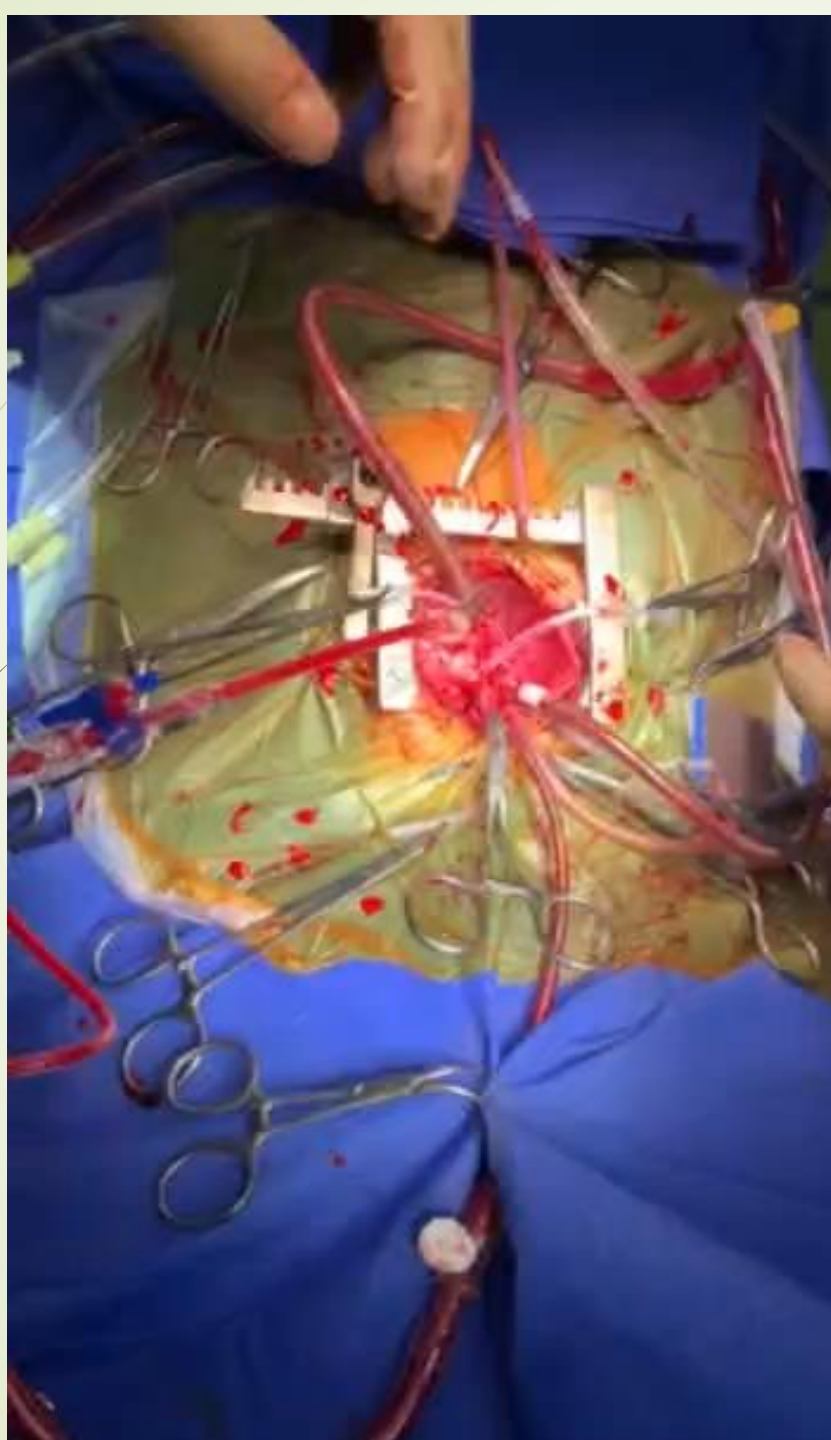
Rigorous department audit

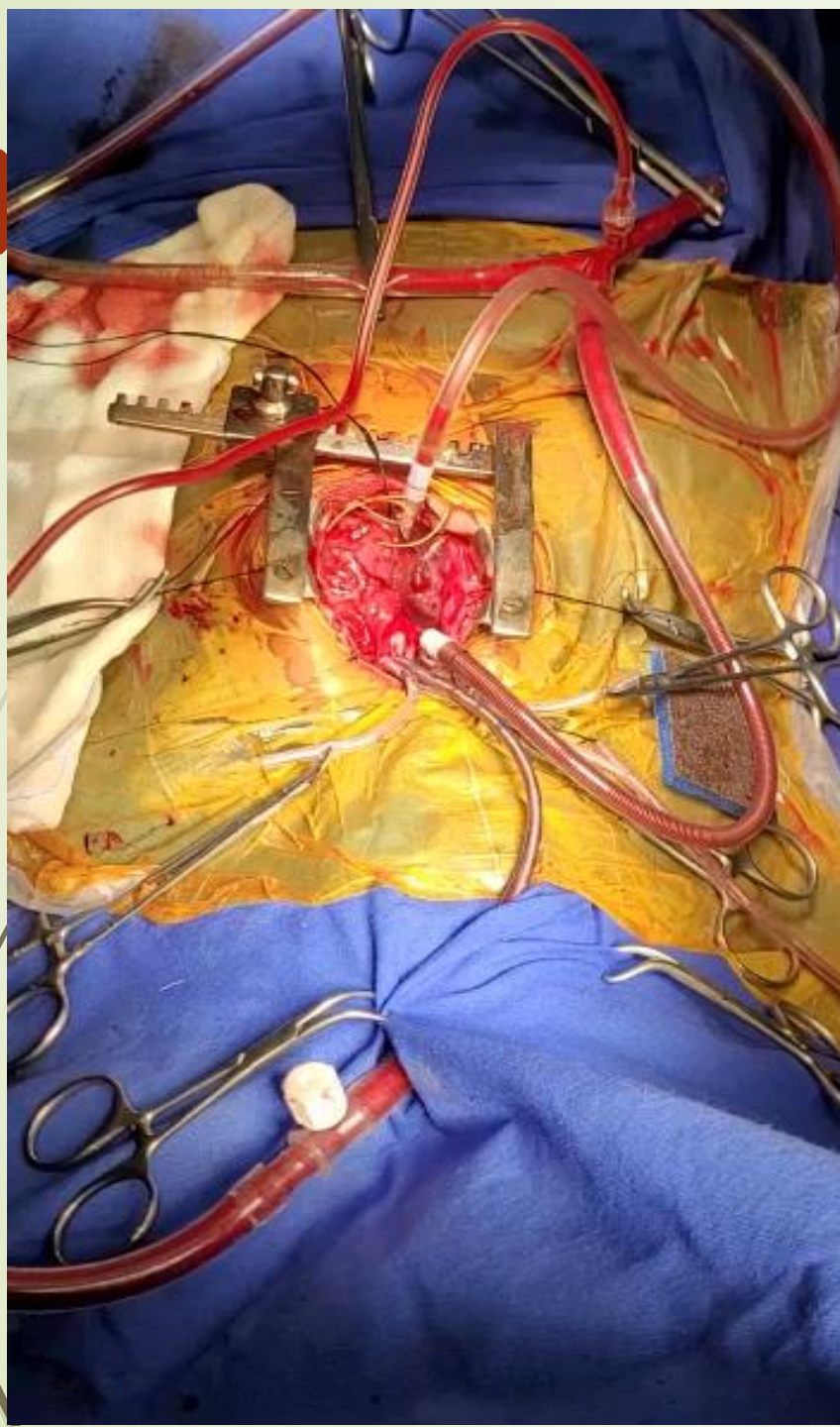
Clinical meetings

Discussion with team

Protocol based approach





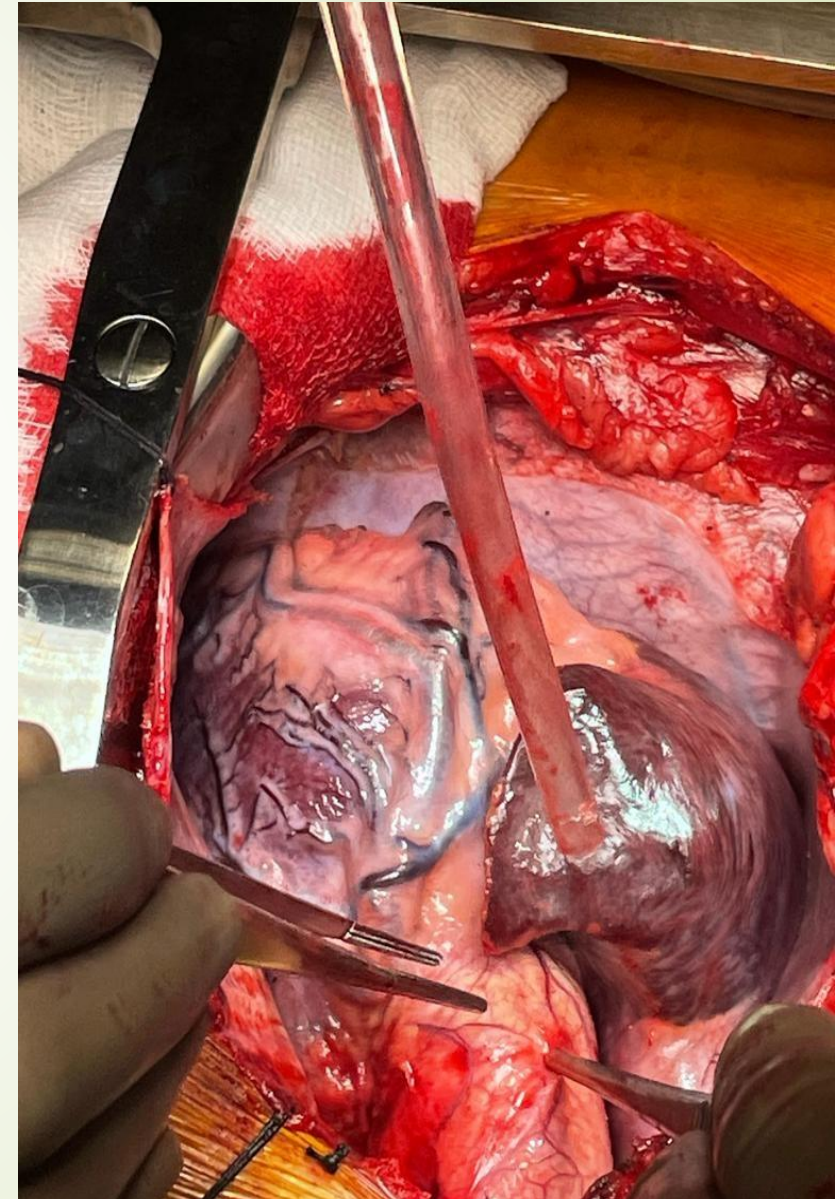


Tetralogy of Fallot

- BT SHUNT : 3 CASES
- REPAIR OF TOF : 44 CASES

- ventricular septal defect
- overriding aorta
- Subpulmonary(infundibular) stenosis
- Right ventricular hypertrophy

- Repair
 - VSD CLOSURE
 - RV OUTFLOW MUSCLE BUNDLE RESECTION
 - PERICARDIAL PATCH AUGMENTATION OF RVOT +/- MPA/RPA/LPA



TOTAL ANOMALOUS PULMONARY VENOUS CONNECTION

➤ 31 CASES

- SUPRACARDIAC: 10
- CARDIAC : 13
- INFRACARDIAC: 5
- MIXED: 3

➤ Obstructed

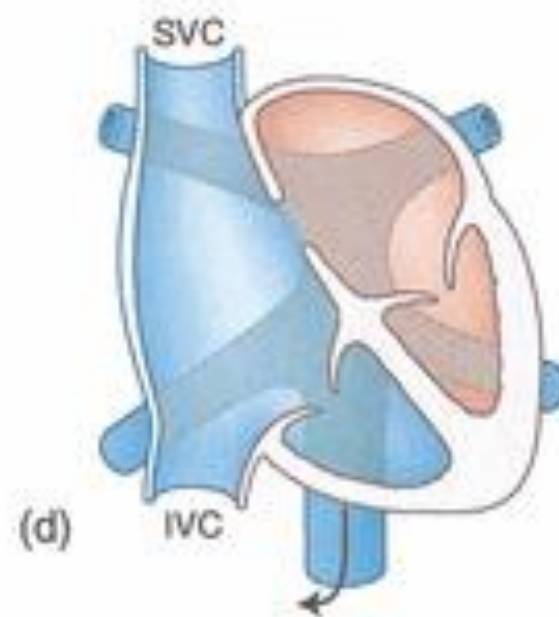
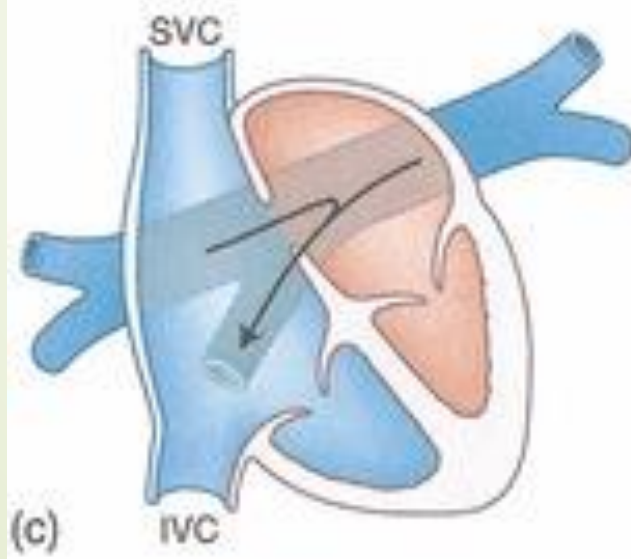
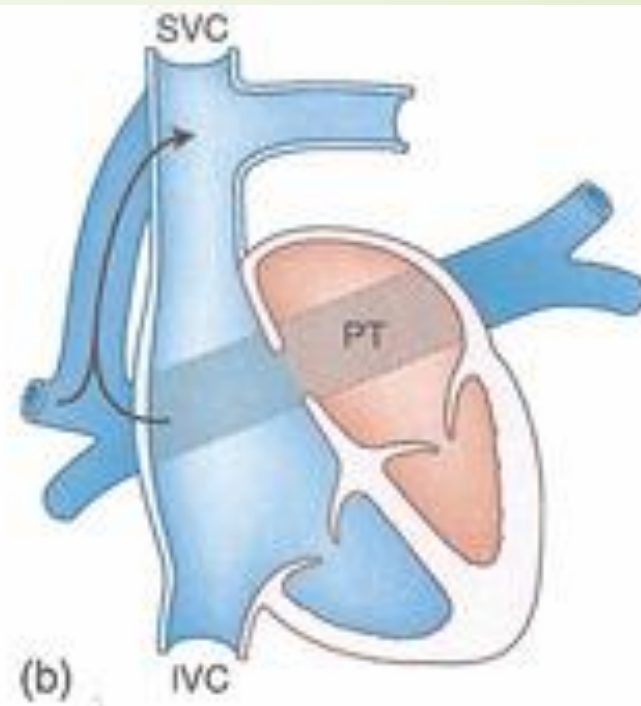
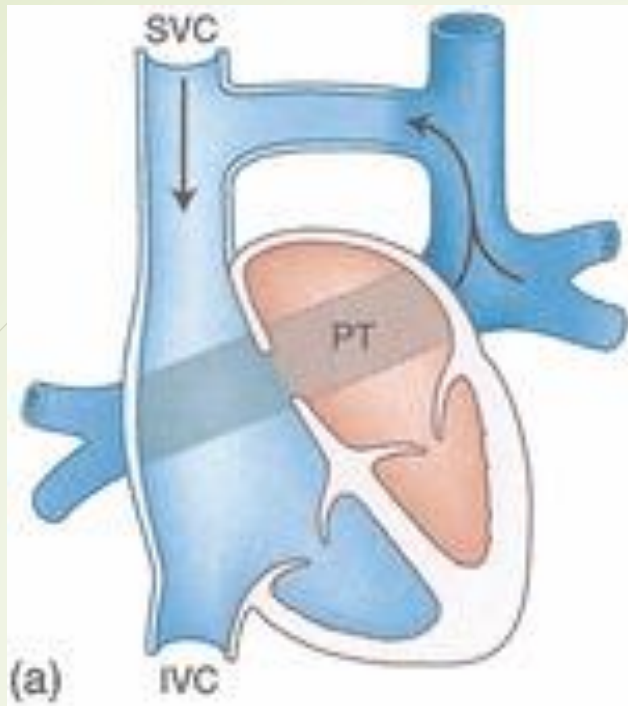
➤ Unobstructed

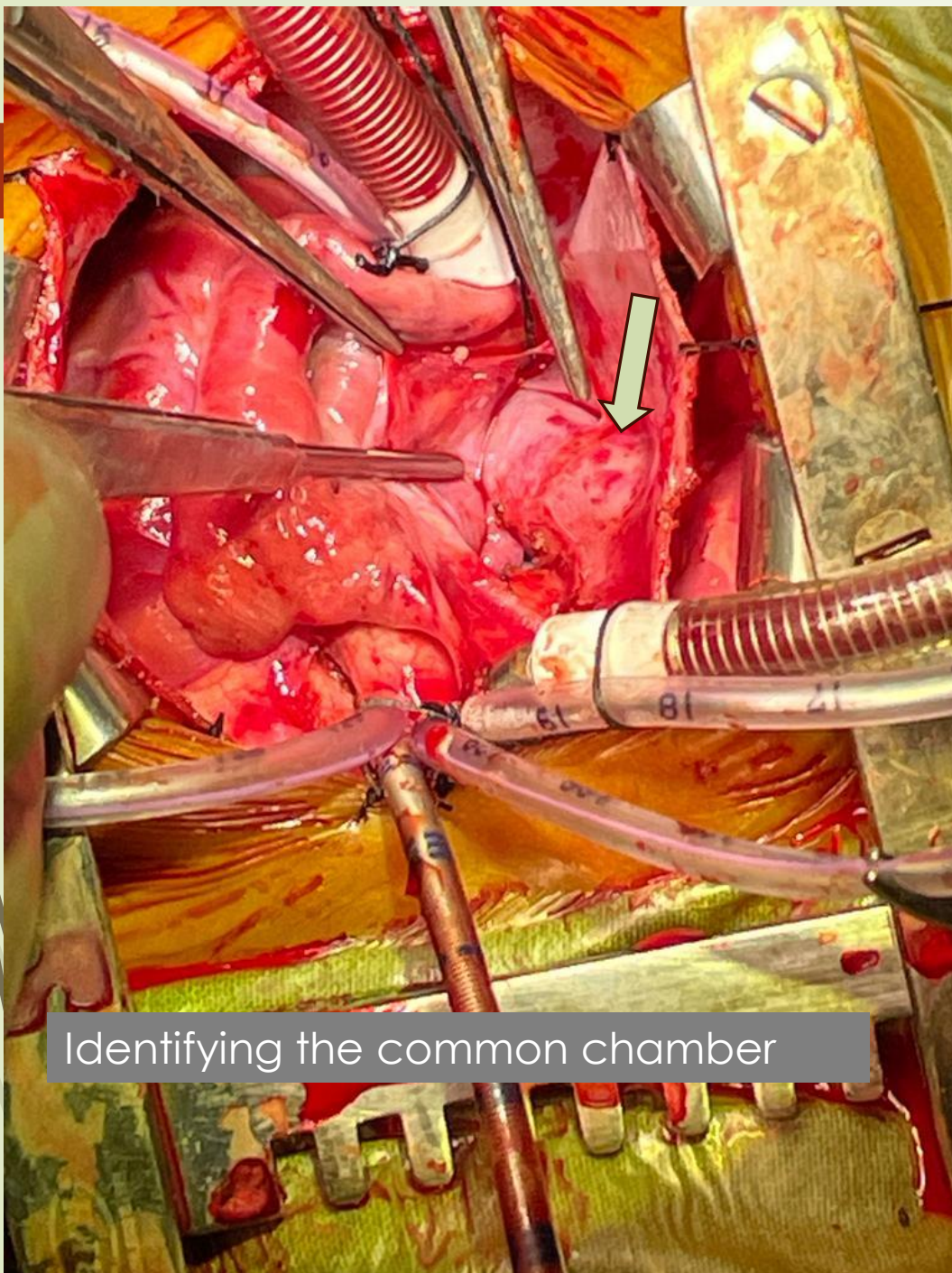
➤ Use of Ultrafiltration

➤ Delayed closure : 4 patients

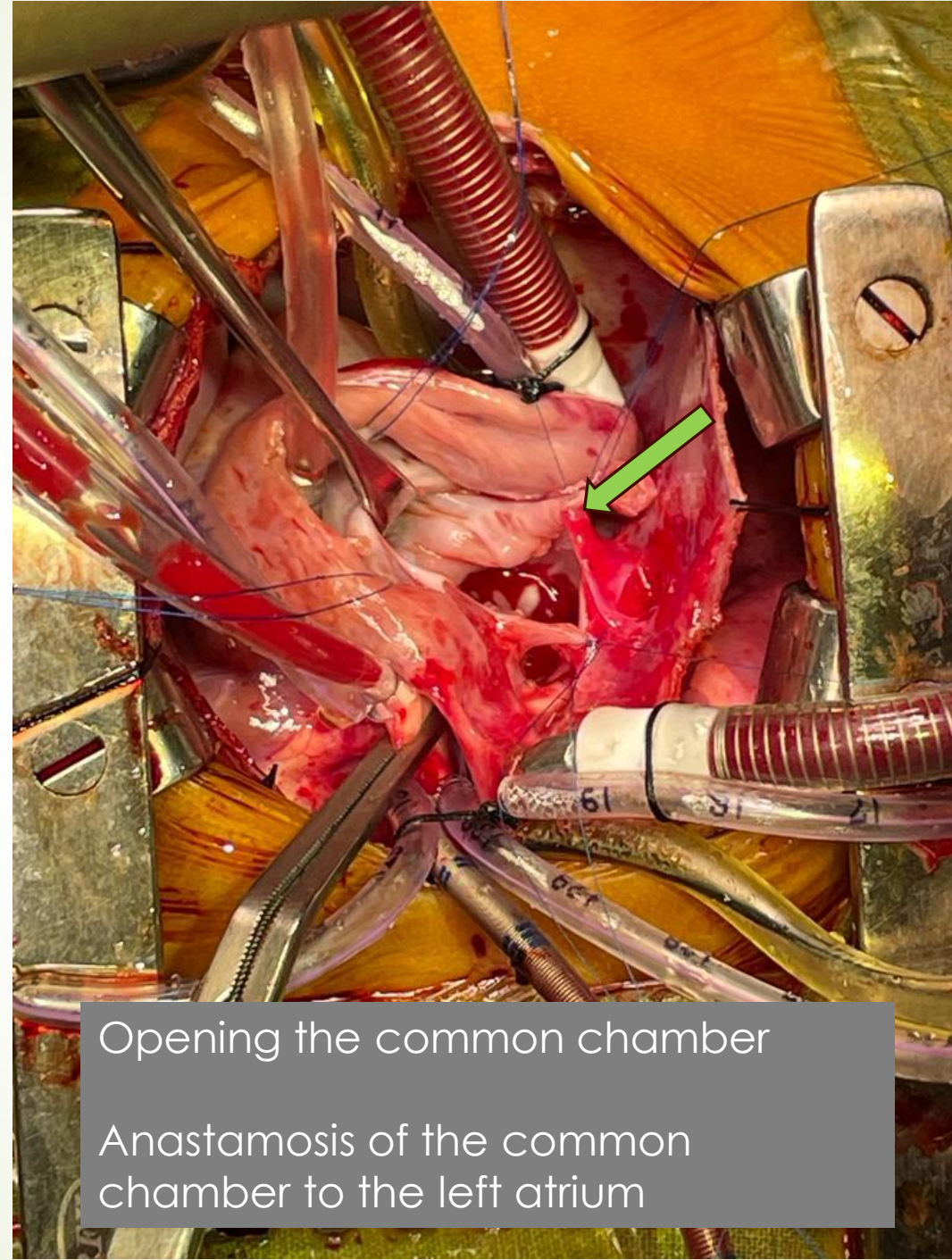
CHALLENGES

- Low body weight
- Emergency repair in case of obstructed TAPVC
- Use of Ultrafiltration
- Delayed closure : 4 patients



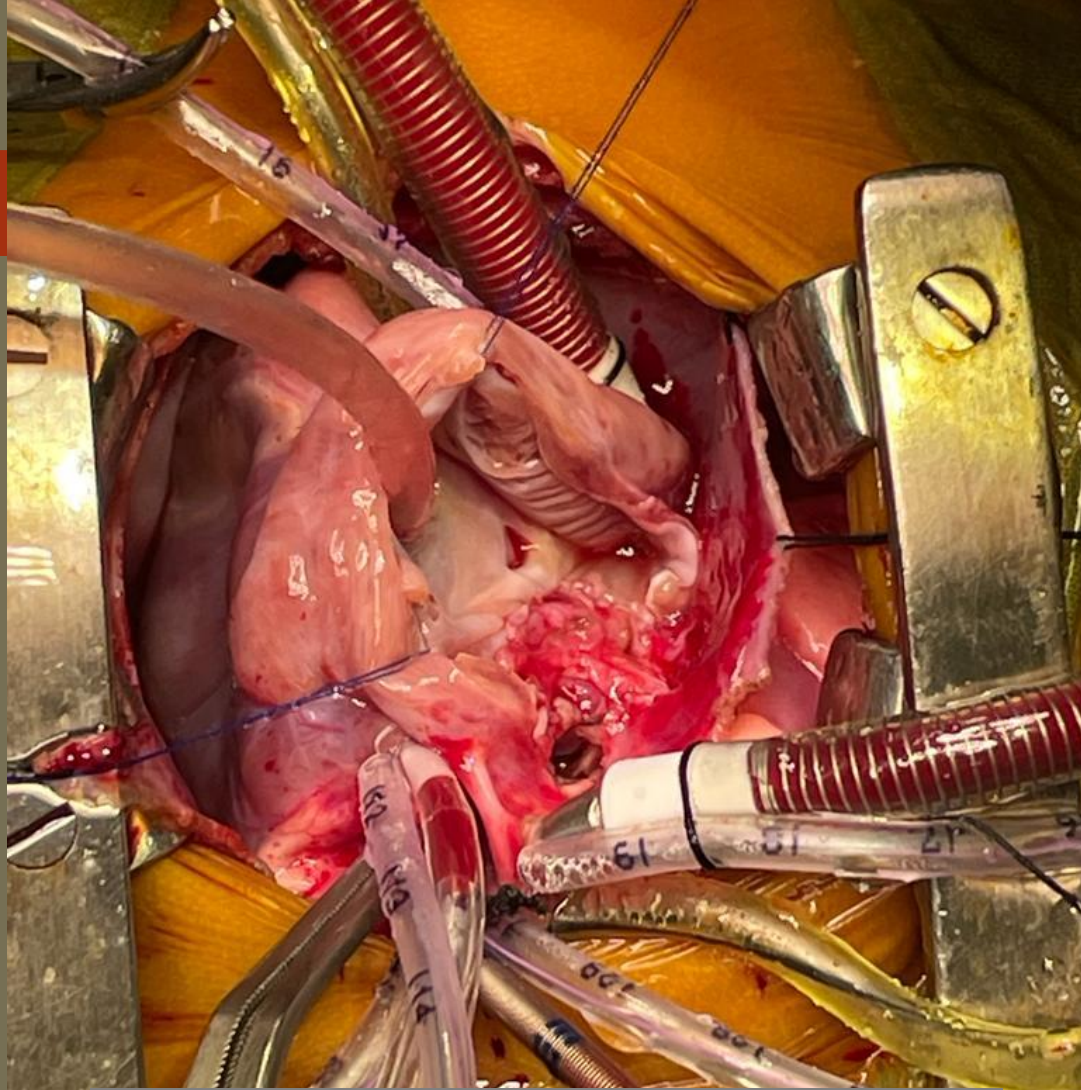


Identifying the common chamber



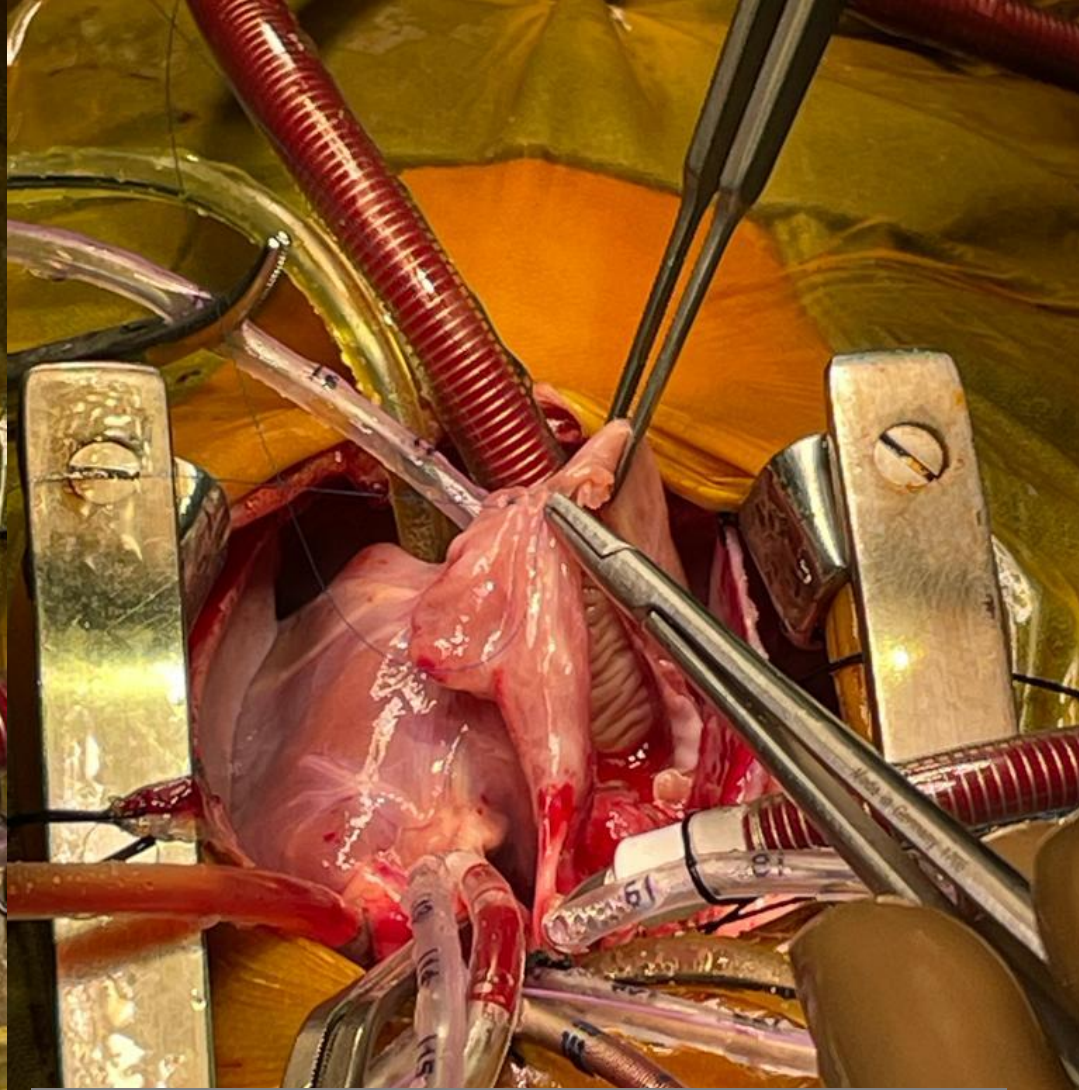
Opening the common chamber

Anastomosis of the common chamber to the left atrium

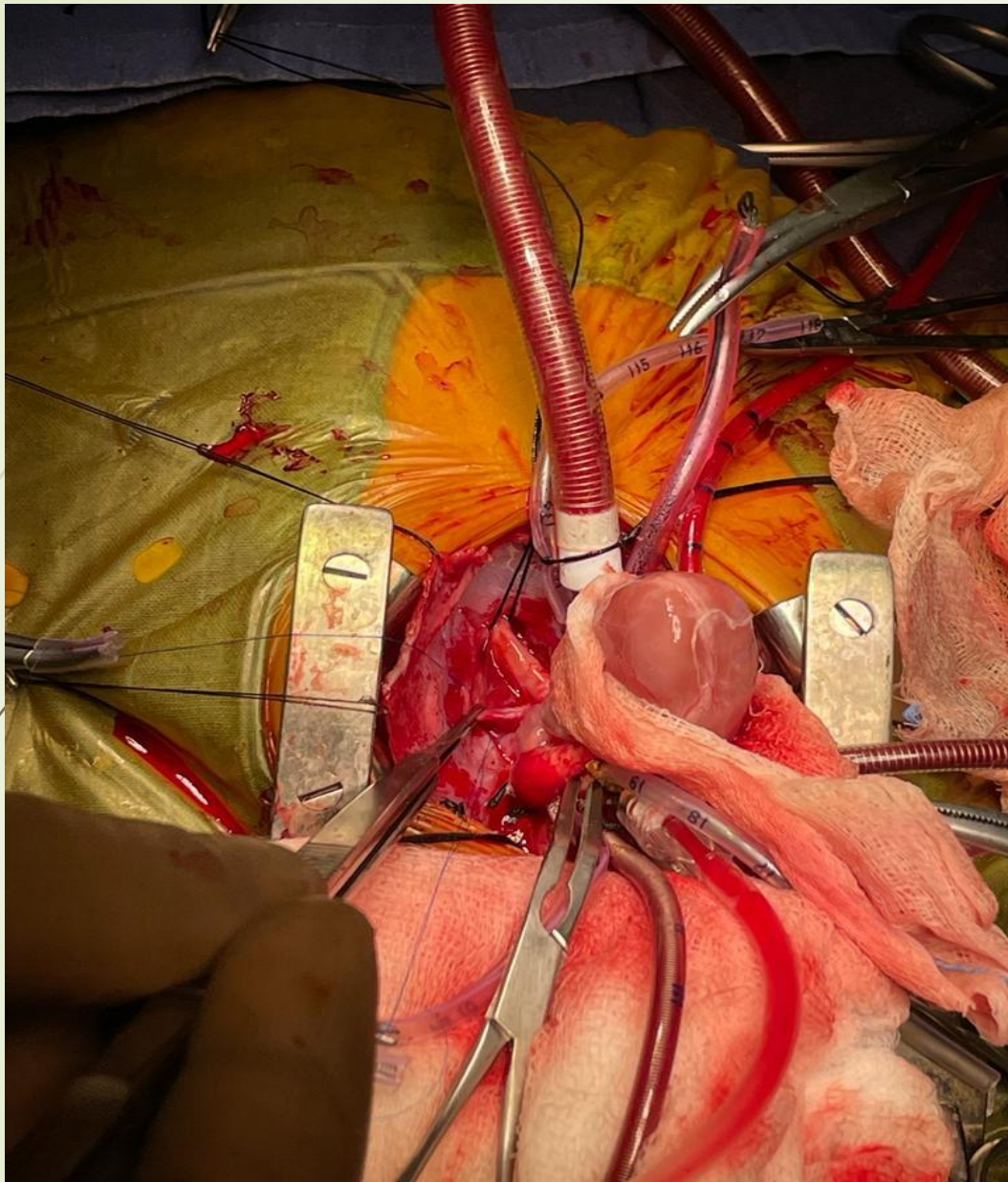


Pericardial patch closure of ASD

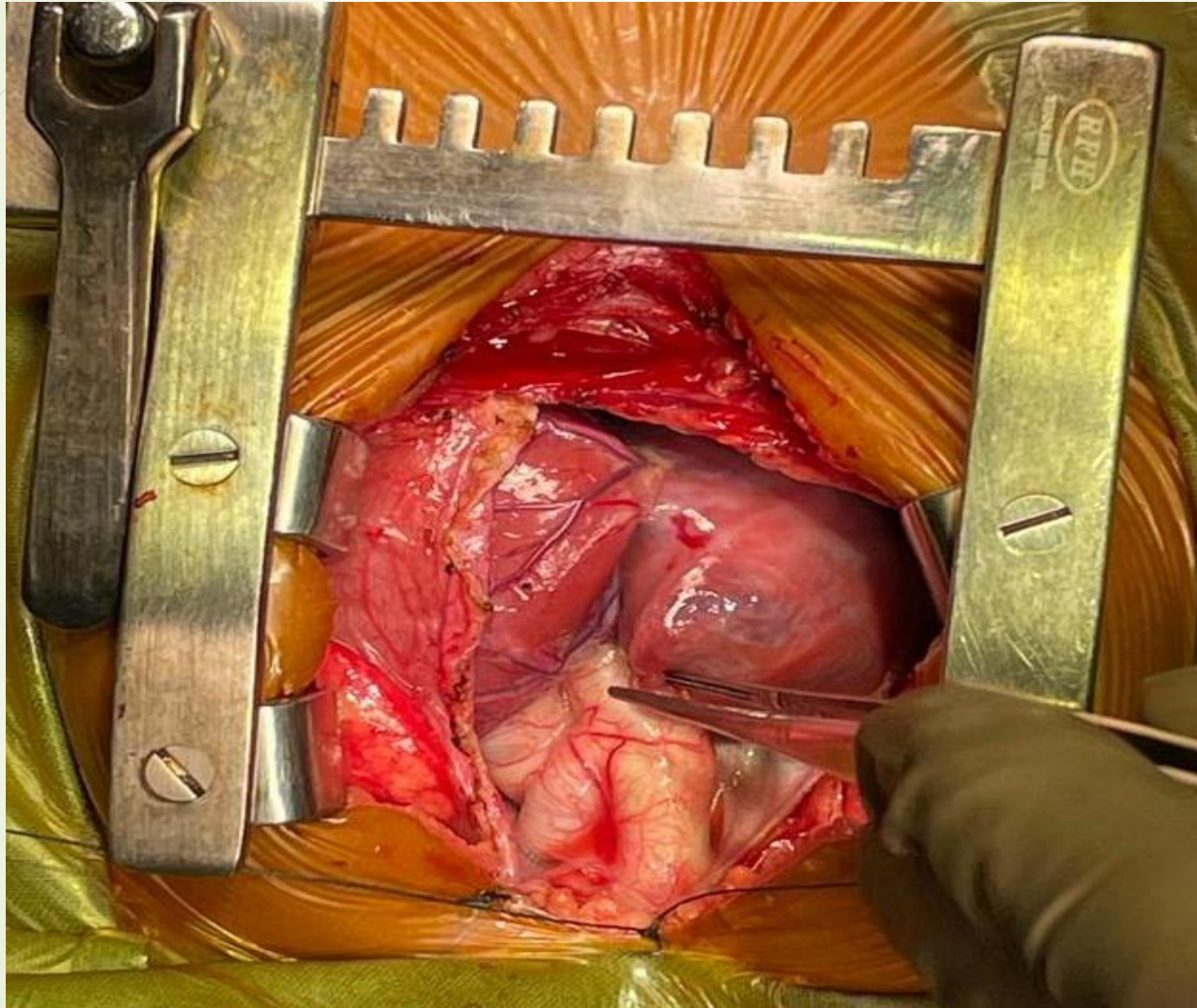
All pulmonary veins draining into common chamber now drain into left atrium.



Closure of the right atrium.



Hemitruncus



Challenges involved

Management

- Dedicated teamwork
- Resource intensive
- Infrastructure
- Labour intensive : need 24X 7 alertness in monitoring
- Specialized nursing

SOCIAL ASPECTS

- Emotional involvement of parents and relatives
- Financial aspects

PATIENT RELATED

- Low body weight
- Syndromic babies
- Complexity of procedures
- History of recurrent infections/admissions
- Emergency procedures

Specialised Team work

- **Surgeon** : paediatric cardiac surgery has a long learning curve and needs supervision. Challenging and complex anatomy needs detailed discussion and literature reference
- **Anesthetist** : intra operative and post operative care in pediatric cardiac surgery is different as each disease has separate protocols.
- **Pediatric cardiologist**: successful outcomes depend on perfect anatomical assessment
- **Support from Pediatrics and neonatology**
- **Perfusionists**
- **Nursing care**: OT and ICU

THE NEED IN OUR COUNTRY

India overtakes China to become world's most populous country

Milestone marks the first time since 1950 that China has dropped to second place in global population ranks



India has overtaken China as the world's most populous country, according to UN estimates.
Photograph: Altaf Qadri/AP

India has overtaken **China** as the world's most populous country, according to UN population estimates, the most significant shift in global demographics since records began.

According to the UN's projections, which are calculated through a variety of factors including census data and birth and death rates, **India** now has a population of 1,425,775,850, surpassing China for the first time.

- **All Congenital birth defects: MC – CHD (28%)**
- **Birth prevalence of CHD : 8-10/1000 live births**
- **Birth prevalence severe CHD -1.5 - 1.7/1000 live births**
- **2,42,390 kids born with CHD/year**
- **Only 35000 get operated**
- **The gap is huge in several parts of the country.**

Saxena A. Congenital Heart Disease in India: A Status Report. Indian Pediatr. 2018 Dec 15;55(12):1075-1082. PMID: 30745481

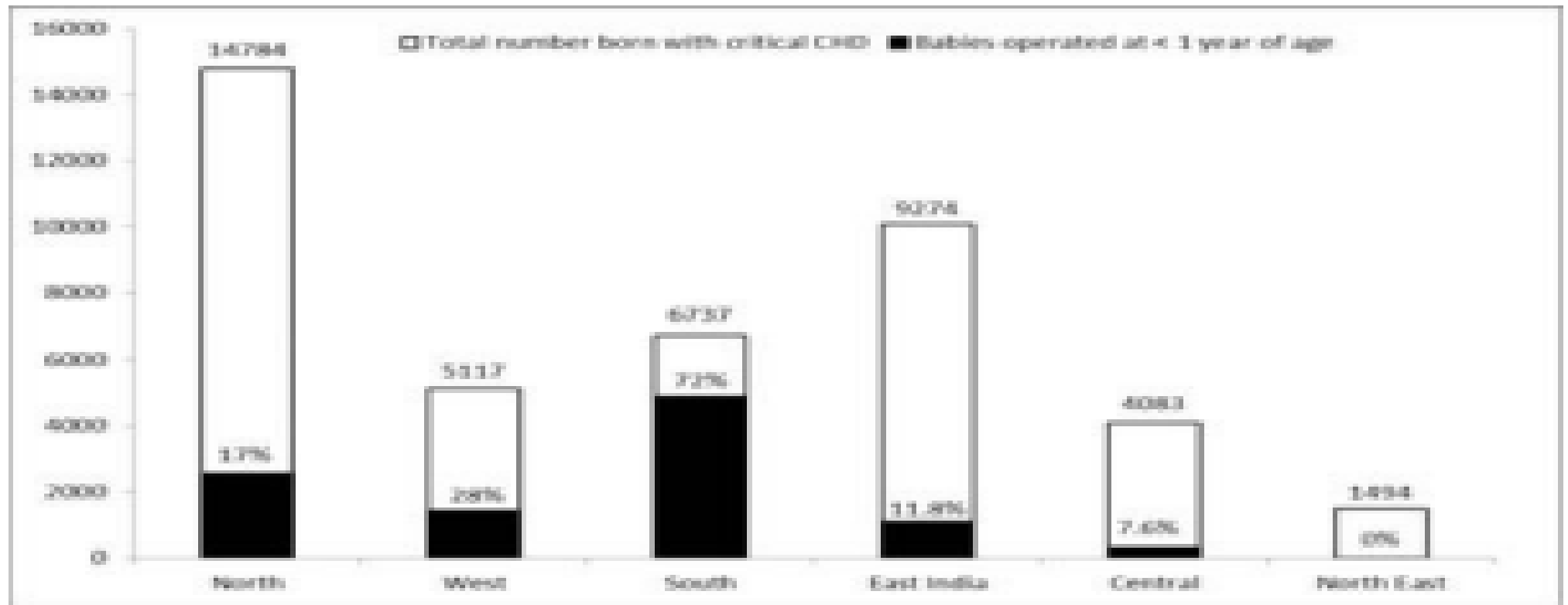
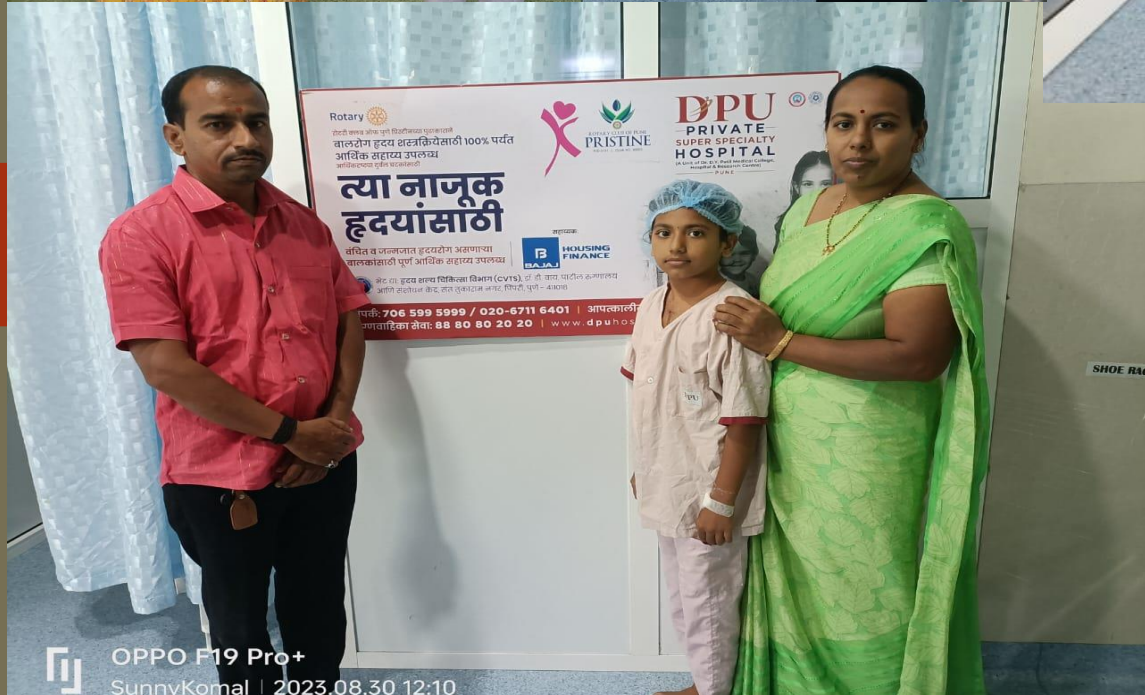
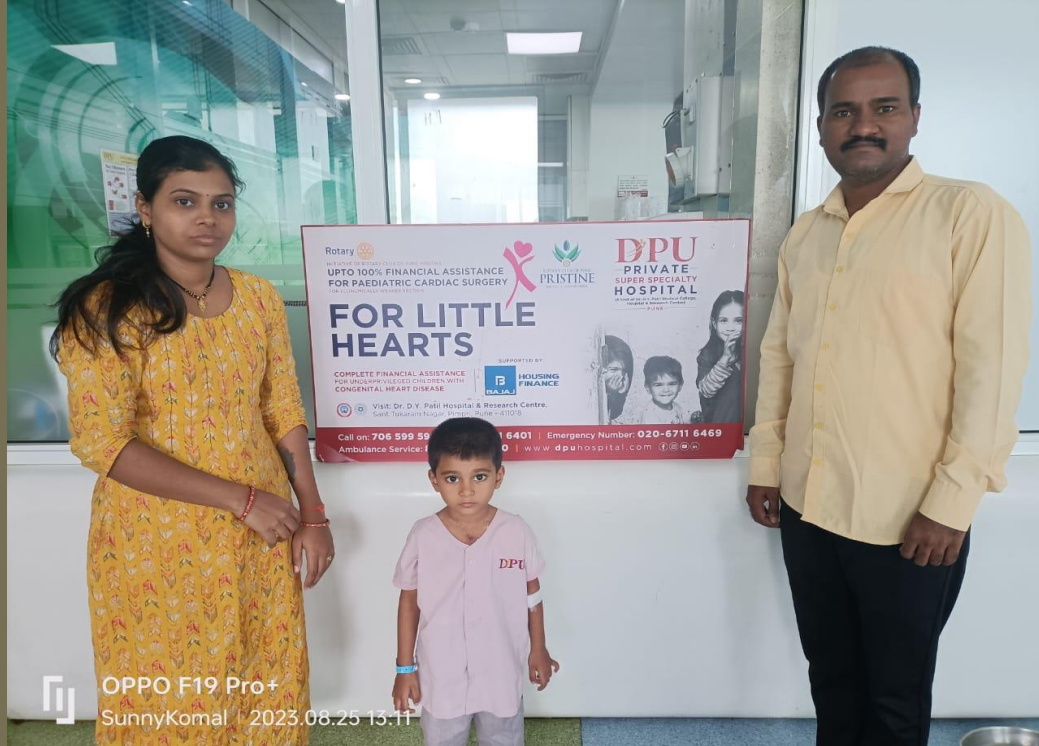


FIG. 2 Regional distribution of infants with critical heart disease accessing surgery as compared to total number born with critical heart disease.





GOALS AHEAD

- ▶ DOUBLE THE NUMBER OF CASES.
- ▶ DEDICATED PAEDIATRIC CARDIAC ICU.
- ▶ PAEDIATRIC ECMO PROGRAM.
- ▶ PAEDIATRIC TRANSPLANT PROGRAM.
 - ▶ 1st HEART TRANSPLANT in collaboration with KIMS Hyderabad.



HEAL A CHILD, SAVE THE WORLD

THANK YOU