

## DISCHARGE SUMMARY

PATIENT NAME: PRIYANSHU KUMAR SHARMA	AGE: 9 YEARS, 11 MONTHS & 16 DAYS, SEX: M
REGN: NO: 12525464	IPD NO: 125773/23/1201
DATE OF ADMISSION: 19/07/2023	DATE OF DISCHARGE: 28/07/2023
CONSULTANT: DR. K. S. IYER / DR. NEERAJ AWASTHY	

### DISCHARGE DIAGNOSIS

- Congenital heart disease
- Tetralogy of Fallot with Pulmonary stenosis
- Large malaligned peri-membranous ventricular septal defect (right to left shunt)
- Hypertrophied infundibular muscle bundle at os
- Pulmonary valve – bicuspid, stenotic
- Right ventricle- hypertrophied
- Polycythemia (Hb 18.8gm/dl).
- S/P Diagnostic Cath and Angio and MAPCA Coiling done on 20/07/2023
- Failure to thrive (< 3<sup>rd</sup> Percentile); Z score < - 3 SD

### OPERATIVE PROCEDURE

**Dacron patch closure of ventricular septal defect + Infundibular resection + Pulmonary valvotomy done on 22/07/2023**

Full size Hepar no.15 administered freely and pulmonary annulus was dilated with Hepar full size dilator. Tricuspid valve checked with saline. Tricuspid valve normal

### RESUME OF HISTORY

Priyanshu Kumar Sharma is a 9 years old male child (date of birth: 06/08/2013) from Chapra (Bihar) who is a case of congenital heart disease. He is 1<sup>st</sup> in birth order and is a product of full term normal vaginal delivery. His birth weight was 3.5 kg. Maternal age is currently 31 years. Other two sibling (6 years and 3 years old girl) who are apparently well.

At month of age, during routine evaluation, cardiac murmur was detected. Echo was done which revealed Congenital heart disease – Tetralogy of Fallot. He was advised surgical management at later age. He had history of easy fatigability.



NABH Accredited

He was seen by Dr. Neeraj Awasthy in Gorakhpur, UP. Echo was done which revealed Congenital heart disease – Tetralogy of Fallot. He was advised surgical management. He was referred to FEHI, New Delhi.

He was seen at FEHI, New Delhi on 18/07/2023. Echo was done which revealed situs solitus, levocardia, D-loop, normal systemic and pulmonary venous drainage, intact interatrial septum, laminar inflow, Tetralogy of Fallot, large perimembranous ventricular septal defect (right to left shunt), confluent branch Pulmonary arteries, severe Pulmonary stenosis (max PG 100mmHg), valvar, supravalvar and infundibular stenosis, laminar flow in arch, no Coarctation of aorta, no Patent ductus arteriosus, normal biventricular function, Right pulmonary artery 12mm, Left pulmonary artery 11mm (exp 12mm), PA annulus 13mm (Exp 15mm).

He was advised surgical management

Now he is admitted at FEHI, New Delhi for further evaluation and management. On admission, his saturation was 83%.

**Cath and angiography done on 20/07/2023 revealed**

<b>CARDIAC CATHETERIZATION AND ANGIOGRAPHY REPORT</b>	
Division of Pediatric Cardiology	

Name : Priyanshu	Registration Number : 12525464
AGE : 9 YRS	IPD No : 125773/23/120
Height (cms) : 125	Cath Date : 20/07/2023
Sedation : Local	Weight (Kg) : 19.7
	BSA : 1 m <sup>2</sup>
	Cath No: 220093

**Admitting Diagnosis :**

- Normal atrial arrangement
- Levocardia
- D Loop (Right Hand Topology)
- Concordant atrioventricular connection
- Two patent AV valves
- Concordant ventriculo - arterial connection



NABH Accredited

**Abnormalities :**

- TOF
- Large Malaligned Perimembranous VSD
- Severe pulmonary stenosis

**Procedure Done :**

- Diagnostic Study + MAPCA Coiling

**Vascular Access :**

		Size
Right Femoral Artery		5F
Right Femoral Vein		5F

**Catheters/Balloons/Stents:**

	French	Size	Length
Multipurpose A2	5F		
Pigtail catheter	5F		

**Guide Wires:**

	Size	Length	Configuration
Terumo	0.035	260	J

**Hemodynamics :**

	Site	Sys	Dia	Mean
	AAO	122	64	86
	LV	130	Ed8	
	RA			13
	RV	104	Ed15	



NABH Accredited

**Angiogram :**

1. Innominate vein hand injection done (AP) revealed innominate vein to SVC to RA. No LSVC.
2. RV angiogram (RAO30, LAO30/Cranial 20) done revealed coarsely trabeculated ventricle with normal inflow and normal contractility. Severe infundibular and valvular pulmonary stenosis seen. Confluent branch PA's RPA = 12mm and LPA= 12mm (exp 15mm).
3. LV angiogram (LAO60 cranial 20) showed smoothly trabeculated ventricle with normal inflow, Large perimembranous VSD filling RV, with overriding of aorta with normal origin of coronaries, no additional VSD.
4. Aortogram (AP) showed Right arch with normal branching. No CoA, no PDA and no significant collateral.
5. Left Subclavian hand injection done revealed. One MAPCA seen arising from LS/ supplying LPA. MAPCA coiling was done with Cook coil 4mm\*4 cm.

**FINAL DIAGNOSIS:**

- Situs solitus, Levocardia
- Tetralogy of Fallot
- Large Perimembranous VSD (right to left shunt)
- Severe Infundibular and valvular pulmonary stenosis
- Confluent branch PA's
- Normal ventricular function
- Normal sinus rhythm
- S/P Diagnostic Cath and Angio and MAPCA Coiling done on 20/07/2023



NABH Accredited

**In view of his diagnosis, symptomatic status, cath and echo findings he was advised early high risk surgery after detailed counselling of family members regarding possibility of prolonged stay as well as uncertain long term issues.**

**Weight on admission 19 kg, Height on admission 125 cm, Weight on discharge 19.5 kg**

**His Weight on admission 19 kg. Failure to thrive (< 3<sup>rd</sup> Percentile); Z score < - 3 SD**

**His blood Group B positive**

**Baby and his Mother SARS-COV-2 RNA was done which was negative.**

On admission he had polycythemia. His Hb was 18.8gm/dl, HCT 57.4%, platelet counts 1.91 lacs/cmm, PTTK control 24.5/ test 31.2 sec, PT control 11.4/, test 13.3 secs INR 1.17. CT head was done which did not show any significant abnormality.

All blood and urine culture were sterile.

#### **INVESTIGATION:**

##### **ECHO**

Done on 18/07/2023 revealed situs solitus, levocardia, D-loop, normal systemic and pulmonary venous drainage, intact interatrial septum, laminar inflow, Tetralogy of Fallot, large perimembranous ventricular septal defect (right to left shunt), confluent branch Pulmonary arteries, severe Pulmonary stenosis (max PG 100mmHg), valvar, supravalvar and infundibular stenosis, laminar flow in arch, no Coarctation of aorta, no Patent ductus arteriosus, normal biventricular function, Right pulmonary artery 12mm, Left pulmonary artery 11mm (exp 12mm), PA annulus 13mm (Exp 15mm)

##### **POST OP ECHO**

Epicardial Echo done on 22/07/2023 revealed ventricular septal defect patch in situ, no residual shunt, well opened Right ventricular outflow tract max PG 56mmHg, laminar inflow, laminar LV outflow, LVEF 40-45%

Done on 22/07/2023 (07:00 PM) revealed LVEF 40-45%, no collection



NABH Accredited

Done on 23/07/2023 revealed ventricular septal defect patch in situ, no residual shunt, laminar inflow, well opened Right ventricular outflow tract max PG 36mmHg, LVEF 40-45%, no collection

Done on 25/07/2023 revealed ventricular septal defect patch in situ, no residual shunt, laminar inflow, well opened Right ventricular outflow tract max PG 65mmHg, LVEF 45%, mild left pleural collection, no right pleural or pericardial collection

Done on 26/07/2023 revealed no pleural or pericardial collection, LVEF 45-50%

Done on 27/07/2023 revealed ventricular septal defect patch in situ, tiny residual shunt, laminar inflow, trace tricuspid regurgitation, well opened Right ventricular outflow tract, good bolus of flow across Right ventricular outflow tract max PG 50mmHg, good flow in branch Pulmonary arteries, moderate pulmonary regurgitation, laminar flow in arch, no Coarctation of aorta, trace aortic regurgitation, LVEF 50%, trace right pleural collection, no left pleural or pericardial collection

#### ABDOMINAL USG

Done on 21/07/2023 revealed Liver shows homogeneous normal echopattern. Portal vein (8mm in diameter) is normal. Intrahepatic biliary radicles are not dilated. • Gall bladder shows normal anechoic pattern. G.B wall thickness is normal. • CBD is normal in caliber. • Pancreas is normal in shape, size & echopattern. No obvious paraaortic lymph node seen. • Spleen is normal in size (Span- 7.0cm) & echogenicity. • Both kidneys are normal in location, size, shape & echotexture. Cortical thickness & corticomedullary differentiation are well maintained. No dilatation of pelvicalyceal system is seen. -Right kidney measures – 7.1cm x 2.9cm. -Left kidney measures- 7.4cm x 2.9cm. • Urinary bladder is normal in contour. No calculi/filling defect seen. • No evidence of free fluid seen in abdomen.

#### CT HEAD (PLAIN):

Done on 21/07/2023 revealed FINDINGS POSTERIOR FOSSA: 4 th ventricle is normal in size, shape and position. Brainstem & cerebellar hemispheres are normal. SUPRATENTORIAL: Brain parenchyma shows unremarkable morphology and attenuation values. No obvious focal brain parenchymal lesion seen. Bilateral ganglio-thalamic nuclear complexes are unremarkable. 3 rd & lateral ventricles are unremarkable in size with septum in midline. Basal cisterns, fissures & cerebral sulci are unremarkable. No evidence of significant intra / extraaxial collection



NABH Accredited

or hyperdense hemorrhage seen. No obvious bony injury / lytic or sclerotic bony lesion seen. Note is made of hyperdense intracranial vessels and venous sinuses, likely due to polycythemia.

**Impression:** No significant intracranial abnormality detected.

#### **COURSE DURING STAY IN HOSPITAL (INCLUDING OPERATIVE PROCEDURE AND DATES)**

**Dacron patch closure of ventricular septal defect + Infundibular resection + Pulmonary valvotomy done on 22/07/2023**

**Full size Hegar no.15 administered freely and pulmonary annulus was dilated with Hegar full size dilator. Tricuspid valve checked with saline. Tricuspid valve normal**

**REMARKS:** Diagnosis: - Cyanotic congenital heart disease, Decreased pulmonary blood flow, Tetralogy of Fallot with Pulmonary stenosis (Max grad-100mm Hg), Rest valves-normal, Right arch, LVFN-Normal, Normal sinus rhythm, S/P MAPCA coiling (20/07/2023). Operation: Total correction (Infundibular muscle bundle resection + Pulmonary valvotomy + Trans RA ventricular septal defect closure with Dacron patch). Operative Findings: Situs solitus, levocardia, AV-VA concordance, Thymus – present, innominate vein – present, adequate size, pericardium – normal, no pericardial effusion, systemic and pulmonary venous drainage – normal, Patent ductus arteriosus – absent, Main pulmonary artery and branch Pulmonary artery – adequate size, confluent, coronaries – normal, right atrium– normal, interatrial septum – intact; interventricular septum - Large malaligned peri-membranous ventricular septal defect with hypertrophied infundibular muscle bundle at os infundibulum, pulmonary valve – bicuspid, stenotic, tricuspid valve normal, aortic valve – normal, right ventricle – hypertrophied, aorta – right arch, dilated. Procedure:- Induction of general anaesthesia and placement of monitoring lines. Supine position placed. Antibiotic given. WHO Surgical checklist confirmed. Median sternotomy and subtotal thymectomy done. Pericardial cradle created with silk 3-0 suture. Aortic purse string taken with Prolene 5-0, Systemic heparinization (400 U/kg). Bicaval purse string with prolene 5-0 double arm suture. On aortobicaval cannulation, ACT>480s, went on Cardiopulmonary bypass, whole body perfusion established & cooled to 33°C. Both cavae looped. Cardioplegia purse string taken and cannula inserted. Aorta cross-clamped, anoxic cardiac standstill in diastole with cold blood cardioplegia delivered antegrade through the aortic root and topical ice-cold saline. Both cavae snared. Oblique right atriotomy parallel to the AV groove. LV vented through surgically created patent foramen ovale. Tricuspid valve leaflets retracted and ventricular septal defect inspected with Mayo retractor. Hypertrophied parietal band of Trabeculo septo marginalis was resected. Pulmonary valvotomy done. Full size Hegar no.15 administered freely and pulmonary annulus was dilated with Hegar full size dilator. ventricular septal defect closed with Dacron patch with prolene 5-0 suture in continuous and interrupted manner. Tricuspid valve checked with saline.



NABH Accredited

Rewarming started, patent foramen ovale closed after LA deairing with prolene 5-0. Rewarming, caval desnaring, and deairing done. Cross clamp removed after de-airing. Heart picked up in sinus rhythm. Right atriotomy was closed with 5-0 prolene. Epicardial pacing wires (2 atrial and 1 ventricular) placed with prolene 6-0 and placed. Weaned off Cardiopulmonary bypass with Dobutamine 5mcg/Kg/Min. Epicardial echo done. MUF done. Meticulous hemostasis secured. Protamine given followed by decannulation. 20F straight chest drains placed in pericardium and 24F straight chest drain in mediastinum. Counts tallied. Pericardium closed over Aorta, right atrium and right ventricle. Both pleurae intact. Drains placed. Hemostasis ensured. Routine sternal closure with steel wire no.2.

**His post-operative course was smooth.**

He was ventilated with adequate analgesia and sedation for 5 hours and extubated on 0 POD to oxygen by mask.

He had initial chest drainage (220ml) on 0 POD and (105ml) on 1<sup>st</sup> POD. Chest drain tube removed on 2<sup>nd</sup> POD.

Post extubation chest x-ray revealed bilateral mild patchy atelectasis with hazy lung fields. This was managed with chest physiotherapy, nebulization and suctioning.

He was shifted to ward on 2<sup>nd</sup> POD. He was weaned from oxygen to air by 3<sup>rd</sup> POD.

He was electively supported with dobutamine (0 – 4<sup>th</sup> POD → 2.5mic/kg/min @ 3 ml/hr) in view of definitive repair of Tetralogy of Fallot and mild left ventricular dysfunction (LVEF 40%).

Decongestive therapy was given in the form of lasix (boluses) and aldactone.

There were no post-operative arrhythmias.

Pacing wire was removed on 5<sup>th</sup> POD.

He had fever (37.2°C) on 0 POD. He was thoroughly investigated for the same. His TLC was 10,670/cmm and platelets 1.50 lacs/cmm. This was managed symptomatically with antipyretics. All cultures were negative. He was clinically well all through and apyrexial later. His predischarge TLC was 9,710/cmm and platelets were 1.30 lacs/cmm.

His pre-operative renal function showed (S. creatinine 0.47 mg/dl, Blood urea nitrogen 9 mg/dl)

His post-operative renal function showed (S. creatinine 0.46 mg/dl, Blood urea nitrogen 14 mg/dl) on 2<sup>nd</sup> POD



NABH Accredited

His pre-discharge renal function showed (S. creatinine 0.14 mg/dl, Blood urea nitrogen 9 mg/dl)

His pre-operative liver functions showed (SGOT/SGPT = 28/23 IU/L, S. bilirubin total 0.63 mg/dl, direct 0.20 mg/dl, Total protein 6.7 g/dl, S. Albumin 4.6 g/dl, S. Globulin 2.1 g/dl Alkaline phosphatase 291 U/L, S. Gamma Glutamyl Transferase (GGT) 11 U/L and LDH 290 U/L).

He had mildly deranged liver functions on 1<sup>st</sup> POD (SGOT/SGPT = 119/29 IU/L, S. bilirubin total 2.44 mg/dl & direct 0.52 mg/dl and S. Albumin 4.5 g/dl) and repeat (SGOT/SGPT = 101/29 IU/L, S. bilirubin total 2.39 mg/dl & direct 0.57 mg/dl and S. Albumin 4.3 g/dl).

This was managed with avoidance of hepatotoxic drug and continued preload optimization, inotropy and after load reduction. His liver function test gradually improved. His other organ parameters were normal all through.

His predischarge liver function test are SGOT/SGPT = 46/45 IU/L, S. bilirubin total 0.53 mg/dl, direct 0.17 mg/dl, Total protein 6.6 g/dl, S. Albumin 3.9 g/dl, S. Globulin 2.7 g/dl Alkaline phosphatase 207 U/L, S. Gamma Glutamyl Transferase (GGT) 89 U/L and LDH 368 U/L

Thyroid function test done on 22/07/2023 which revealed T3 3.86 pg/ml (normal range – 2.53 – 5.22 pg/ml), T4 1.76 ng/dl (normal range 0.97 – 1.67 ng/dl), TSH 4.450 µIU/ml (normal range – 0.600 – 4.840 µIU/ml).

Gavage feeds were started on 0 POD. Oral feeds were commenced on 2<sup>nd</sup> POD.  
Folic acid was commenced in view of pre-existing Polycythaemia (Hb 18.8gm/dl).

#### CONDITION AT DISCHARGE

His general condition at the time of discharge was satisfactory. Incision line healed by primary union. No sternal instability. HR 104/min, normal sinus rhythm. Chest x-ray revealed bilateral clear lung fields. Saturation in air is 98%. His predischarge x-ray done on 27/07/2023

In view of congenital heart disease in this patient his mother is advised to undergo fetal echo at 18 weeks of gestation in future planned pregnancies.

In view of advanced maternal age, the mother had been advised to do chorionic villus sampling or amniocentesis early in any future pregnancy to exclude Down's syndrome and she has also been advised a detailed congenital anomaly scan in next pregnancy.

Other siblings are advised detailed cardiology review.



NABH Accredited

**PLAN FOR CONTINUED CARE:**

**DIET :** Normal diet as advised

**Normal vaccination (After 6 weeks from date of surgery)**

**ACTIVITY:** Symptoms limited.

**FOLLOW UP:**

Long term cardiology follow- up in view of:-

1. Possibility of recurrence of Right ventricular outflow tract obstruction
2. Tiny residual shunt
3. Moderate pulmonary regurgitation

**Review on 29/07/2023 in 5<sup>th</sup> floor at 09:30 AM for wound review**

**Repeat Echo after 6 - 9 months after telephonic appointment**

**Repeat Thyroid function test after 3 – 4 months**

**PROPHYLAXIS :**

**Infective endocarditis prophylaxis prior to any invasive procedure**



NABH Accredited

### **MEDICATION:**

- Tab. Paracetamol 300 mg PO 6 hourly x one week
- Tab. Pantoprazole 20 mg PO twice daily x one week
- Tab. Shelcal 250 mg PO twice daily x 3 months
- Tab. Folic Acid 5 mg PO once daily x one year
  
- Tab. Lasix 20 mg PO once daily x one week and then
- Tab. Lasix 20 mg PO alternate days x one week and then stop
  
- Tab. Aldactone 12.5 mg PO once daily x one week and then
- Tab. Aldactone 12.5 mg PO alternate days x one week and then stop
  
- All medications will be continued till next review except the medicines against which particular advice has been given.

Review at FEHI, New Delhi after 6 – 9 months after telephonic appointment  
In between Ongoing review with Pediatrician

Sutures to be removed on 04/08/2023; Till then wash below waist with free flowing water

4<sup>th</sup> hrly temperature charting - Bring own your thermometer

- Frequent hand washing every 2 hours
- Daily bath after suture removal with soap and water from 05/08/2023

Telephonic review with Dr. Parvathi Iyer (Mob. No. 9810640050) / Dr. K. S. IYER (Mob No. 9810025815) if any problems like fever, poor feeding, fast breathing



NABH Accredited

**(DR. KEERTHI AKKALA)**  
**(CTVS RESIDENT)**

**(DR. K.S. IYER)**  
**(EXECUTIVE DIRECTOR**  
**PEDIATRIC CARDIAC SURGERY)**

Please confirm your appointment from (Direct 011-47134540, 47134541, 47134500/47134536)

- Poonam Chawla Mob. No. 9891188872
- Treesa Abraham Mob. No. 9818158272
- Gulshan Sharma Mob. No. 9910844814
- To take appointment between 09:30 AM - 01:30 PM in the afternoon on working days

**OPD DAYS: MONDAY – FRIDAY 09:00 A.M**

In case of fever, wound discharge, breathing difficulty, chest pain, bleeding from any site call 47134500/47134536/47134534/47134533

Patient is advised to come for review with the discharge summary. Patient is also advised to visit the referring doctor with the discharge summary.



NABH Accredited