Fortis Escorts
HEART INSTITUTE
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DISCHARGE SUMMARY

PATIENT NAME: SHIV	AGE: 7 MONTHS & 22 DAYS, SEX: M
REGN: NO: 12211749	IPD NO: 143236/23/1201
DATE OF ADMISSION: 16/08/2023	DATE OF DISCHARGE: 23/08/2023
CONSULTANT: DR. K. S. IYER / DR. NEERAJ AWASTHY	

DISCHARGE DIAGNOSIS

- Congenital heart disease
- **Large malaligned Peri membranous ventricular septal defect (left to right shunt)**
- **Non-obstructive Right ventricular outflow tract muscle bundle**
- **Right atrium dilated, right ventircle dilated, mild hypertrophy**

OPERATIVE PROCEDURE

Dacron patch closure of ventricular septal defect + Right ventricular outflow tract muscle bundle resection done on 17/08/2023

Tricuspid valve checked for competency and no leak was found

RESUME OF HISTORY

Shiv is a 7 months old male infant (date of birth: 25/12/2022) from Kanpur who is a case of congenital heart disease. He is 2nd in birth order and is a product of full term LSCS (lower segment caesarian section) delivery. His birth weight was 2.5 kg. Maternal age is currently 27 years. 1st sibling is apparently well.

On ~ 3 – 4th day of life, he had history of jaundice for which he was shown to pediatrician. During evaluation, cardiac murmur was detected. Echo was done which revealed Congenital heart disease – ventricular septal defect.

He also had history of failure to thrive and lower respiratory tract infection he was managed conservatively. He was advised surgical management and was referred to FEHI, New Delhi for further management.

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He was seen at FEHI, New Delhi on 31/12/2023. His saturation at that time was 92% with weight of 2.6 Kg and Height 47 cm. Echo was done which revealed situs solitus, levocardia, D-loop, normal systemic and pulmonary venous drainage, laminar inflow, trace tricuspid regurgitation, non-restrictive perimembranous ventricular septal defect with inlet extension (left to right shunt), anterior malaligned of septum, aortic override, no additional ventricular septal defect, laminar outflow, no Pulmonary stenosis, confluent branch Pulmonary arteries, tricuspid aortic valve, normal origin of coronaries, laminar flow in arch, no Coarctation of aorta, no Pulmonary artery, no left superior vena cava, normal biventricular function, LVIDd 2.3cm, LVIDs 1.8cm, Right pulmonary artery 4.2, Left pulmonary artery 6.2 (Exp 4mm), PA annulus 6mm (Exp 6mm).

He was stated on decongestive therapy. He was advised to review after 4 weeks.

He was again seen at FEHI, New Delhi on 04/02/2023. His saturation at that time was 94% with weight of 2.9 Kg and Height 51 cm. Echo was repeated. He was advised to review after 3 weeks.

He was again seen at FEHI, New Delhi on 14/04/2023. His saturation at that time was 94% with weight of 4.1 Kg and Height 46 cm. Echo was done which revealed non-restrictive perimembranous ventricular septal defect, malaligned with inlet extremism (left to right shunt), with anterior deviation of conal septum, laminar inflow and outflow, no Right ventricular outflow tract obstruction / Left ventricular outflow tract obstruction, normal biventricular function, dilated left atrium and left ventricle, no additional ventricular septal defect, LVIDd 2.4 (Z score +1.6), LA 1.9 (Z score +2.7). He was advised surgical management.

Now **he** is admitted at FEHI, New Delhi for further evaluation and management. On admission, **his** saturation was 93%. Review Echo done on 16/08/2023 revealed situs solitus, levocardia, D-loop, normal systemic and pulmonary venous drainage, intact interatrial septum, mild flow acceleration across mitral valve, mean PG 3mmHg (flow related), laminar tricuspid valve inflow, large malaligned perimembranous ventricular septal defect with inlet extension (left to right shunt), no additional ventricular septal defect, laminar outflow, tricuspid aortic valve, normal origin coronaries, confluent branch Pulmonary arteries, laminar flow in arch, left arch, no Coarctation of aorta, no Patent ductus arteriosus, no left superior vena cava, normal ventricular function, dilated left atrium and left ventricle, LVIDd 2.5cm, LVIDs 1.6cm

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

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Weight on admission 5.5 kg, Height on admission 66 cm, Weight on discharge 5.37 kg

His Weight on admission 5.5 kg. Failure to thrive (< 3rd Percentile); Z score < - 3 SD

His blood Group AB positive

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

On clinical evaluation, he was found to have ? dysmorphic features.

FISH and Karyotype was done report awaited.

All blood and urine culture were sterile.

INVESTIGATION:

ECHO

Done on 31/12/2022 revealed situs solitus, levocardia, D-loop, normal systemic and pulmonary venous drainage, laminar inflow, trace tricuspid regurgitation, non-restrictive perimembranous ventricular septal defect with inlet extension (left to right shunt), anterior malaligned of septum, aortic override, no additional ventricular septal defect, laminar outflow, no Pulmonary stenosis, confluent branch Pulmonary arteries, tricuspid aortic valve, normal origin of coronaries, laminar flow in arch, no Coarctation of aorta, no Pulmonary artery, no left superior vena cava, normal biventricular function, LVIDd 2.3cm, LVIDs 1.8cm, Right pulmonary artery 4.2, Left pulmonary artery 6.2 (Exp 4mm), PA annulus 6mm (Exp 6mm)

Done on 04/02/2023 revealed large non-restrictive malaligned perimembranous ventricular septal defect with inlet extension (left to right shunt) max PG 18mmHg, aortic override, no additional ventricular septal defect, no Pulmonary stenosis, Right ventricular outflow tract gradient 11mmHg, confluent and adequate branch Pulmonary arteries, normal biventricular function, RVIDd 1.3 (Z score 0.1), LVIDd 2 (Z score 0.2), LVIDs 1.3 (Z score 0.6), PA annulus 7mm (Exp 6mm), Right pulmonary artery 4mm

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Done on 14/04/2023 revealed non-restrictive perimembranous ventricular septal defect, malaligned with inlet extremism (left to right shunt), with anterior deviation of conal septum, laminar inflow and outflow, no Right ventricular outflow tract obstruction / Left ventricular outflow tract obstruction, normal biventricular function, dilated left atrium and left ventricle, no additional ventricular septal defect, LVIDd 2.4 (Z score +1.6), LA 1.9 (Z score +2.7)

Done on 16/08/2023 revealed situs solitus, levocardia, D-loop, normal systemic and pulmonary venous drainage, intact interatrial septum, mild flow acceleration across mitral valve, mean PG 3mmHg (flow related), laminar tricuspid valve inflow, large malaligned perimembranous ventricular septal defect with inlet extension (left to right shunt), no additional ventricular septal defect, laminar outflow, tricuspid aortic valve, normal origin coronaries, confluent branch Pulmonary arteries, laminar flow in arch, left arch, no Coarctation of aorta, no Patent ductus arteriosus, no left superior vena cava, normal ventricular function, dilated left atrium and left ventricle, LVIDd 2.5cm, LVIDs 1.6cm

POST OP ECHO

Epicardial Echo done on 17/08/2023 revealed VSD patch in situ, No residual shunt. Laminar inflows. Laminar LV outflow, trace TR, LVEF 40%

Done on 17/08/2023 (04:30 PM) revealed ventricular septal defect patch in situ, no residual shunt, laminar inflow, trace tricuspid regurgitation, well opened Right ventricular outflow tract max PG 15mmHg, good flow in branch Pulmonary arteries, LVEF 40%, no collection

Done on 17/08/2023 revealed LVEF 35-40%, no collection

Done on 18/08/2023 revealed ventricular septal defect patch in situ, no residual shunt, laminar inflow, well opened Right ventricular outflow tract, LVEF 35-40%, no collection

Done on 19/08/2023 revealed ventricular septal defect patch in situ, no residual shunt, laminar inflow, well opened Right ventricular outflow tract, good flow in branch Pulmonary arteries, laminar LV outflow, LVEF 40%, no collection

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Done on 21/08/2023 revealed ventricular septal defect patch in situ, no residual shunt, laminar inflow, well opened Right ventricular outflow tract, good flow in branch Pulmonary arteries, normal LVEF, laminar flow in arch and descending aorta, no collection

ABDOMINAL USG — Done on 16/08/2023 revealed Liver shows homogeneous normal echopattern. Intrahepatic biliary radicles are not dilated. Hepatic veins & portal vein (4mm in diameter) are normal. Gall bladder shows normal anechoic pattern. G.B wall thickness is normal. CBD is not dilated. Pancreas is normal in shape, size & echopattern. Spleen is normal in size (Span- 4.0cm) & 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 – 4.9cm x 1.8cm. -Left kidney measures- 5.0cm x 2.2cm. Urinary bladder is partially filled. No calculi/filling defect seen. No ascites.

USG BRAIN — Done on 16/08/2023 revealed No obvious focal lesion seen in brain parenchyma. • No ventricular dilatation seen. • No midline shift seen.

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

Dacron patch closure of ventricular septal defect + Right ventricular outflow tract muscle bundle resection done on 17/08/2023

Tricuspid valve checked for competency and no leak was found.

REMARKS: Diagnosis: -Congenital Heart Disease. Large malaligned Peri membranous ventricular septal defect, Non-obstructive Right ventricular outflow tract muscle bundle. Operation:- Dacron patch closure of ventricular septal defect, Right ventricular outflow tract Muscle bundle resection. Operative Findings: - Situs solitus, levocardia {S, D, S}, AV-VA concordance, Thymus present, Pericardiumnormal, Innominate normal, Superior vena cava normal, Inferior vena cava normal, Pulmonary Veins normal, right atrium dilated, right ventricel dilated, mild hypertrophy, non obtructive, Main pulmonary artery adequate size, Left pulmonary artery adequate size, Right pulmonary artery adequate size, Aorta dilated, interatrial septum intact, ventricular septal defect nonrestrictive malaligned peri membranous ventricular septal defect, Coronaries normal, tricuspid valve normal leaflets. Procedure - Routine induction of General Anaesthesia and placement of monitoring lines. Median sternotomy. Right lobe of thymus excised. Pericardial cradle created. Systemic heparinization (400 U/kg). On aortobicaval cannulation, went on Cardiopulmonary bypass. Cooled to 34°C. Aorta cross-clamped and

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heart arrested with cold blood cardioplegia delivered antegrade through the aortic root. Cavae snared. Right atrium opened parallel to the Atrioventricular groove. Left atrium vented through surgically created patent foramen ovale. Nonobstructive muscle bundle resected. The ventricular septal defect margins delineated and ventricular septal defect is closed with Dacron patch using 5-0 pledgeted prolene continuous and interrupted sutures. Tricuspid valve checked for competency and no leak was found. Patent foramen ovale closed directly by continuous suture using 5-0 prolene continuous suture. RA closed with 5-0 prolene. After adequate deairing, Aortic cross clamp released. Caval desnaring done. Epicardial pacing wires (2 atrial and 1 ventricular) placed. Weaned off Cardiopulmonary bypass with 5μ/kg/min Dobutamine. Hemostasis secured. Protamine given followed by decannulation. Pericardium loosely approximated. Right pleura open. Routine sternal closure over drains

His post-operative course was smooth.

He was ventilated with adequate analgesia and sedation for 21 hours and extubated on early 1st POD to oxygen by hood.

He had initial chest drainage (55ml) on 0 POD and (40ml) on 1st POD. Chest drain tube removed on 2nd 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 3rd POD. He was weaned from oxygen to air by 4th POD.

He was electively supported with dobutamine (0 – 3rd POD → 5mic/kg/min @ 1.6 ml/hr) in view of ventricular septal defect closure with right ventricular outflow tract muscle bundle resection and metabolic acidosis (BE -3.8mmol/L)

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

There were no post-operative arrhythmias.

Pacing wire was removed on 4th POD.

He had fever (37.8°C) on 2nd POD. He was thoroughly investigated for the same. On evaluation he had mild leucocytosis. His TLC was 18,950/cmm and platelets 2.892 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 9,600/cmm and platelets were 3.87 lacs/cmm.

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His pre-operative renal function showed (S. creatinine 0.28 mg/dl, Blood urea nitrogen 22 mg/dl)

His post-operative renal function showed (S. creatinine 0.24 mg/dl, Blood urea nitrogen 11 mg/dl) on 1st POD

His pre-discharge renal function showed (S. creatinine 0.22 mg/dl, Blood urea nitrogen 10 mg/dl)

His pre-operative liver functions showed (SGOT/SGPT = 44/45 IU/L, S. bilirubin total 0.14 mg/dl, direct 0.08 mg/dl, Total protein 7.1 g/dl, S. Albumin 3 g/dl, S. Globulin 3 g/dl Alkaline phosphatase 204 U/L, S. Gamma Glutamyl Transferase (GGT) 12 U/L and LDH 388 U/L).

He had mildly deranged liver functions on 1st POD (SGOT/SGPT = 101/37 IU/L, S. bilirubin total 0.52 mg/dl & direct 0.19 mg/dl and S. Albumin 4.7 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 = 41/28 IU/L, S. bilirubin total 0.25 mg/dl, direct 0.10 mg/dl, Total protein 6.2 g/dl, S. Albumin 4.1 g/dl, S. Globulin 2.1 g/dl Alkaline phosphatase 156 U/L, S. Gamma Glutamyl Transferase (GGT) 13 U/L and LDH 370 U/L)

Thyroid function test done on 17/08/2023 which revealed was normal→ Thyroid function test showed T3 2.88 pg/ml (normal range – 2.15 – 5.83 pg/ml), T4 1.05 ng/dl (normal range 0.92 - 1.99 ng/dl), TSH 1.630 µIU/ml (normal range – 0.730 – 8.350 µIU/ml).

Repeat Thyroid function test done on 18/08/2023 which revealed T3 1.47 pg/ml (normal range – 2.15 – 5.83 pg/ml), T4 0.71 ng/dl (normal range 0.92 - 1.99 ng/dl), TSH 0.939 µIU/ml (normal range – 0.730 – 8.350 µIU/ml) for which Tab. Thyroxine was started.

Repeat Thyroid function test done on 22/08/2023 which revealed was normal→ Thyroid function test showed T3 2.36 pg/ml (normal range – 2.15 – 5.83 pg/ml), T4 0.94 ng/dl (normal range 0.92 - 1.99 ng/dl), TSH 1.420 µIU/ml (normal range – 0.730 – 8.350 µIU/ml).

Minimal enteral feeds were started on 1st POD and cautiously and gradually advanced to full feeds by 2nd POD. Oral feeds were started on 3rd POD

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CONDITION AT DISCHARGE

His general condition at the time of discharge was satisfactory. Incision line healed by primary union. No sternal instability. HR 138/min, normal sinus rhythm. Chest x-ray revealed bilateral clear lung fields. Saturation in air is 100%. **His predischarge x-ray done on 21/08/2023**

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.

Other siblings are advised detailed cardiology review.

PLAN FOR CONTINUED CARE:

DIET : Semisolids 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

Review on 24/08/2023 in 5th floor at 09:30 AM for wound review

Repeat Echo after 9 - 12 months after telephonic appointment

Repeat Thyroid function test after 3 – 4 months

PROPHYLAXIS :

Infective endocarditis prophylaxis prior to any invasive procedure

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MEDICATION:

- Syp. Paracetamol 80 mg PO 6 hourly x one week
- Tab. Pantoprazole 5 mg PO twice daily x one week
- Syp. Shelcal 2.5 ml PO twice daily x 3 months
- **Tab. Thyroxine 12.5mcg PO once daily x 3 months and then repeat Thyroid function test (Empty Stomach)**

- **Syp. Lasix 5 mg PO once daily x one week and then**
- **Syp. Lasix 5 mg PO alternate days x one week and then stop**

- **Tab. Aldactone 3.125 mg PO once daily x one week and then**
- **Tab. Aldactone 3.125 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 9 – 12 months after telephonic appointment
In between Ongoing review with Pediatrician

Sutures to be removed on 31/08/2023; Till then wash below waist with free flowing water

4th hrly temperature charting - Bring own your thermometer

- **Frequent hand washing every 2 hours**
- **Daily bath after suture removal with soap and water from 01/09/2023**

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

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(DR. KEERTHI AKKALA)
(ASSOCIATE CONSULTANT
PEDIATRIC CARDIAC SURGERY)

For (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.