



A RARE CASE OF REDO AORTIC ROOT ENLARGEMENT REDO STERNOTOMY + REDO AVR WITH 19 TTK CHITRA + KONNO ANTERIOR ROOT ENLARGEMENT + CABG (RSVG TO RCA)

Cardiovascular

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KEYWORDS

INTRODUCTION -

Aortic valve replacement is very common cardiac surgery. Small aortic root can be congenital or acquired due to various condition such as aortic stenosis. This condition can increase risk of cardiac failure. Small aortic root is a significant limitation of optimal hemodynamics and a major limiting factor for aortic valve replacement due to patient prosthesis mismatch. In case of small aortic root with need of Aortic valve replacement requires aortic root enlargement procedures.

Most commonly done aortic root enlargement procedure is posterior root enlargement and most commonly use mechanical prosthetic valve is Bileaflet prosthetic valve. Smallest available size is 17 mm. Female patient with menstruation with hormonal changes, heavy menstrual bleeding is more common with anticoagulation, but anticoagulation is must for is must for mechanical prosthetic heart valves. To prevent the thrombus formation on the prosthetic heart valve. So it is a double edge sword for reproductive age group female with prosthetic heart valve such that one side risk of heavy menstrual bleeding is there and other side risk of prosthetic heart valve thrombosis is there.

Here in our case patient was operated for aortic valve replacement with posterior root enlargement for small aortic root with aortic valve stenosis. She had a heavy menstrual bleeding and taken treatment for it. Later she had a thrombosis of prosthetic heart valve.

In rare case such as the one mentioned below, a stuck leaflet following AVR; it becomes even more challenging to manage due to the high risks and complications involved in a redo procedure. We share such an interesting case managed successfully at our institute.

Case Report

A 37 years old female patient, with weight of 48 kg, B +ve Blood group, was admitted to our institute with symptoms of dyspnea on exertion grade 2 (DOE 2) since 9 months. Patient is a known case of Bicuspid Aortic valve since 2007, underwent balloon dilatation in 2007. Later in 2012, she underwent aortic valve replacement (17 sjm) + nicks posterior root enlargement with autologous pericardium at outside hospital. In 2013 - she was thrombolysed for stuck valve due to reappearance of same symptoms. Since last 9 months, she complains of having to shortness for breath when walking at own pace or has to walk slower than people of same age on level.

She is also a known case of Hypothyroidism on medication with last TSH of 3.0. No significant family history.

On examination, there was a sternotomy scar with 3 drain site scars below it. Keloid at upper end of sternotomy scar. On auscultation, S1, S2 with Ejection systolic murmur at aortic area heard. On Investigations - Hb-10.2g%, Plt- 3.2 lakh/mm³, INR-0.99, Na/K-138/3.9, Cr-0.87, Bilirubin-0.5mg%, A/G-4.5/3.2, TSH - 3.0.

She was on the following Preop Medications - T. Ecosprin - 75 mg OD, T. Pentid 400 TDS, T. Warfarin 4 mg OD, T. Dytol plus OD, T. Thyronorm 25 ug OD.

On her Pre op

2D ECHO, her EF-52%, LVIDS/LVIDD-48/35, Ao - 24, AS gradient-

75 / 48, AR +1. CXR PA Standing - CTR 55, 5 wire, Prosthetic valve in aortic position.

ECG - HR - 80 / min, SR, Axis +10, WIDE QRS, LBBB

CAG - Normal epicardial coronaries, LMCA - Normal, bifurcate into LAD, LCx, LAD- type III, Normal, RCA dominant vessel & NORMAL, Dynamic CARDIAC CT, she had Limited posterior leaflet motion suggestive of stuck valve, Opening angle 44, Coronary arteries were normal, LV 47, RV 33, Aortic root 25, Retro sternal anatomy all 5 wire with maintained fat plane, 1st with innominate vein, 2nd with lung parenchyma, 3rd - 4th - 5th - RV

FLUOROSCOPY also suggestive of Posterior leaflet stuck. Procedure we did- Redo STERNOTOMY + Redo AVR with 19 Chitra valve + Konno anterior root enlargement + CABG (RSVG - RCA)

Procedural Details

After induction of general endotracheal anaesthesia and placement of adequate monitoring lines, a Redo Sternotomy was performed, 5 sternal Wires Removed. Adhesion Released.

Cardiopulmonary bypass was initiated using aorto bicaval Cannulation - SVC 20 DLP, IVC 30 BARD, AORTA 16 Fr, LV vented via RSPV.

While doing dissection near aortic root RCA got injured. So temporary hemostatic stitch taken. Aorta cross clamped and root plegia given. Heart arrested in diastole. Vertical aortotomy done at root plegia site. Injury to RCA confirmed. GSV harvested simultaneously. Proximal RSVG to RCA distal anastomosis done and additional cardio plegia given via Graft. Pannus on previous SJM 17 valve Was noted, so valve explanted. SVC, IVC snugged - total bypass started.

Konno Anterior root enlargement incision - aortic incision extended on RVOT, lateral to RCA ostium, IVS incised, IVS & RVOT reconstruction done with bovine pericardium (prolene 5-0), Annulus sized for 19 Chitra valve, 12 pledgetted 2-0 ethibond suture taken - Supra annular (LV to AORTA)

Previous posterior root enlargement reinforced with bovine pericardium, Anterior root also reconstructed with bovine pericardium (RVOT patch), De airing via same suture line, Cross clamp removed

Proximal anastomosis of CABG done to augmented anterior aortic root (bovine pericardium) done, Came off bypass in JR, VOO pacing at 80/min, DOBUTAMINE 1 ug/kg/min, Right and left pleural drains and 2 mediastinal drains placed. Closure done. Patient stable and shifted to ICU.

CPB Data

Aorto Bicaval Cannulation - SVC 20 DLP, IVC 30 BARD, AORTA 16 Fr, LV vented via RSPV Root Cardioplegia given followed by LMCA via OSTIAL PLEGIA and RCA via GRAFT, Core cooling - 28 degree Celsius, Vent - RUPV (right upper pulmonary vein), total CPB time - 377 min, total aortic cross clamp time - 227 min Post Op Day 0 - 200 ml in drain, own rate SR - 85.

Post Op Day 1 - patient was extubated with Inj Dobutamine 1 ug/kg/min support. BRADYCARDIA 35 RATE WITH CHB SO VOO @80 - PPI Planned. DRAIN 500 ML

Post Op Day 2 - Dobutamine continue 1 ug, Drains 90 ml, HR 90 SR, VBG 70%

Post Op Day 3 - Dobutamine off, Drains 140 ml, Vital stable hr 90 SR, BJP 124/68

Post Op Day 4 - patient vitally stable, a febrile, off inotropes, SR, delined, drains out.

Post Op Day 5 - patient shifted to ward,

Post Op Day 6 - patient mobilized in ward but developed sudden dizziness and hypotension. So shifted to ICU and eco done which showed clot on heart so re explode, re explode and during re-exploration. Proximal anastomosis of RSVG TO RCA was given away due to poor vein quality. So CABG Re done with RIMA to RCA and chest closure done. Patient shifted back to ICU with stable hemodynamics and discharge from ward without any further complication.

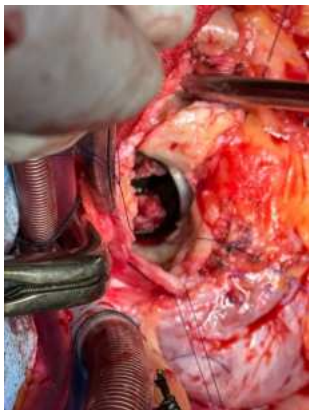
Post Op ECHO before discharge - LV 33/29, GDBV, EF 54 %, No RWMA, Gradient 18/12, No LVOTO, NO PE, RVSP 22 +RA

DISCUSSION-

In Redo cardiac surgery like Redo AVR has high chance of Coronary injury on top of that surgery like Redo AVR with root enlargement where we need to mobilise the aortic root, RCA injury chance are very high specially when we are planning an anterior route enlargement like Konno root enlargement.

In Redo cardiac surgery especially in females where great saphenous vein quality is poor which can further lead to unexpected complications after CABG. So internal memory artery is the best conduit for CABG in females.

And additionally this patient had Blood clot on heart which was compressing RCA graft which was first presented as a complete heart block and later with syncope and hypotension which was recovered after ReExploration and Redoing CABG with RIMA to RCA.



CONCLUSION-

This Redo AVR case is rare where anterior aortic root enlargement required in already operated case of posterior aortic root enlargement with AVR.

This case report shows us Rare complication of Redo cardiac surgery specially near aortic root where RCA can get injured and managed with CABG with RGSV graft but it failed so later RIMA used.

She had a complete heart block and hypotension and syncope, which was due to clot on the heart which was compressing RGSV to RCA graft. Which shows rare complication of cardiac compromise due to RCA graft compression.