Surgical Correction of Single Atrium after Miscarriages

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Abstract

We present a successful surgical repair of a single atrium (SA) in a 27-year-old woman, who had a complete missing of the atrial septum, without any coexisting valvular pathology. The SA diameter was 9.97 x 6.18 cm and the Qp/Qs were 4.1 due to single atrium. Surgical correction consisted in creating a new atrial septum, using double-velor patch. First and second year follow up, patient in very good condition and without any symptoms present. We consider that the diagnoses of single atrium, especially in child bearing women is done in appropriate time, in order to avoid miscarriages and other complications associated.

Keywords: Single atrium; Common atrium; Miscarriages

Introduction

Single atrium is a rare heart condition, in which inter atrial septum is missing, without atrioventricular valve pathology. These congenital heart defects are surgically corrected after birth. Patient we are going to present is a grown-up lady, who underwent successful surgical correction of the defect after three aborts.

Case Report

A 27-year-old female patient was referred to our hospital with rhythm disturbances, cianozes and weight loss. She has been seen previously by gynaecologist for other reasons and finally seen by cardiologist who noticed on echocardiography a single atrium. She went through three spontaneous abortions. During her life she avoided sport and other physical activities. She started working as a hairdresser in order to avoid exercise.

After her marriage, she had three abortions (her first pregnancy was terminated spontaneously on 29-week gestation, her baby was only 810 gm in weight and died few hours later. Her second pregnancy again was terminated spontaneously at 23 weeks. Baby weight was 360 gm died couple of hours later. Her third and last pregnancy was ended at 30 weeks gestation, baby died couple of hours later), what made her to seek medical advice.

After her third baby loss, her gynecologist noticed that she had supraventricular extra systoles and referred her to cardiologist, who on echocardiography noticed a single atrium and referred her to us for surgical treatment. She was not diagnosed with heterotaxy syndrome. In our clinic she presented with mild cyanoses of her fingers and lips. She told us that her feet and hands have been cold since childhood and on exercise she gets difficulty in breathing.

Figure 1: Pre-operative diagnostic. a) Chest X-Ray, b) Echocardiography, c) Four chamber view.
Discussion

There are few case reports involving common atrium also known as single atrium [1]. Rastelli and associates [2] reported few cases were the absence of the atrial septum was accompanied by presence of the cleft into the anterior leaflet of the mitral valve and the absence of inter-ventricular communication. On the other hand, Levy and associates [3] reported a case were the complete absence of the atrial septum was not accompanied by other defects as described by Rastelli, suggesting that this condition can exist alone as a specific entity.

Intra-operative TEE showed that there was a mild degree of mitral and tricuspid valve insufficiency (Grade I). There was no inter-atrial defect remained. Right atrium with normal size however mildly enlarged left atrium. Postoperative we don’t have atrial fibrillation and AV block, however saturations dropped to 84-85%. Mitral Valve has a minimal insufficiency Grad I-II with v.contracta 0.2 cm on echocardiography (Figure 2c). The PSAP post-operative is 29 mmHg and the RVSP is 23 mmHg. Anticoagulation with Camarine (International Normalized Ratio- INR 2.5-3 was given for a period of six months). Mitral valve has a minimal insufficiency on echocardiography (Figure 2c). Follow up after first and second year, patient was in very good condition and with a good result.

Surgical Procedure

Standard Sternotomy Aortic and bicaval canulation. After opening of the right atrium, we noticed complete absence of the interatrial septum (Figures 2a and 2b). Superior and inferior pulmonary veins from the right and left lung drained into what supposed to be left atrium. Mitral and Tricuspid valve with normal morphology. Coronary sinus opened normally into right atrium. After careful inspection of the entire atrium, we started to create an interatrial septum, with double pericardial patch. As described by Jing Wang (second Technique [1]) we started sutures (4-0 Prolen) from the middle of the ventricular septal crest downward to the borderline between the tricuspid septal valve annulus to the left inner side of the coronary sinus to the remaining border of the atrial septum. The Patch was sutured with running sutures and with extra fixating mattress suture without pledgets were taken every 2-3 cm.

Figure 2: (a) TV and MV with the patch in the middle and the suture line where the patch would suture at the posterior border of CS. (b) Right Atrium, view of tricuspid valve. (c) Echocardiography, follow up after 1 year. (Note: A- Aorta, TV: Tricuspid Valve, IVC: Inferior Vena cava, SVC: Superior Vena cava, CS: Coronary sinus, RPV: Right Pulmonary Vein).
SaO\textsubscript{2} values stabilized within one year from surgery. At present her SaO\textsubscript{2} values are maintained at 97%, with pO\textsubscript{2} 66 mmHg, pCO\textsubscript{2} 28.4 mmHg. She keeps very active and for the first time she does not complain of tiredness or cyanosis is present.

Congenital Heart Disease Guidelines from 2010, recommend that a team of Cardiologist, Gynecologist and Anaesthetist should discuss and follow before pregnancy patients who can be complicated during pregnancy and offer adequate treatment. Our patient makes us to support strongly these recommendations. Our patient was presented with a heart defect, which was undiagnosed for years and costs our patient three miscarriages and lately divorce. This history makes us push forward the need for guidelines to be followed and implement in every institution which treat pregnant women. Patients like ours not only will bear the consequences of losing three pregnancies but losing her family as well which will have psychological implications too.

**Conclusion**

Surgical correction of a single atrium can be done with good results and without any later complications. The long-term survival is very good.

**Conflicts of Interest**

There are no conflicts of interest for the present study.

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