

## Atrial Septal Defect in Two Nigerian Adults: 2 Case Reports

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### ABSTRACT

ASD is one of the most common asymptomatic congenital heart defects manifesting in adulthood. We report two cases managed in a tertiary facility in Nigeria. The first case is a 31-year-old woman who came to the hospital with overt symptoms of heart failure. Color Doppler showed a left to right shunt in the inter-atrial septum (Ostium Primum type). She subsequently improved with anti-failure regimen and anticoagulants.

The second case is a 32-year-old man who presented with easy fatigability of four months. Transthoracic echocardiogram revealed a mid-inter-atrial septal defect (Ostium Secundum type) with dilated heart chambers. He is for surgery pending when finances permit.

### Keywords

Atrial septal defect, Ostium Primum, Ostium Secundum.

### Introduction

Defective septation of the heart chambers by the endocardial cushions during embryogenesis leads to various congenital heart diseases, atrial septal defect (ASD) is one of them [1]. It is characterized by an opening in the inter-atrial septum with a left to right shunt of blood resulting in enlargement of the right chambers of the heart [2]. It is one of the most common congenital anomalies accountings for 25-30% of the newly diagnosed congenital heart defects in adults; however, it is seldom diagnosed [2]. We present two cases of ASD; one with Ostium primum and another with Ostium secundum diagnosed at a tertiary health center in Nigeria.

Approval was obtained from the ethics and research committee of the University of Benin Teaching Hospital. Informed consent was obtained from both patients.

### Case 1: Ostium Primum ASD

Miss I.S., a 31-year-old caterer who presented with complaint of painless bilateral swelling of 2 months duration, cough and breathlessness of 2 weeks. Cough is productive of white, frothy sputum. There was associated orthopnoea and paroxysmal

nocturnal dyspnea. She had previous history of stroke 7 years prior to presentation, with residual right hemiparesis.

Examination revealed an acutely ill looking young lady, dyspnoeic at rest, acyanosed, bilateral pitting pedal oedema up to the knees, with sacral oedema. She had tachycardia with pulse rate of 126 bpm, small volume. Her presenting blood pressure was 120/?. The jugular blood pressure was elevated by 6cm above the sternal angle of Louis. The apex beat was localized at the 6<sup>th</sup> left intercostal space, lateral to the mid-clavicular line and heaving. She had a 3<sup>rd</sup> heart sound, with grade 3 pansystolic murmur loudest at the apex. Other significant findings were tachypnea with respiratory rate of 36cpm, crackles in both lung bases, soft-tender hepatomegaly and ascites.

Chest radiograph showed cardiomegaly (CTR=81.5%), peri-hilar fullness and right lower lung base infiltrates. Electrocardiogram done revealed atrial fibrillation.

Trans-thoracic echocardiography showed dilated left ventricle with reduced ejection fraction of 7%. Colour Doppler revealed a left to right shunt in the basal part of the inter-atrial septum. (Figure 1). The mitral valve was thickened, with moderate mitral regurgitation. The right ventricle was also dilated with reduced

right ventricular systolic pressure. The left atrium was dilated with left atrial diameter of 5.9 cm. There was pulmonary hypertension with pulmonary artery acceleration time of 67ms and estimated mean pulmonary artery pressure of 48.9 mmHg.

She was subsequently got better with medical therapy using anti-failure regimen and anticoagulants. However, she was subsequently lost to follow up.

### Case 2: Ostium Secundum ASD

Mr E.O., a 32-year old male who presented with easy fatigability of four months duration. He also had dyspnea on moderate exertion. Nil associated orthopnoea, paroxysmal nocturnal dyspnea or leg swelling.

On examination, he was a young man, not in any obvious distress, not pale, not cyanosed, nil digital clubbing and no pedal oedema. His pulse rate was 80 bpm, regular and of normal volume. His blood pressure was 100/60 mmHg in both arms. The jugular

pressure was 3 cm above the sternal angle of Louis. The apex beat was located at the 5<sup>th</sup> left intercostal space, mid-clavicular line and not heaving. There was no para-sternal heave. He had 1<sup>st</sup> and 2<sup>nd</sup> heart sounds, with grade 3 pansystolic murmur at the left sternal edge.

Electrocardiogram done showed right axis deviation, incomplete right bundle branch block and right ventricular hypertrophy (Figure 2a).

Echocardiography done revealed a defect in the mid-inter-atrial septum (ASD Ostium secundum type) measuring 3.86 cm with left to right shunt (Figure 2b). The left atrium was dilated with diameter of 5.86 cm, area of 15.1 cm<sup>2</sup> and volume of 37.8 cm<sup>3</sup>. The right atrium was also dilated with diameter of 6.22 cm, area of 23.8 cm, and volume of 77.1 cm<sup>3</sup>. The right ventricular was also dilated with right ventricular internal diameter of 3.8 cm. The estimated pulmonary artery pressure was 36.7 mmHg, pulmonary artery acceleration time of 94 ms, right ventricular systolic pressure of

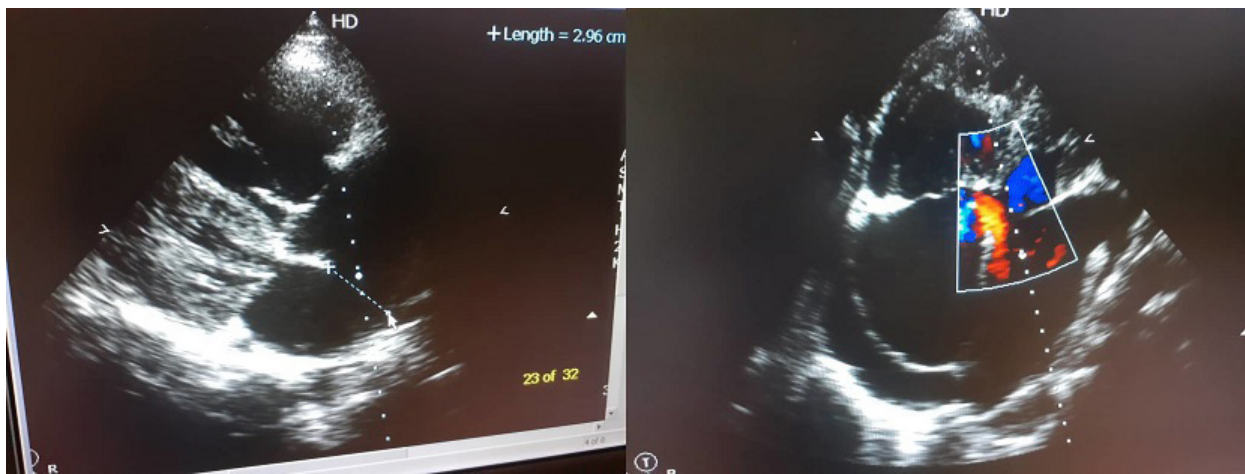


Figure 1: A 4CH view showing Ostium Primum ASD and moderate pericardial effusion.

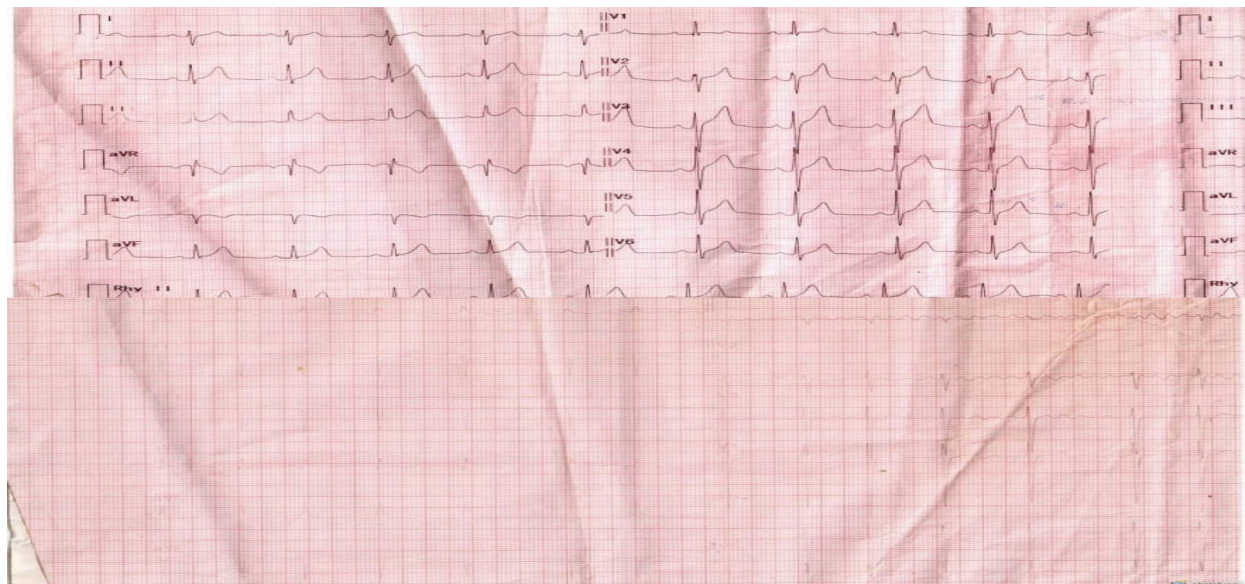
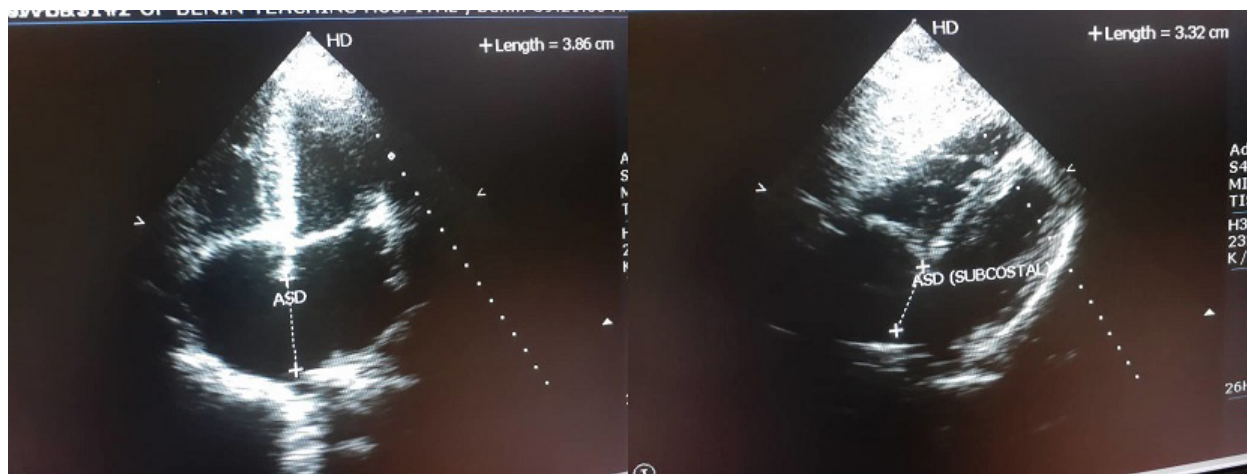


Figure 2a: Electrocardiogram showing right ventricular hypertrophy in a Patient with Ostium Secundum ASD.



**Figure 2b:** A 4CH view showing a large ASD Ostium Secundum type.

28.1mmHg and QP/QS was 2.17. The right and left ventricular systolic function were preserved.

He was subsequently referred for surgical intervention, still pending because of financial constraint.

### Discussion

The prevalence of Congenital heart diseases (CHD) ranges between 8-12/1000 live births and 30% to 40% of all congenital defects worldwide, occurring either in isolation or in addition to syndromic anomalies [3]. ASD are classified according to the location of the defect. Ostium Secundum is a communication in the fossa ovalis and makes up 60-75% of all cases. Ostium Primum is when the defect involves the lower part of the atrial septum and Sinus Venosus type when the communication is in the upper atrial septum [2]. Atrial septal defects rarely present with symptoms in the first three decades of life and patients usually present in their middle age [4]. Exercise intolerance is usually the first presenting symptom while others may include palpitations, features of congestive heart failure or arrhythmias [5]. Diagnosis is made with symptoms, signs, invasive and noninvasive investigations. Echocardiography remains the gold standard for clinching a diagnosis of ASD, but this is not readily available in settings like the Sub Saharan Africa, making knowledge of the clinical features very important to clinicians [5]. In developed nations such as the USA, CHD account for 3% of all infant deaths and 46% of deaths from congenital malformations [6]. ASD are among the most common congenital heart defects affecting adults, with women being diagnosed with twice as much cases as men [2]. In this report, we had a male and female ASD. Studies done in the cardiac center in Ethiopia, Africa shows the ostium secundum defect is the most common variant of ASD accounting for 75-95% of cases, while the ostium primum defect accounts for 15-20% [7]. A study done in Enugu South-East Nigeria showed the ostium secundum as the most common occurring in adults (75% of cases), with the ostium primum and sinus venosus each occurring in 12.5% of cases respectively [5]. Most cases present between the ages of 5 to 55 years [4]. The common presenting complaints of patients is dyspnea on exertion with few cases showing signs of overt

heart failure as seen in the second patient studied [4]. Physical examination findings include elevated jugular venous pressure, displaced apex beat, parasternal heave, pansystolic murmur. Overt features of heart failure such as third heart sound, bilateral lung crackles, tender hepatomegaly may be present depending on severity at presentation as seen in the second case [4]. Most ASD are asymptomatic being incidental findings [4]. Echocardiography remains the imaging modality of choice for clinching a diagnosis, revealing the size, location and hemodynamic effects of the defects [2,8]. Findings include a defect in the inter-atrial septum, dilated right heart chambers with increased pulmonary pressures [2]. Definitive treatment for ASD is surgical repair [2]. Management of complications such as heart failure, arrhythmias maybe necessary as seen in the second case.

### Conclusion

ASD remains one of the most common congenital heart defects, which manifest in adulthood. The asymptomatic nature makes it difficult to detect till it presents with life threatening complications. Efforts should therefore be taken to detect it much earlier in life and offer prompt treatment before serious adverse cardiovascular effects arise.

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