

# Crochet age Sign: An important ECG Sign in Detecting ASD

Amit Mandal\*

Department of Cardiology, Christian Medical College, Vellore, Tamil Nadu, India.

\*Corresponding Author: Amit Mandal. Department of Cardiology, Christian Medical College, Vellore, Tamil Nadu, India

Received Date: December 15, 2023 | Accepted Date: December 26, 2023 | Published Date: December 29, 2023

**Citation:** Amit Mandal, (2023), Crochet age Sign: An important ECG Sign in Detecting ASD, *International Journal of Clinical Reports and Studies*, 2(6); DOI:10.31579/2835-8295/044

**Copyright:** © 2023, Amit Mandal. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

## Abstract

An atrial septal defect is a common congenital heart disease in the adult population. There are various ECG manifestations of ASD and one of them is the crochet age sign.

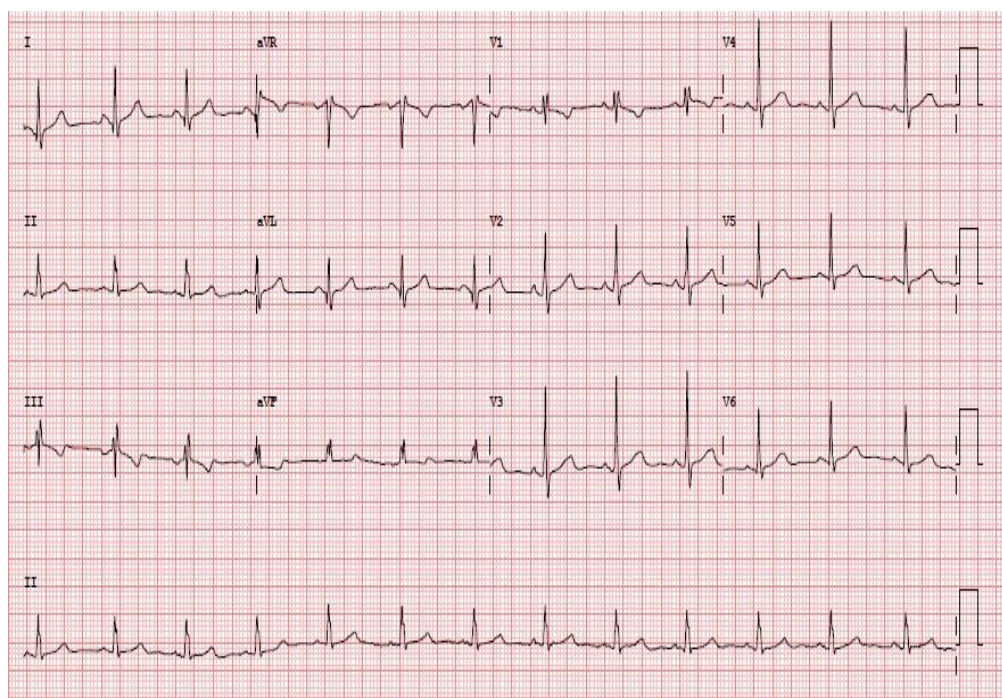
**Keywords:** an atrial septal defect; crochet age sign; electrocardiogram

## Introduction

An atrial septal defect is a common congenital heart disease in the adult population. There are various ECG manifestations of ASD and one of them is the notch near the apex of the R wave in leads II, III, if also known as the crochet age sign. We report a case of a 37-year-old woman with the crochet age sign in ECG and subsequently diagnosed to have ostium secundum ASD.

## Case Report

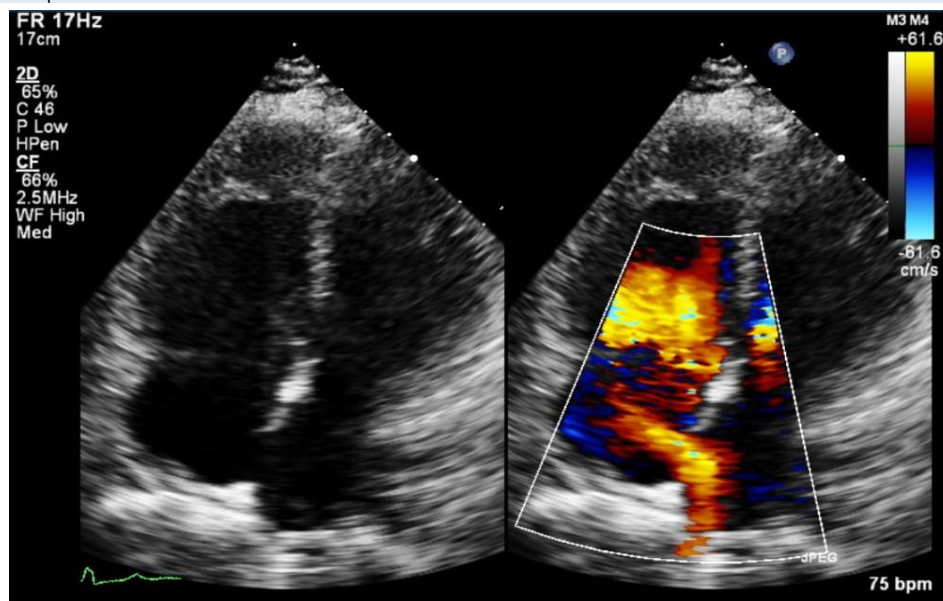
A 37-year-old woman was admitted for evaluation of progressive dyspnea on exertion for the last 2 years. She did not have any cardiovascular co-morbidities. Cardiac examination revealed a normal first heart sound, wide and fixed split-second heart sound. The ECG showed sinus rhythm, incomplete right bundle branch block (RBBB) and notch near the apex of the R wave in leads II, III, aVf, also known as the 'crochet age' sign (Figure 1).



**Figure 1:** ECG showing notches on the R waves in leads II, III, and aVF with right bundle branch block pattern in lead V1.

Chest X-ray revealed cardiomegaly with dilated main pulmonary artery. Transthoracic echocardiography (TTE) subsequently confirmed the

presence of an ostium secundum ASD (19 mm) with left to right shunt with dilated right atrium and right ventricle. (Fig 2).



**Figure 2:** Transthoracic echocardiography showing an ostium secundum ASD with left to right shunt

She underwent ASD device closure with a 22 mm Septal Occlude device. Post procedure at three month follow up, the ECG showed disappearance of crochet age sign with persistent incomplete RBBB pattern. Transthoracic echocardiography (TTE) revealed the device in situ and without any evidence of any residual shunt.

### Discussion

An atrial septal defect is one of the most frequent congenital heart diseases of adults. Clinical features of ASD consist of wide and fixed splitting of second heart sound and ejection systolic murmur in upper left sternal border, and echocardiography can confirm the diagnosis. There are various ECG manifestation of ASD and one of them is crochet age sign. It was first described by Toscano et al in 1958 (1) as notch near the apex of the R wave of inferior leads (II, III, if). In 1996, Heller et al concluded that crochet age pattern in inferior limb correlates with shunt severity and the presence of crochet age sign was highly specific for ASD and if present in all three inferior leads specificity reaches 92%–100%. (2) Presence of an incomplete RBBB further helps in diagnosis of ASD. Crochet age pattern is independent of the RBBB. The presence of a RBBB has a sensitivity of 36.1% and specificity of 80% for an ASD, hence crochet age sign could be a better ECG marker of an ASD. (3) In the crochet age pattern, notching of the R-wave generally happens in the initial 80 ms of the QRS complex, whereas in a RBBB pattern, it occurs in the latter part of the QRS complex. (2) After closure of ASD, this sign vanishes in 35% of patients (4).

### Conclusion

In conclusion, in the appropriate clinical setting, presence of the crochetae sign on ECG, should be considered as a vital clue for a secundum ASD.

### References

1. Toscano Barboza E, Brandenburg RO, Swan HJ. (1958). Atrial septal defect; the electrocardiogram and its hemodynamic correlation in 100 proved cases. *Am J Cardio.* 1958;2(6):698–713.
2. Heller J, Hagee AA, Besse B, Desmos M, Marie FN, et al., (1996). “Crochet age” (notch) on R wave in inferior limb leads: a new independent electrocardiographic sign of atrial septal defect. *J Am Coll Cardio.* 15;27(4):877–882.
3. Schiller O, Greene EA, Moak JP, Kiedrowski M, wt. all., (2013). The Poor Performance of RSR' Pattern on Electrocardiogram Lead V1 for Detection of Secundum Atrial Septal Defects in Children. *J Pediatric.* Feb 1;162(2):308–312.
4. Gatzoulis MA, Freeman MA, Siu SC, Webb GD, Harris L. (1999). Atrial arrhythmia after surgical closure of atrial septal defects in adults. *N Engl J Med.* Mar 18;340(11):839–846.

**Ready to submit your research? Choose ClinicSearch and benefit from:**

- fast, convenient online submission
- rigorous peer review by experienced research in your field
- rapid publication on acceptance
- authors retain copyrights
- unique DOI for all articles
- immediate, unrestricted online access

**At ClinicSearch, research is always in progress.**

Learn more <https://clinicsearchonline.org/journals/international-journal-of-clinical-reports-and-studies>



© The Author(s) 2023. **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>. The Creative Commons Public Domain Dedication waiver (<http://creativecommons.org/publicdomain/zero/1.0/>) applies to the data made available in this article, unless otherwise stated in a credit line to the data.