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## Case Report

# Left atrial anomalous muscular band detected by computed tomography before catheter ablation in a patient with atrial fibrillation

Katsunori Okajima, M.D.<sup>\*</sup>, Kimitake Imamura, M.D., Gaku Kanda, M.D., Akira Shimane, M.D.

Department of Cardiology, Himeji Cardiovascular Center, Japan

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## ABSTRACT

A 65-year-old man was referred to our hospital with persistent atrial fibrillation (AF). Before the ablation procedure, 3-dimensional computed tomography revealed a left atrial anomalous muscular band connecting the posterior side of the left atrial roof and the right edge of the fossa ovalis. During the first ablation procedure, the band interfered with the manipulation of the catheter, resulting in only the left pulmonary vein (PV) being isolated. However, AF recurred. During the second procedure, careful catheter manipulation permitted complete right PV isolation, after which, the patient has not had AF recurrence for more than 3 years.

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## 1. Introduction

The use of MDCT or MRI in atrial fibrillation (AF) patients has been recommended in the preoperative anatomical determination of the left atrium-pulmonary veins before catheter ablation because of the local variation among patients [1]. In the current case report, we present the case of a rare anomalous muscular band originating from the left atrium and obstructing the ablation procedure.

## 2. Short case report

A 65-year-old man with persistent AF underwent multi-detector computed tomography (CT) before catheter ablation. An anomalous muscular band connecting the posterior side of the left atrial roof and the right edge of fossa ovalis in the left atrium was detected (Fig. 1).

During the ablation procedure, sheaths were inserted into the left atrium through a preexisting patent foramen ovale without trans-septal puncture; the band was detected as a translucent structure on angiography (Fig. 2A). Direct cardioversion caused atrial premature complex, originating from the left inferior pulmonary vein (PV), and subsequent AF. Left PV isolation suppressed the AF recurrence. Therefore, we ended this session after isolating

the left PV to avoid damaging the anomalous muscular band by catheter manipulation. A second ablation procedure was performed 6 months later owing to recurrence of paroxysmal AF. For this procedure, we re-isolated the left PV and then carefully passed the ablation catheter posterior and anterior to the band in order to completely isolate the right PV, thus preventing damage to the band itself (Fig. 2B). AF has not recurred for more than 3 years since the second session.

## 3. Discussion

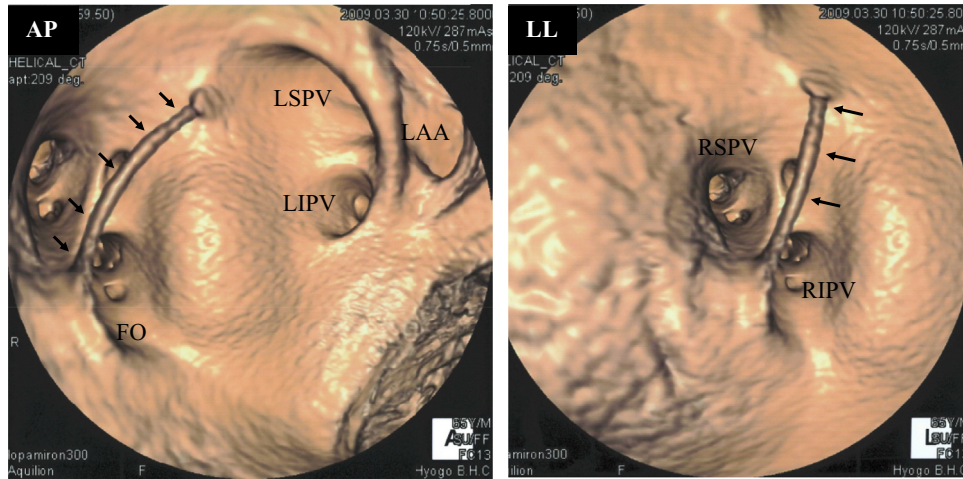
The incidence of anomalous muscular bands in the left atrium was previously found to be 2% among autopsy cases (22 of 1100 autopsies) [2]. In most of these cases (19/22), this band was found to connect the left atrial side of the fossa ovalis with other areas of the left atrial endocardium. In addition, the presence of Chiari's network (27%), a patent foramen ovale (23%), and premature atrial complex (41%) were also observed in these cases. In the current case, we were able to perform catheter ablation through a preexisting patent foramen ovale. However, we were still unable to determine the presence of any other possible malformations and an AF-triggering premature complex arising from the band in our patient.

## 4. Conclusion

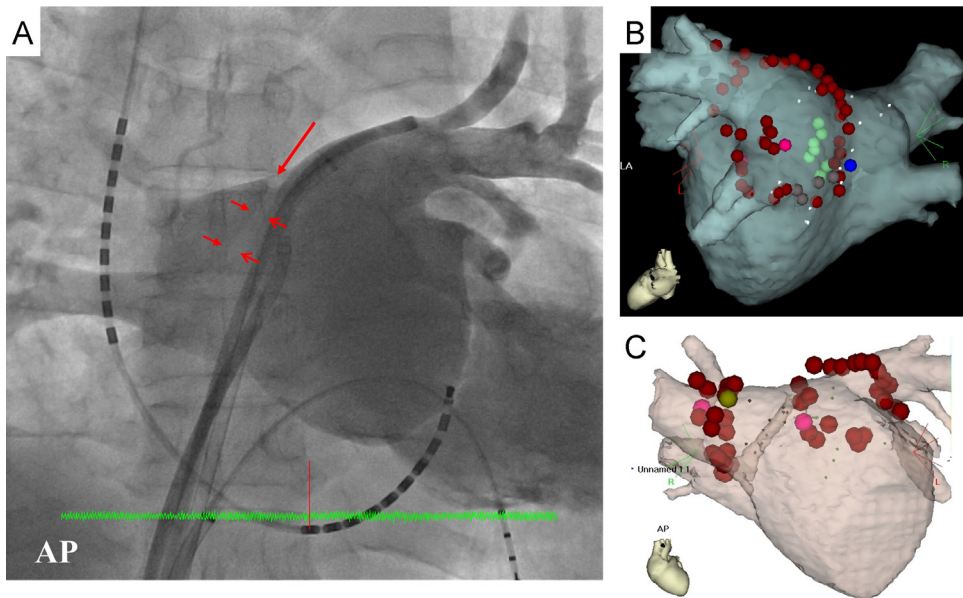
Understanding the anomalous anatomical characteristics of the muscular band may help us to better predict the existence of a

<sup>\*</sup> Correspondence to: Department of Cardiology, Himeji Cardiovascular Center, 520 Saisho-ko, Himeji, Hyogo Prefecture 670-0981, Japan. Tel.: +81 79 293 3131; fax: +81 79 295 8199.

E-mail address: [kokajima@hbhc.jp](mailto:kokajima@hbhc.jp) (K. Okajima).



**Fig. 1.** Multi-detector computed tomography imaging of the anomalous muscular band using a left atrial endoscopic view (arrow). LSPV; left superior pulmonary vein (PV), LIPV; left inferior PV, RSPV; right superior PV, RIPV; right inferior PV, LAA; left atrial appendage, FO; foramen ovale.



**Fig. 2.** Angiogram of the left atrium during the procedure. (A) Identification of the muscular band “translucent image” (red arrow). (B) Left pulmonary vein (PV) isolation using CARTO during the first procedure. (C) Left PV re-isolation and additional right PV isolation during the second procedure.

patent foramen ovale, an unexpected difficulty in catheter manipulation, and potential arrhythmogenicity.

#### Conflict of interest

The authors have no conflicts of interest to disclose.

#### References

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