



# Case Report

## A Case of Asymptomatic Cardiac Lipoma and Literature Review

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### ABSTRACT

Primary cardiac tumours are a rare occurrence, of which lipomas comprise approximately 8%. Although mostly asymptomatic, cardiac lipomas can lead to lethal arrhythmias and significant left ventricular outflow obstruction. We present a case of an asymptomatic left ventricular lipoma managed by surgical resection and discuss diagnostic modalities and management options. Our case exemplifies how prompt surgical resection is a reasonable and safe approach in select patients even if they are asymptomatic.

### RÉSUMÉ

Les tumeurs cardiaques primitives sont rares; environ 8 % d'entre elles sont des lipomes. Bien qu'ils soient généralement asymptomatiques, les lipomes cardiaques peuvent entraîner des arythmies mortelles et provoquer une obstruction importante de la voie d'éjection du ventricule gauche. Nous exposons un cas de lipome du ventricule gauche asymptomatique pris en charge par résection chirurgicale et traitons des outils diagnostiques et des options thérapeutiques. Ce cas montre qu'il peut être raisonnable et sûr de procéder rapidement à une résection chirurgicale dans certains cas, même si le patient ne présente pas de symptômes.

Primary cardiac tumours are rare entities with an incidence of <0.02%.<sup>1</sup> A total of 75% of these tumours are benign, of which lipomas comprise approximately 8%.<sup>2</sup> Cardiac lipomas are mostly asymptomatic but can present with symptoms ranging from palpitations to syncope and even sudden cardiac death. Conservative management includes clinical observation and, in some cases, anticoagulation. Surgical management includes resection of the mass, which is considered curative. Whether one approach is superior to the other is unknown due to the lack of data given the rarity of this condition.

breath, palpitations, or syncope. Medical history included hypertension, diabetes, gastroesophageal reflux disease, and a stable intracranial arachnoid cyst. He was on no prescription medications. He had no family history of any cardiac issues.


### Case Presentation

We present a 51-year-old man with an incidental left ventricular lipoma. The patient initially presented to the emergency department with abdominal pain and diarrhea. Computed tomography scan of the abdomen revealed sigmoid and rectal thickening. In addition, the lower part of the thorax captured in this scan revealed that a fat-attenuating intracardiac mass measuring 1.0 × 0.9 cm was found in the left ventricle. The patient had no cardiac symptoms such as chest pain, shortness of

### Differential Diagnoses

The characteristics of the mass on computed tomography were suggestive of a fat-containing lesion at the left ventricular apex. As such differential diagnoses were fairly limited to lipoma, lipomatous hypertrophy, and subendocardial fat collection. Lipomatous hypertrophy usually occurs in the interatrial septum and was therefore judged less likely given the location of our patient's mass. Other intracardiac masses such as myxoma, fibroma, and teratomas could not be initially excluded.

### Investigations

A transthoracic echocardiography (TTE) showed a left ventricular mass measuring 1.12 cm × 0.524 cm located in the apex (Fig. 1). A cardiac magnetic resonance image (CMR) revealed a 12 × 7 × 7 mm apical pedunculated lesion with elevated in-phase T1 signalling, which was diminished on the opposed-phase image (Fig. 2, Video 1 , view video online). Based on these imaging results, the patient was given a preliminary diagnosis of cardiac lipoma.

### Management

After discussing treatment options and potential risks of untreated cardiac lipoma with the patient, the decision was

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**Ethics Statement:** This report has adhered to the relevant ethical guidelines.

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See page 209 for disclosure information.

### Novel Teaching Points

- Recognize that incidental cardiac masses need prompt investigation using specialized imaging such as TTE, TEE, and CMR.
- Understand the mechanisms by which cardiac lipomas cause symptoms and appreciate the spectrum of clinical presentations.
- Recognize that surgical resection is the only definitive treatment and should be considered in all patients regardless of symptomatology.

made to proceed with surgical resection. The patient was anticoagulated with apixaban as a “bridge” to definitive surgical therapy. A preoperative coronary angiogram showed mild nonobstructive disease. The patient underwent a successful robotic-assisted surgical resection of the mass, which measured  $1.0 \times 0.6 \times 0.5$  cm (Fig. 1). Intraoperative histopathologic examination of the mass revealed mature adipose tissue, confirming the diagnosis of lipoma. There were no postoperative complications, and the patient was discharged home after 4 days. Apixaban was discontinued as the mass had been resected, and the patient had no other indication for anticoagulation.

### Discussion

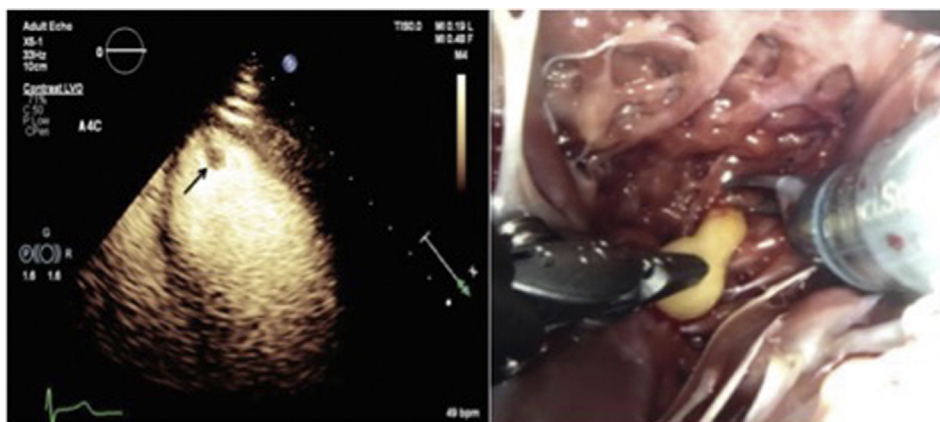
Cardiac lipomas are rare entities that are mostly asymptomatic but can also present with a range of clinical symptoms. Lipomas that are large in size and located in the left ventricular outflow tract can cause left ventricular outflow tract obstruction and lead to symptoms ranging from syncope to cardiogenic shock. Lipomas situated near the mitral or tricuspid valves can lead to valvular insufficiency and manifest clinically as heart failure. Lipomas that encroach on the myocardium can disrupt conduction systems and lead to fatal arrhythmias such as ventricular tachycardia.<sup>3</sup> Moreover, smaller size lipomas can potentially embolize leading to various ischemic events such as ischemic strokes. However, embolization is rare because lipomas are well encapsulated. Embolism of cardiac masses are better described with left atrial

myxomas given their friable structure. Lastly, lipomas have thrombogenic effects due to disruption of laminar blood flow. This can lead to formation of intracardiac thrombi and subsequent cardioembolic events such as strokes.<sup>4</sup>

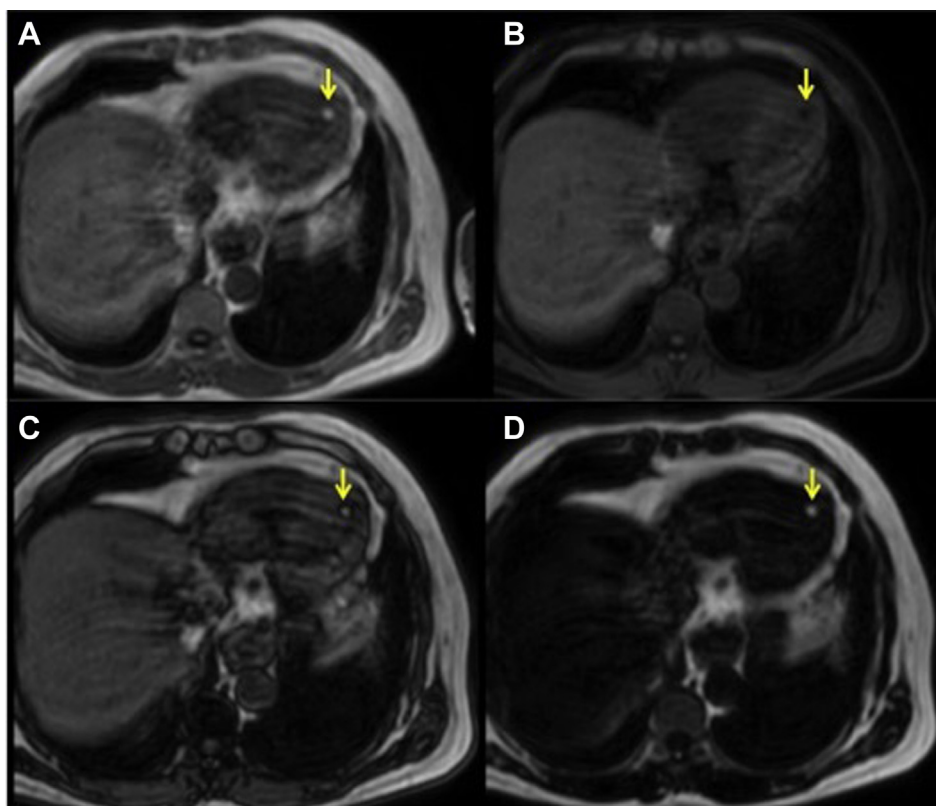
Once a cardiac mass is incidentally discovered, further dedicated imaging is warranted to characterize the mass. TTE is often the first investigative modality due to its widespread availability. Transesophageal echocardiography (TEE) may be helpful in visualizing a mass that is not readily visible on TTE and CMR. However, it is less useful for apical masses as the apex is not well visualized in standard TEE views and is distant from the transducer, which limits resolution.<sup>5</sup> TEE is also useful in providing real-time imaging during surgical resection of lipomas. In our case, we proceeded with CMR as it provides better tissue characterization compared with TEE and helps differentiate a fat-containing lesion from a thrombus.

There are no evidence-based guidelines regarding optimal treatment for cardiac lipomas given their rarity. The decision of surgical vs conservative management depends on factors such as symptomatology, surgical candidacy, and patients' preference. Lipoma size and location also dictate surgical feasibility. In our patient, the mass was small, subendocardial, and pedunculated, making it easily resectable. The risks of surgery were less than the known, potentially fatal, long-term risks of untreated cardiac lipoma. Therefore, surgical management was favoured in our patient. Whether or not postoperative anticoagulation is needed is debatable. In our opinion, if surgical resection is successful and the patient has no other thrombotic risks, it is reasonable to discontinue anticoagulation in order to minimize bleeding risk. In some instances, the mass may not be fully resected or, theoretically, mass resection may lead to tissue scarring. Both of these scenarios can potentially increase thrombotic risk and may warrant anticoagulation. However, to our knowledge, there are no reports or studies discussing the appropriateness of anticoagulation in these scenarios, and the decision should be based on the clinicians' best judgement.

Conservative management involves clinical monitoring for the development or worsening of symptoms such as palpitations and syncope. In asymptomatic patients, brain imaging to monitor for occult cerebrovascular events might also be reasonable. The development of cerebrovascular events may



**Figure 1.** (Left) Apical 4-chamber view transthoracic echocardiogram with definity contrast showing a pedunculated left ventricular apical mass. (Right) Intraoperative image showing an intracardiac lipomatous mass at the apex of the left ventricle.



**Figure 2.** (A) In-phase T1W sequence showing apical enhancement of intracardiac mass (arrow). (B) Opposed-phase (fat suppressed) T1W sequence showing diminished apical signal. (C) Dixon water-only sequence showing diminished apical mass signal. (D) Dixon fat-only sequence showing increased apical mass signal.

be an indication of an enlarging mass and warrants prompt echocardiography and intervention. Anticoagulation can be used to offset some of the thrombogenic effects of the tumour; however, there is no evidence that this is effective. In fact, Stefanou et al.<sup>6</sup> reported recurrent strokes in almost 50% of patients with atrial lipomas who were treated with anticoagulants.

Regardless of symptomology, we believe that patients with cardiac lipomas should undergo prompt evaluation for surgical candidacy. If deemed eligible for surgery, resection of the mass should be the first-line treatment as it is definitive and prevents the potential long-term risks of lipomas. The surgical procedure, especially if done laparoscopically, is considered low-risk and has minimal or no postoperative complications as exemplified by our case.

### Conclusion

When cardiac lipomas are found incidentally, prompt workup is warranted with echocardiography and CMR. Management is either conservative with clinical observation and possibly anticoagulation or by surgical resection. Our case exemplifies how prompt surgical resection is safe and effective in select patients.

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### Disclosures

The authors have no conflicts of interest to disclose.

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### Supplementary Material

To access the supplementary material accompanying this article, visit *CJC Open* at <https://www.cjcopen.ca/> and at <https://doi.org/10.1016/j.cjco.2020.10.002>.