

# Primary Cardiac Tumors Operated on in Côte d'Ivoire: They Are Almost All Myxomas

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## Abstract

**Objective:** Through this surgical series, we present the epidemiological and anatomical-clinical aspects and the surgical results concerning patients operated on for a primary cardiac tumor at the Abidjan Heart Institute. **Materials and Method:** This is a retrospective descriptive study covering the period of January 1982 to December 2022, based on the medical records of patients operated on for a primary cardiac tumor at the Abidjan Heart Institute. **Results:** Twenty-seven (27) patients underwent surgery for a primary cardiac tumor, including 14 women and 13 men with a mean age of 41.5 years (range 19 - 76 years). The main circumstances of discovery were exertional dyspnea, palpitation and syncope or pseudo-syncope. The main site was the septal wall of the left atrium. The diagnosis of myxoma was confirmed by pathological examination of the surgical specimen in 96.3% (n = 24) of the patients and it was a malignant large cell immunoblastic lymphoma of the myocardium in 3.7% (n = 1) of the patients. The mean largest diameter was 46.1 mm. The postoperative course was marked by an ischaemic stroke (n = 1); recurrence of a left atrial myxoma 5 years after the first tumor removal (n = 1). Two cases of death were noted, one due to the evolution of immunoblastic large cell lymphoma and the other due to an extracorporeal circulation accident. **Conclusion:** Almost all primary cardiac tumors operated on in Abidjan are myxomas. The circumstances of the discovery of these cardiac tumors are multiple and varied but dominated by exertional dyspnea, palpitation and syncope. Whatever their histological type, primary cardiac tumors are serious affections, in view of the haemodynamic and rhythmic disorders they cause.

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## Keywords

Cardiac Myxomas, Primary Cardiac Tumors, Tumor Removal

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### 1. Introduction

Cardiac tumors are benign or malignant neoformations that affect the epicardium, myocardium, endocardium and valves [1]. Malignant cardiac tumors can be primary or secondary [2] [3]. Three-quarters of primary cardiac tumors are benign and the majority of benign tumors are myxomas [4] [5] [6]. Primary malignant cardiac tumors are even rarer. They can be sarcomas, mesotheliomas, or lymphomas [7] [8]. In Côte d'Ivoire, a government policy of installing a medical cardiology service in each regional hospital was initiated a decade ago. This policy contributes to the improvement of the diagnosis of heart disease and therefore of cardiac tumors. Although still rare, the incidence of cardiac tumors is clearly increasing because they are probably better diagnosed.

Through this surgical series, we present the epidemiological and anatomical-clinical aspects and the surgical results concerning patients operated on for a primary cardiac tumor at the Abidjan Heart Institute.

### 2. Materials and Method

This is a retrospective descriptive study covering the period of January 1982 to December 2022, based on the medical records of patients successively operated on for a primary cardiac tumor at the Abidjan Heart Institute. Excluded from this study were three suspected cases of primary benign cardiac tumor who were not operated on before they were lost to follow-up and one case of right intra-auricular metastasis of papillary adenocarcinoma of the thyroid gland, because it was not a primary tumor of the heart. Data entry and analysis were performed by MICROSOFT WORD 2007, EXCEL 2007 and INFINIX HOT 5 LITE software. The parameters studied included: socio-demographic data, the circumstances of discovery, tumor site and measurements on Cardiac Echography and/or Magnetic Resonance Imaging, The cardiac tumor approaches after sternotomy, peri-operative complications, the result of the anatomo-pathological examination of the surgical specimen and the clinical and ultrasound data from short, medium and long terms postoperative follow-up. The quantitative parameters were expressed in averages with their extremes and the qualitative parameters in numbers with their percentages.

### 3. Results

Twenty-seven patients, operated on for a primary cardiac tumor, were collected. 14 were women and 13 were men with a mean age of 41.5 years (range 19 - 76 years). The circumstances of discovery are grouped in **Table 1**.

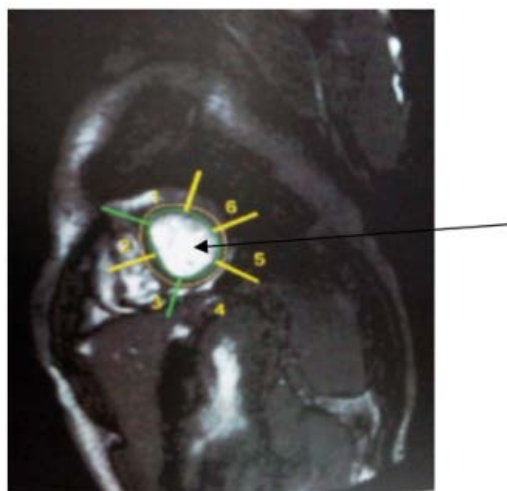
All patients (n = 27) received cardiac echography (see **Figure 1**). In addition, 02 patients received magnetic resonance imaging (see **Figure 2**).

**Table 1.** Circumstances of discovery.

Circumstances of discovery	Numbers	Percentages
exertional dyspnea	11	40.7
Palpitation	4	14.8
Syncope or Pseudo-syncope	3	11.0
Decubitus Vertigo	1	3.7
Myocardial infarction	1	3.7
Constituted ischaemic stroke	2	7.4
Transient Ischaemic Attack	1	3.7
Global heart failure	2	7.4
Lower limb oedema	1	3.7
Incidental discovery	1	3.7
<b>Total</b>	<b>27</b>	<b>100</b>



**Figure 1.** Echographic image of left atrium septal wall tumor (see arrow).



**Figure 2.** Magnetic resonance imaging of a left atrial tumor (see block arrow).

The cardiac topography of these tumors is shown in **Table 2**. In terms of measurements, the average of the largest diameters was 46.1 mm (range 8 - 88 mm). The cardiac tumor approaches are shown in **Table 3**.

Complete tumor removal was performed in 96.3% (n = 26) of patients (see **Figure 3**).

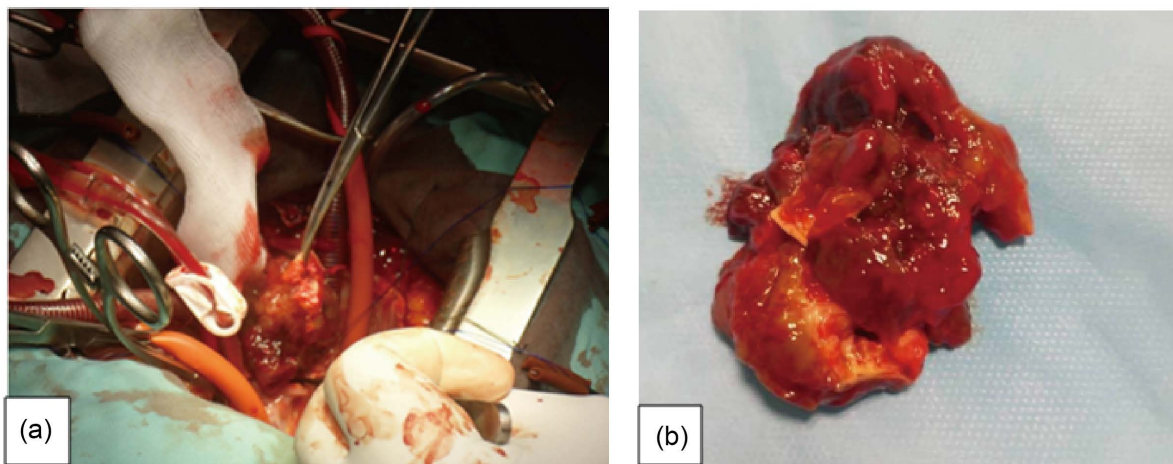
A biopsy of the right ventricular free muscle wall tumor was performed in 3.70% (n = 1) of patients. Pathological examination of the surgical specimen confirmed the diagnosis of myxoma in 96.30% (n = 26) of patients and the diagnostic of myocardial immunoblastic large cell lymphoma in 3.70% (n = 1) of patients.

**Table 2.** Topography of cardiac tumors.

Heart cavities Topography	Left atrium	Left ventricle	Right atrium	Right ventricle	Total
Free wall	2	0	0	1	3
Septal wall	15	0	5	0	20
Atrio-ventricular valve (atrial or ventricular side)	4	0	0	0	4
<b>Total</b>	<b>21</b>	<b>00</b>	<b>5</b>	<b>1</b>	<b>27</b>

**Table 3.** Cardiac tumor approaches.

Cardiac tumor approaches	Numbers	Percentages
Trans-septal	15	55.56
Left atriotomy	6	22.22
Right atriotomy	5	18.52
Right ventricle	1	3.70
<b>Total</b>	<b>27</b>	<b>100</b>



**Figure 3.** Surgical removal of a cardiac tumor. (a) Intra-operative view; (b) surgical specimen.

The surgical results were as follows: Postoperative morbidity was represented by Ischaemic stroke (n = 1) which regressed with minimal sequel of left mono paresis; and the recurrence of a left atrial myxoma 5 years after the first tumor removal (n = 1) which was successfully reoperated. Two deaths were noted, one due to the terminal course of immunoblastic large cell malignant lymphoma and the other due to a major failure of the cardiectomy reservoir during extracorporeal circulation.

#### 4. Discussion

Medical literature has established that three quarters of primary cardiac tumors are benign and the majority of benign tumors are myxomas [4] [5] [6]. This predominance of myxomas is found in our study (96.3%). All the cases of myxoma in this series are intra-atrial, although other locations like ventricular myxoma and anterior mitral valve leaflet have been described in the literature [9] [10] [11].

Primary malignant cardiac tumors are extremely rare. They represent 0.018% of cases observed in the autopsy series of Butany J *et al.* [12]; they constitute 25% of primary cardiac tumors and are dominated by sarcomas and malignant lymphomas [8] [13]. Indeed, the only case of primary malignant cardiac tumor in our series was a malignant immunoblastic large cell lymphoma. Unlike other primary malignant tumors, lymphomas are generally sensitive to chemotherapy and radiotherapy [7] [13]. Tumor fragments or peri-tumor thrombi may embolise into the systemic circulation [14] [15]. This serious complication was the circumstance of discovery in three patients of our series. In addition, autopsy findings of cardiac tumors, including asymptomatic right atrial myxoma, leading to massive and fatal pulmonary embolism have been described [16]. Nevertheless, pulmonary embolism was not the circumstance of discovery of any of the 05 right intra-atrial locations in this series. In addition, only one case of an asymptomatic form of cardiac tumor, discovered incidentally during a health check-up, was noted in this short series. The circumstances of discovery therefore show that cardiac tumors end up being symptomatic in the majority of cases.

In practice, the etiological approach to a mass suspected of being a cardiac tumor is based on transthoracic and transesophageal echocardiography [17]. This allows the diagnosis of a tumor to be confirmed or invalidated by eliminating a constructed image, a false echo, an anatomical variant, a cyst or a thrombus. Echocardiography also specifies the exact location, extension and dimensions of the mass and the haemodynamic impact. If the echographic appearance is not very suggestive of a benign tumor, Magnetic Resonance Imaging plays a major role in confirming the tissue nature of the mass, eliminating a thrombus and confirming the diagnosis of a cardiac tumor [18] [19]. However, Magnetic Resonance Imaging is a recent examination in our environment and its high cost at present limits its popularisation in daily practice. We only used Magnetic Resonance Imaging in 2 patients. In case of doubt about the benign or malignant

nature of a cardiac tumor, imaging-guided endomyocardial biopsies are essential. Indeed, only the anatomic-pathological analysis of the biopsy or the excisional specimen can confirm the benign or malignant nature of a cardiac tumor [20].

## 5. Conclusion

Almost all primary cardiac tumors operated on in Abidjan are myxomas. The circumstances of the discovery of these cardiac tumors are multiple and varied but dominated by exertional dyspnea, palpitation and syncope. Whatever their histological type is, primary cardiac tumors are serious affections, in view of the haemodynamic and rhythmic disorders they cause.

## Limits of the Study

The retrospective nature and the small size of the population studied constitute the main limitations of our study.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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