

Cardioscope-Assisted Excision of a Left Ventricular Tumor—A Case Report

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ABSTRACT

Background: A 56-year-old male with a past history of excision of a malignant melanoma from his lip presented with squeezing chest pain. The patient was evaluated and determined to have a tumor of the left ventricle. Excision of such a tumor is indicated to prevent embolization and also to prevent the possibility of outflow tract obstruction.

Methods: The patient underwent transesophageal echocardiography and was placed on cardiopulmonary bypass with cold-blood cardioplegia. The ascending aorta was opened and a video-assisted cardioscope was inserted through the aortic valve and used to visualize the tumor. The tumor was resected under direct vision and the aorta was closed.

Results: Frozen section analysis revealed the tumor to be a benign hemangioma. The patient had an uneventful recovery with no evidence of ventricular septal defect or embolization.

Conclusions: Performing the cardioscopy via the aortotomy helped us to avoid an atriotomy and/or ventriculotomy and enabled us to discern the precise extent of the tumor and rule out concomitant pathology. The use of cardioscopy as an adjunct for excision of intraventricular abnormalities can assist in determining the precise location and size of tumors and in resecting tumors in areas of the heart that might otherwise be difficult to visualize.

INTRODUCTION

A 56-year-old male with a past history of excision of a malignant melanoma from his lip presented with squeezing chest pain. The chest pain was relieved by the administration of nitroglycerine and morphine, and the patient was admitted to the hospital. Although his cardiac enzymes were negative on admission, he was noted on echocardiography to have a pedunculated left ventricular mass measuring 1 cm in diameter. The patient was subsequently evaluated with cardiac catheterization (Movie ①), which revealed mild coronary disease with a highly vascular lesion in the left ventricle. The patient was then given

a CT scan of the head and thorax to rule out metastatic melanoma. At this point, the patient was evaluated with magnetic resonance angiography (MRA) of the heart that revealed a 1 cm pedunculated mass with no evidence of thrombus or valvular vegetation. Based on the imaging studies, the patient was believed to have a tumor of the left ventricle. Excision of such a tumor is indicated to prevent embolization and also to prevent the possibility of outflow tract obstruction.

MATERIALS AND METHODS

Operative Technique

The patient was brought to the operating room where he underwent transesophageal echocardiography (Movie, ②), which revealed an echo-dense structure that was pedunculated and mobile in the left ventricle along the septum near the apex. The patient was then placed on cardiopulmonary bypass and cooled to 34 degrees. The aorta was cross-clamped and the heart arrested with cold-blood cardioplegia administered via a stab wound in the ascending aorta. The cardioplegia was augmented with retrograde cold-blood cardioplegia.

A right superior pulmonary vein vent was placed in the left atrium to maintain a clear operative field. The ascending aorta was then opened in a transverse manner, similar to that usually carried out for an aortic valve replacement, and the aortic valve was noted to be normal. A 30-degree angled, 10 mm video-assisted cardioscope was then used for visualizing the tumor (Figure 1, ③). It was carefully introduced through the aortic valve into the left ventricular cavity. Using the cardioscope, we were able to visually identify the free mobile tumor arising from the anterior portion of the septum approximately two-thirds of the way to the apex. The tumor measured approximately 1 cm in diameter and was pink in color. It had a small fibrous stalk measuring approximately 2 mm in diameter that was attached to the septum. We were able to view the tumor by placing a hand at the apex of the heart and looking down through the aortic valve. The cardioscope was then removed because we felt we could resect the tumor best under direct vision.

The tumor stalk was divided with a small rim of normal septal muscle using a no. 15 knife blade, and the tumor was removed (Figures 2 and 3, ④). The tumor was sent to pathology for frozen section, and the frozen section analysis suggested that it was a benign vascular tumor. A careful inspection of the remainder of the left ventricle with the cardioscope failed to reveal any additional masses or any iatrogenic

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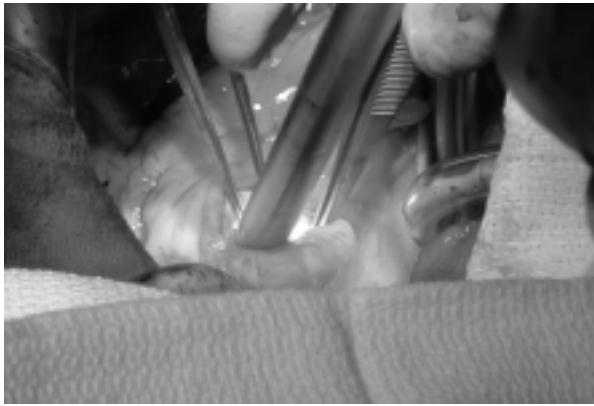


Figure 1. The cardioscope being introduced into the left ventricle via the aortotomy.

septal defect. The aorta was then closed and the heart deaired. After rewarming, the patient was successfully weaned from the cardiopulmonary bypass. The final intraoperative transesophageal echocardiogram showed no residual tumor or any evidence of ventricular septal defect. Final pathological analysis revealed the mass to be a benign hemangioma. The patient had an uneventful recovery with no evidence of ventricular septal defect or embolization.

DISCUSSION

Tumors of the heart remain a rare occurrence. The majority of cardiac tumors are benign myxomas, and a majority of the primary malignant cardiac tumors are sarcomas. Patients with intracardiac tumors usually present with one of the following triad of complications: embolism, intracardiac obstruction, or constitutional symptoms [Centofanti 1999].

Echocardiography remains the most valuable tool in discerning the size, location, and nature of the tumors. This modality can also help us to plan the type of excision. For this particular patient, even with his history of malignant

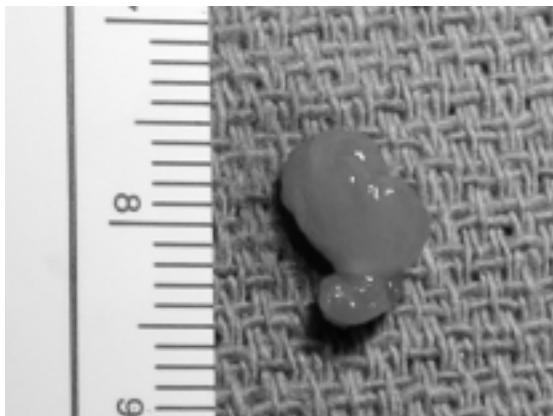


Figure 2. The tumor after its removal. Note the short stalk and small segment of myocardium that was removed with it.

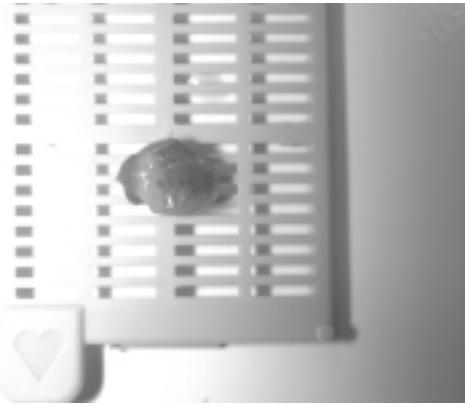


Figure 3. The tumor after it has been bisected reveals a small segment of intact myocardium.

melanoma, we were fairly sure that the tumor was not malignant because of the smooth, pedunculated appearance noted on echocardiography and MRA. We believed that using cardioscopy as an adjunct would help us to determine the location and extent of the tumor and to inspect the entire ventricle to rule out other coexisting defects. Moreover, we were concerned that we would not be able to see the tumor well without the cardioscope.

Video-assisted cardioscopy has been reported to be helpful in the management of patients with hypertrophied interventricular septum and of patients with hypertrophic cardiomyopathy to assess the degree of resection that is needed [Reuthebuch 1999]. Reuthebuch et al. also have described the use of cardioscopy for examination of both left and right ventricular pathology. In addition, this group has described the use of video-assisted resection of hypertrophied and fibrous intraventricular tissue [Bauer 1997].

Introducing the cardioscope via an aortotomy helped us to avoid an atriotomy and/or ventriculotomy and enabled us to discern the precise extent of the tumor and rule out concomitant pathology. We could have resected the tumor using laparoscopic instruments and the video-assisted visualization if we had been unable to see the tumor directly through the aortic valve. We recommend cardioscopy as a useful adjunct for excision of intraventricular abnormalities and believe that cardioscopy can help determine the precise location and size of tumors and assist in their resection in areas of the heart that might otherwise be difficult to visualize.

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