

Radiofrequency ablation of endocardial attachment in cardiac myxomas with atypical localization

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Эндокардиальная радиочастотная абляция при миксомах сердца с атипичной локализацией

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Myxomas can occur in any chamber of the heart but have a special predilection for the left atrium, from which approximately 75% originate. Typically, atrial myxomas arise from the endocardium of the interatrial septum at the border of the fossa ovalis and are considered to be derivative of the subendocardial multipotential mesenchymal cells [1]. Therefore, standard resection encompasses the myxoma as well as the portion of interatrial septum to which it is attached to remove the subendocardial mesenchymal cells and thus prevent tumor recurrence. However, in atypical locations excision of full-thickness wall may require complex reconstruction or even endanger vital cardiac structures.

Materials and methods

Two patients with myxomas attached to the left atrial free wall were admitted for resection. In the first patient the myxoma stalk originated at the left atrial roof near to the aortic root and aortic valve. In the second patient the myxoma had a broad-based attachment at the left atrial base close to the coronary sinus and the right coronary artery (fig. 1).

In both cases the tumor was resected in toto leaving behind the myocardial atrial wall without endocardium. In order to prevent recurrence by killing subendocardial mesenchymal cells, the resection site was treated by transmural radiofrequency ablation with a customary device for the creation of transmural lesions in the case of atrial fibrillation (Cardioblate® Pen, Medtronic, Minneapolis, MN).

Results and discussion

No complications of radiofrequency ablation were seen in either patient. Especially alterations of aortic valve function in the first patient and impairment of atrioventricular groove vessels in the second patient were excluded. The further clinical course was also uneventful in both patients. Histopathological examination confirmed the diagnosis of a cardiac myxoma. The patients recovered

well and were discharged from our hospital on the fifth and fourth postoperative day, respectively.

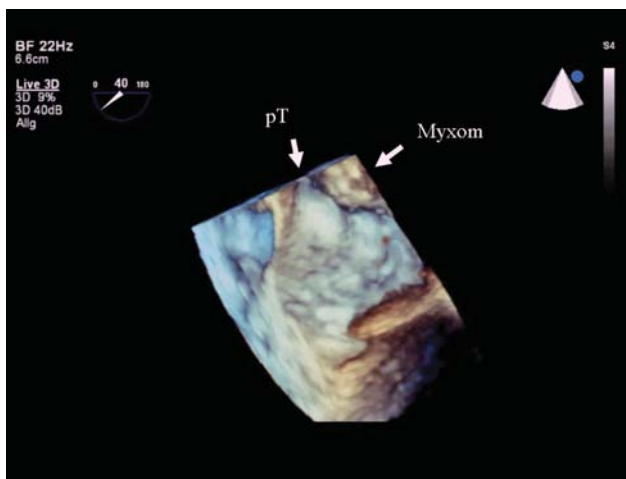


Fig. 1a. Transesophageal 3D echocardiography of the left atrium during systole in our second patient. pT = posterior trigonum of mitral valve.

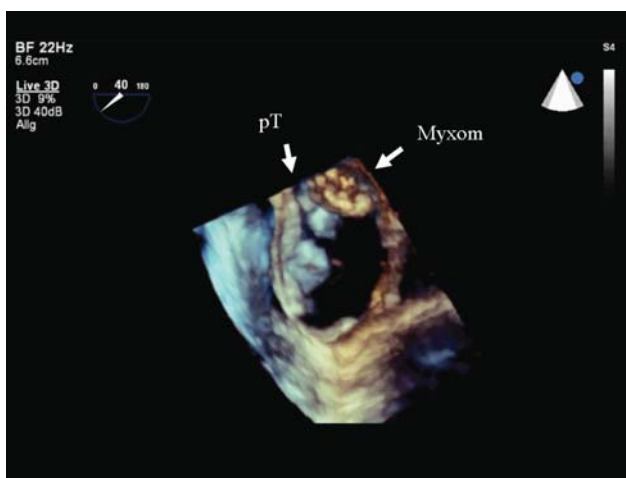


Fig. 1b. Transesophageal 3D echocardiography of the left atrium during diastole in our second patient. pT = posterior trigonum of mitral valve.

Finally, there were no recurrences of the tumor at 3-year and 6-month follow-up echocardiography, respectively.

Surgical resection is the only effective therapeutic option for patients with cardiac myxoma and should not be delayed because serious complications may occur in as many as 8% of patients awaiting operation [2].

The ideal resection of myxomas encompasses the tumor and a portion of the interatrial septum or cardiac wall to which it is attached [3]. However, in some locations excision of full-thickness wall would require complex reconstruction or even threaten critical cardiac structures.

In these cases only partial-thickness resection of the area of tumor attachment was performed as a compromise. With the eradication of potentially existent subendocardial multipotential mesenchymal cells by ablation devices as described here this compromise can be avoided. It has to be considered that ablation induces tissue necrosis and therefore may also endanger critical structures. However, experimental data show that lesion dimensions can be adjusted by the millimeter and clinical experience with MAZE procedures shows that ablation can be directed to

the mitral anulus with “surgical precision” and without “collateral damage” of the valve leaflet or vessels of the atrioventricular groove [4, 5].

On the other hand, it is controversial whether excision of full-thickness wall is necessary or whether excision of only the endocardial attachment is sufficient to prevent recurrence: Partial-thickness resection of the area of tumor attachment has been performed without a noted increase in recurrence rate [6].

Of course, radiofrequency ablation of the endocardial attachment may also be a useful technique in other tumors in which a radix has to be excised, i.e. in fibroelastomas.

Minimally invasive approaches are being applied with increasing frequency in all areas of cardiac surgery and may be used in a select group of patients with cardiac tumors [7, 8]. Especially in these procedures partial-thickness resection and radix ablation would be more convenient than wall reconstruction by patch after full-thickness resection.

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