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Case report: Using so called “sutureless-technique” for the treatment of a giant right atrium myocardial lipoma

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Central message:

The sutureless technique is a useful and safe technique to provide atrial reconstruction of the right heart in complex cardiac tumors.

Clinical Summary

A 65-year-old woman with progressive dyspnea underwent a diagnostic CT scan where a right atrial mass measuring 4x5cm was diagnosed. A preoperative axial CT scan was added to the video. The structure had a broad base at the right atrial septum (Figure 1). After the diagnosis, the patient was referred to our center for urgent operative treatment.

Physical examination of the cardiopulmonary system was normal. Secondary diagnoses included hypothyroidism, depression, nicotine abuse and a history of left side breast carcinoma.
Intraoperative echocardiography showed a normal ventricular function, no significant valvopathies and a right atrial mass, infiltrating the atrial septum (Figure 1).

Access to the heart was performed through a right anterolateral thoracotomy in the 5th intercostal space with cannulation of the femoral vessels. The access of this minimal invasive procedure was performed for reduced sternal damage associated with reduced postoperative complications such as decreased bleeding, pain and improved access to the right and left atrium without luxation of the heart. Beside that we used a femoral and jugular venous drainage to avoid a limitation of both cannulas in the operative situs. After start of cardiopulmonary bypass (CPB), the pericardium was incised 2 cm above the right phrenic nerve and extended to the superior vena cava. A solid structure was palpable at the level of the right pulmonary veins. After clamping of the ascending aorta, cardioplegia (modified Buckberg-solution) was administered via the coronary sinus.

The tumor was broad base, infiltrating almost the complete atrial septum. The tumor was removed in toto with a safety distance, removing the atrial septum and amputating the superior and inferior venae cavae, as well as the right pulmonary veins (Figure 2). For reconstruction of the left atrium, autologous pericardium was used. Therefore, the right phrenic nerve was carefully mobilized (neurolysis) of the pericardium. We created a new left atrium by anastomosing the left atrial wall to the posterior pericardium. Then the pericardium was turned over the right merging pulmonary veins and anastomosed with the remaining atrial septum so called “sutureless-technique²⁴⁵⁶”. The remaining pericardium was then anastomosed to the left atrial wall. For reconstruction of the right atrium, a bovine pericardial patch was anastomosed with the superior vena cava.
via a continuous polypropylene-suture. The remaining right atrium was then reconstructed with the remaining patch, following the insertion of the inferior vena cava in the patch-reconstruction.

After completing the reconstruction of the right and left atrium, dearing of the left heart was performed via the ascending aorta. After successful weaning from CPB the echocardiography showed an unobstructed inflow of the right pulmonary veins as well as both venae cavae. After an uncomplicated postoperative course, she was discharged home 7 days after the operation on a single aspirin regimen. Histologic evaluation of the intraoperative specimen revealed a myocardial lipoma. We had an echocardiographic follow-up 3 months after the operation. Left ventricular function was preserved and there was no pericardial effusion or atrial septal defect detected. No specific personal data was used in this manuscript; therefore, informed consent was not necessary.

Discussion

Solid masses of the right atrium are rarely found incidentally by using routine echocardiography at an early stage before causing clinical symptoms. Diagnostic investigations are usually limited to imaging studies; therefore, a precise primary diagnosis is difficult to make. The alternative presence of a right atrial mass is highly suspicious of a myxoma, a thrombus or an endocardial fibroelastoma. The macroscopic differentiation criteria, however, are unsafe, and final diagnosis of the type and dignity of the tumor can only be made by means of histologic evaluation. A specific characteristic of myocardial lipomas is the absence of absorption of contrast medium in MRI examination.
In consideration of a differential diagnosis, the atrial myxoma is the most likely of a variety of cardiac tumors. Although typically located in the left atrium, myxomas have also been found in the right atrium in a substantial number of patients². Myocardial lipomas are described as extremely rare in the literature. In comparison to other benign tumors of the heart, the myocardial lipoma has no preferred localization³.

One of the advantages of using the sutureless technique for treating a solid interatrial tumor is the improved freedom of pulmonary vein stenosis after reconstructing the left atrium. The sutureless repair shows a lower risk of reoperation and death in children with post repair stenosis and therefore seems to be safe in adult patients with need of interatrial reconstruction. One of the disadvantages is the nearby located phrenic nerve, which needs to be carefully freed in order to avoid an injury.

**Conclusions**

Myocardial lipomas of the right atrium are extremely rare; the sutureless technique, described formerly in pediatric cardiac surgery, is a useful and safe technique to provide atrial reconstruction of the right heart in complex cardiac tumors.

**References**


3. Thelen, Manfred et al.: 2007 Bildgebende Kardiodiagnostik, Thieme


Central Picture Legend

Central picture:

Interatrial lipoma before excision using sutureless technique

Figure 1:

Left: Preoperative CT-scan. Red arrow is indicating a mass in the atrial septum.

Right: Intraoperative TEE scan. Red arrow is indicating a mass in the atrial septum.

Figure 2:

Left: Right atrial lipoma in situ.

Right: Right atrial lipoma after excision as seen from the right atrium.

Video:

The video shows the access to the operative situs. It also shows the technique to excise the tumor of the atrium. It also includes total overview of the tumor.