

**HEART SURGERY AND ABDOMINAL TUMOR MASS - SEPARATE OPERATIONS
OR SINGLE-STAGE PROCEDURE?**

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Abstract: We present a case of 48-year old woman, where 8-years before aortic valve replacement was performed because of severe aortic valve stenosis. The patient was hospitalized in cardiac surgery department with clinical and echographic signs of acute prosthetic valve thrombosis (PVT). Computed tomography (CT) scan was performed at admission and large tumor formation in the left ovarium was diagnosed. Laparotomy with radical hysterectomy, bilateral salpingo-oophorectomy, pelvic lymphadenectomy, partial resection of the greater omentum as well as aortic valve prosthesis replacement was performed as a single-stage procedure in an urgent manner.

The patient was discharged at postoperative day 13 on drug therapy with anticoagulant – Sintrom, diuretic – Furosemide and calcium channel blocker – Amlodipine. The

survival of cancer patients which undergo cardiac surgery is more closely related with the progression of the tumor than the surgical procedure.

Individual evaluation of each case should consider both the tumor stage and chances of complete remission even in active cancers before discounting heart surgery. Our case was different – as a consequence of urgency caused by obstructive prosthetic valve thrombosis, as well as the abdominal tumor mass diagnosed on occasion.

Keywords: aortic valve replacement, prosthetic valve thrombosis, abdominal tumor.

CASE PRESENTATION

We present a case of a 48-year old woman with previous hospitalization in our department 8 years ago with mechanical aortic valve replacement due to severe aortic valve stenosis. The patient was admitted in emergency department with symptoms of shortness of breath and general weakness. Trans-thoracic echocardiography was performed measuring maximum trans-valvular gradient of 94mm Hg - finding highly suspected for PVT and was referred to our institution for urgent operation.

The patient was admitted in intensive care unit in the Cardiovascular Surgery Clinic in poor general condition. The skin and the visible mucous membranes were with normal coloration. Lungs – double-sided vesicular breathing on auscultation, with added wheezes in right lung base. Cardio-vascular system – heart frequency rate of 97 bpm, rhythmic heart activity, arterial blood pressure of 90/60 mmHg, low heart sounds. Abdomen – above the chest level, soft abdominal wall without palpatory tenderness. Liver – palpated on 2 cm above the right costal margin, and the spleen was not enlarged on palpation. Abdominal tumor mass with dimensions of 15-17cm in diameter was palpated in the umbilical and left inguinal region. Succusio renalis – bilaterally negative. Extremities – with preserved pulsations and without edema.

Trans-esophageal echocardiography (Figure 1) as well as full body CT-scan (Figure 2, Figure 3) were performed confirming both the diagnosis of PVT and the abdominal tumor mass.

Figure 1: Trans-esophageal echocardiography, confirming the diagnosis of the aortic PVT.

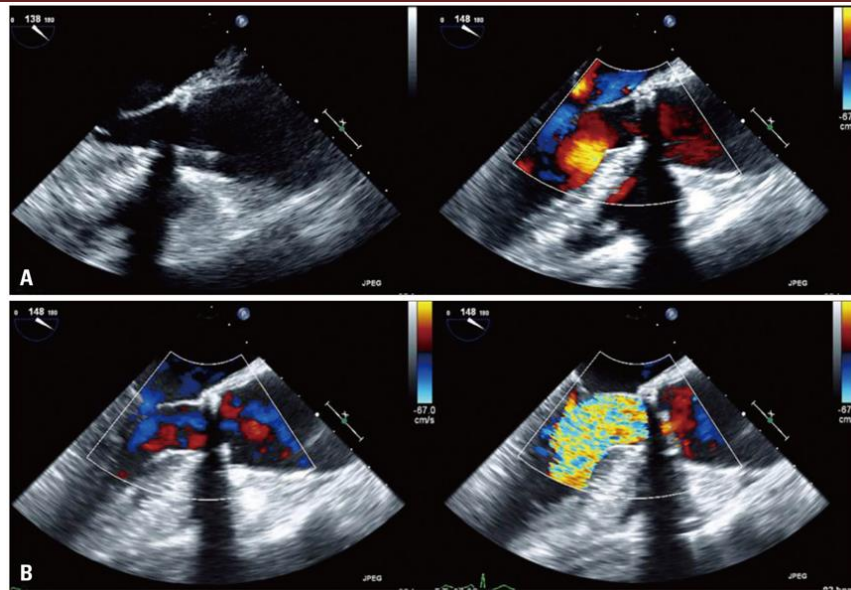
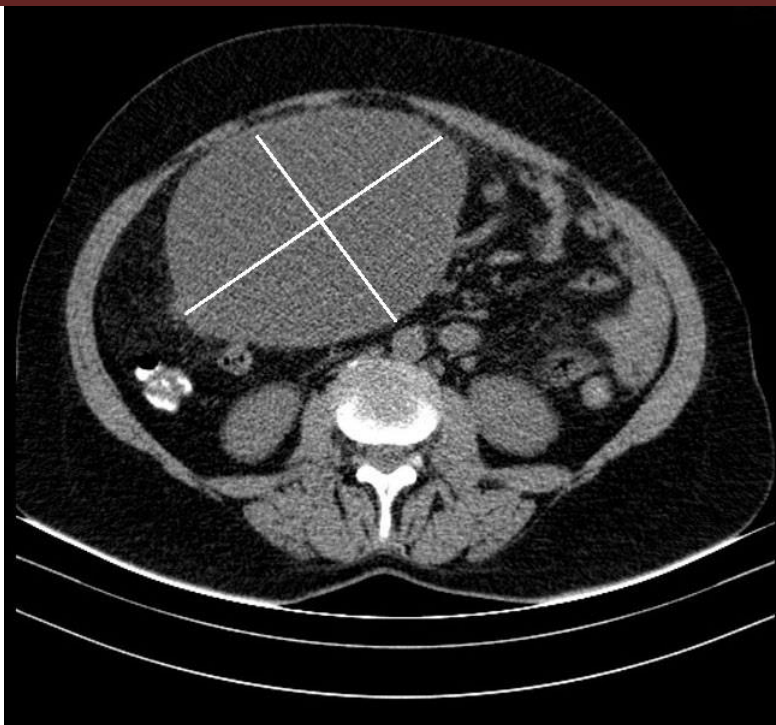


Figure 2: CT-scan data confirming the aortic PVT;



Figure 3: CT-scan data with evident abdominal tumor mass



LABORATORY TEST RESULTS

Hemoglobin	Hematocrit	Erythrocytes	Leucocytes	Platelets
98	0.30	4.25	9.2	648

COAGULOGRAM

PT	INR	APPT	Fibrinogen
14%	3.52	44.9	11.3

BIOCHEMICAL TESTS

Creatinine: 73 $\mu\text{mol/l}$, AST: 22 U/l, ALT: 11 U/l, Creatine kinase-MB: 63 U/l, LDH: 496 U/l, HBDH: 259 U/l, GGT: 23 U/l, Urea: 2.8 $\mu\text{mol/l}$, Glucose: 5.4 mmol/l, Urine results – without deviations.

Electrocardiography(ECG)

Sinus rhythm, left QRS axis.

Chest radiography

Bilaterally inflated lungs. Hilar congestion. Without infiltrative changes.

ECHOCARDIOGRAPHY

The trans-thoracic echocardiography performed preoperatively demonstrated left ventricle ejection fraction of 48%. Measured diameter of aortic root was 2.1cm, aortic bulbus: 3.1cm, ascending aorta: 3.8cm . Aortic valve prosthesis was with mean gradient of 45mmHg and 2nd degree regurgitation. Left ventricle: interventricular septum – 1.5cm, posterior wall thickness – 1.8cm, Telediastolic diameter(TDD) – 3.7cm , Telesystolic diameter(TSD) – 2.1cm, Telediastolic volume – 73ml, Telesystolic volume – 40ml. Mitral valve – 2nd degree regurgitation. Tricuspid

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valve – 1st degree regurgitation, mean pulmonary artery pressure – 42 mmHg. Doppler sonography of the carotid arteries – without pathological deviations. The calculated EuroSCORE(European System for Cardiac Operative Risk Evaluation) of the patient was 31.3%.

OPERATIVE INTERVENTION

The patient was operated in an urgent manner. The operation included : laparotomy with radical hysterectomy, bilateral salpingo-oophorectomy, pelvic lymphadenectomy, partial resection of the greater omentum as well as aortic valve prosthesis replacement was performed as a single-stage procedure. Median laparotomy was performed exploring the abdominal cavity. Tumor mass with dimensions 12x13cm in diameter was found arising from the left ovarium. Intraoperative biopsy was taken revealing well differentiated endometrioid endometrial carcinoma Stage IA. Radical hysterectomy with bilateral salpingo-oophorectomy, pelvic lymphadenectomy and partial resection of the greater omentum was performed. The abdomen was closed in a normal manner.

Redo-sternotomy was performed using sagittal oscillating saw. In total cardiopulmonary(CPB) bypass, mild hypothermy and cold blood cardioplegia induced retrograde through the coronary sinus and antegrade through direct coronary ostia cannulation after the aortotomy. Aortic valve prosthesis was found with thrombotic masses obstructing the leaflets. The old prosthesis was replaced with 23-mm Sorin Carbomedics (SorinGroup, Saluggia, Italy) mechanical aortic valve. After the closure of the aorta the extracorporeal circulation was terminated with optimal dopamine dose support. The total CPB time was 75min. and cross-clamp time was 53min.

POSTOPERATIVE PERIOD

The postoperative period was free of complications. The mediastinal chest drains were removed on the 2nd, and the abdominal cavity drains on 5th postoperative day. The estimated total blood loss from the mediastinal chest drains was 440ml . The patient was extubated on the 2nd postoperative day.

The patient was discharged on the 13th postoperative day, on medical therapy with Furosemide - 40mg daily, Amlodipine - 10mg daily and anticoagulant – Sintrom in dose according to results of the International Normalized Ratio (INR: 2.5-3.0) and recommendations were given for follow-up examinations a week and a month after the discharge, as well as control CT-scan 6 months after the operation. At late follow-up visit one month after the operation the patient was asymptomatic from the cardiovascular standpoint and with a good clinical evolution of the surgical wounds.

DISCUSSION

The possible causes of PVT include thrombus formation, pannus formation and, rarely, vegetations. Pannus and thrombosis may be present alone or in combination causing acute or subacute valve obstruction [1]. Pannus is a fibro-connective tissue ingrowth from the sewing ring that occurs many years after valve implantation. Moreover, routine anticoagulation does not prevent its formation [2]. In a study included 112 obstructed mechanical valves, thrombus alone or with a little pannus formation was the most common cause and found in 77.7% as it was in our case, while pannus formation was the underlying cause in 10.7% of valves. Pannus formation is more common in the aortic position. The time window from valve implantation to pannus formation varies and has been reported to occur between 3 months and 23 years after implantation [3]. In our patient, the presenting symptoms and signs were very suggestive. The preceding symptoms followed by night sweats but without fever raised a suspicion of obstructive prosthetic valve thrombosis. The initial INR measured in our hospital however was higher than the target INR for this type of valves. TTE done in the Emergency department confirmed a valve dysfunction with high mean gradient, a finding which had been re-confirmed by repeating the TTE on admission to our Intensive Care Unit, as well as on the CT-scan. According to the recommendations of the American Society of Echocardiography (ASE), thrombus is associated with a short duration of symptoms and with a history of inadequate anticoagulation (INR <2) in comparison to pannus formation [4].

The decision of urgent operation was taken because after CT-scan confirmation of the diagnosis. The abdominal tumor mass was caught on occasion and was decided for a single-stage operation.

Total abdominal hysterectomy and bilateral salpingo-oophorectomy with lymph node dissection remains the key element of the treatment. In all Stage IC and stage IA and IB with grade 2 or 3 histology, and presence of adverse risk factors like lymphovascular space invasion, advanced age, tumor size, lower uterine segment

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involvement, vaginal brachytherapy ± pelvic radiotherapy is recommended to reduce the risk of pelvic recurrence.[5]. In our case the dissected lymph nodes were negative to tumor cells on histological examination.

CONCLUSION

The mortality associated with obstructive prosthetic valve thrombosis is approximately 10%, independent of treatment modality. Therefore, suspicion of PVT is an urgent clinical condition, which warrants rapid diagnostic assessment. Diagnosis is based on the findings of the clinical examination, echocardiography and CT-scan. Therapeutic strategy will be influenced by prosthesis location, the presence or absence of valvular obstruction, and by the patient's clinical status. The well differentiated endometrioid endometrial carcinoma in younger premenopausal women, though rare, can be aggressive enough to cause early metastasis to multiple organs. Postoperative radiation therapy may improve local control but not the survival for Stage I endometrial cancer. Systemic chemotherapy is reserved for women with disseminated disease or extrapelvic recurrence.

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