INTRODUCTION
Dissection of ascending aorta after an aortic valve replacement, particularly in a patient with a dilatation of aortic root, at the time of replacement, is a rare but a fatal event. It has a high mortality rate of 1 - 2% per hour for the first 24 - 48 hours. The aorta is considered pathologically dilated if the diameter of the ascending aorta and the aortic root exceeds the norms for a given age and body size. The dilated or aneurysmal ascending aorta is at risk for spontaneous rupture or dissection. The magnitude of this risk is closely related to the size of the aorta and the underlying pathology of the aortic wall.

We present a case of Debakey type-II (Stanford type-A) aortic dissection occurring 9 months after aortic valve replacement and reduction aortoplasty.

CASE REPORT
A 35 years male presented with chest pain, severe in intensity, tearing in character and radiating to his back and interscapular region, relieved by taking analgesics. He had a history of aortic valve replacement with 27-A St Jude’s mechanical aortic valve along with reduction aortoplasty. Nine months later, he was admitted to our hospital with complaint of severe sudden anterior chest pain. Computed tomography with aortic enhancement showed dilatation and dissection of ascending aorta. Successful operation of aortic root replacement with composite graft was performed and patient was discharged without any postoperative complication. The aortic diameter at the time of aortic valve replacement is an independent risk factor for the late aortic dissection.

Key Words: Reduction aortoplasty. Debakey type-II dissection. Aortic root replacement.

ABSTRACT
A case of Debakey type-II (Stanford type-A) dissecting aortic aneurysm, after aortic valve replacement and reduction aortoplasty, is reported. The patient was 35 years male who was diagnosed of severe aortic regurgitation along with aortic root dilatation of 7 cm. He underwent aortic valve replacement with 27-A St Jude’s mechanical aortic valve along with reduction aortoplasty. Nine months later, he was admitted to our hospital with complaint of severe sudden anterior chest pain. Computed tomography with aortic enhancement showed dilatation and dissection of ascending aorta. Successful operation of aortic root replacement with composite graft was performed and patient was discharged without any postoperative complication. The aortic diameter at the time of aortic valve replacement is an independent risk factor for the late aortic dissection.

Physical examination revealed a well healed median sternotomy incision. Blood pressure at the time of presentation was 130/90 mmHg. He was hemodynamically stable with raised JVP. His cardiac examination revealed a click sound from mechanical prosthetic valve. Peripheral pulses were symmetrical and palpable. Rest of examination was normal.

Chest radiography showed enlargement of the mediastinal shadow. Chest CT with aortic enhancement showed dissecting aortic aneurysm (Stanford type-A, Debakey type-II). The aortic root measured 7.2 cm and decreased progressively to 4.0 cm at the level of right subclavian artery. Intimal flap was visualized from proximal ascending aorta on right side upto aortic arch separating it into two lumina. The length of flap was about 10.0 cm. The endpoint was just proximal to the origin of right subclavian artery (Figure 1). The aortic valve prosthesis was functioning normal.

The patient underwent an operation. Femoral artery and right atrial venous cannulation was done after redo median sternotomy. Patient was put on cardiopulmonary bypass and aorta was cross clamped just proximal to right brachiocephalic artery. Antegrade and retrograde cold blood cardioplegia was given. An aortotomy was done. Prosthetic aortic valve was removed. Ascending aorta was then replaced with PTFE (poly-tetra-fluoroethylene) graft of 40 mm in diameter and 12 cm in length along with 25-A St Jude’s aortic valve and right and left coronary buttons were stitched to the conduit using 5/0 continuous prolene suture. Clamp was applied again to conduit. Circulation was then restored, rewarming...
started and patient successfully weaned off from cardiopulmonary bypass. Hemostasis was secured, sterile gauze packs were applied on bleeding areas as bleeding was not controlled through conventional methods, and the wound was closed. Patient was shifted to intensive care unit. Packs were removed after 36 hours when there was no active bleeding in the drains. Postoperatively patient's creatinine was on the higher side and serum sodium was on lower side, which recovered slowly to their normal values. Patient was discharged on the 18th postoperative day due to some social issues. Upon follow-up, his echocardiography showed normal left ventricle function, no collection in pericardial cavity and normal functioning graft.

DISCUSSION
Aortic dissection after aortic valve replacement has been reported several times. Its overall incidence is 0.6% but much higher (27%) in the patients who have dilatation of aorta more than 50 mm at the time of aortic valve replacement.² Redo sternotomy procedure for repair of aortic dissection carries its own risk and a mortality rate of 11.5%.³ Mandatory indications for emergency replacement of aorta include acute dissection of the ascending aorta and related pathology, spontaneous rupture and intramural hematoma. The value of replacing the entire aortic root for severe destruction of the aortic annulus due to bacterial endocarditis is also well established. Solid clinical experience and information support these indications.⁴ Predisposing factors for aortic dissection are hypertension, genetically triggered thoracic aortic disease like Marfan syndrome and Vascular Ehlers-Danlos syndrome, bicuspid aortic valve, penetrating atherosclerotic ulcer, trauma (blunt or iatrogenic), aortic valve surgery, cocaine use, pregnancy and various inflammatory and infectious disorders.

An ascending aortic diameter of 6 cm emerges as the mean or the median diameter quite consistently in all reliable contemporary natural history studies. Coady and associates found that a diameter of 6 cm is the hinge point, beyond which there is a 30% increase in the probability of rupture/dissection.⁵ In a study of more than 140 acute type-A dissections, the ascending aorta was dilated at the time of presentation in 73%, with a mean diameter of 4.8 cm.⁴ Reduction Ascending Aortoplasty (RAA) is one of the techniques in the surgical spectrum of surgical treatments for ascending aortic aneurysmal dilatation. Since the time it was proposed, it has been controversial. Reduction ascending aortoplasty is an alternative procedure to the replacement of the ascending aorta in case of ascending aorta aneurysm without aortic root involvement. Studies have supported that given the proper indications (poststenotic dilatations of < 6 cm in diameter, absence of cystic medial necrosis, and a technique that decreases aortic diameter to < 3.5 cm), non-reinforced reduction ascending aortoplasty performed concomitantly with aortic valve replacement appears to be a simple and safe procedure, with low morbidity and mortality and rare late complications.⁶ However, aortic dilatation is a progressive disease. The mural stress acting on the aortic wall cannot be solved by RAA, regardless of which technique is used. It has been argued that reduction aortoplasty does not completely preserve the integrity and physiologic properties of the aorta. The gold standard technique remains the replacement of ascending aorta.⁷,⁸ Reduction ascending aortoplasty is a conservative technique that can still be used with the appropriate indications, especially in high-risk patients. Careful evaluation is required if there is ascending aortic dilatation exceeding 6 cm in diameter, enlargement of the sinotubular junction, and concomitant aortic
regurgitation. Thus in these cases, replacement of ascending aorta should be considered as a selected procedure.

Studies have supported that significant risk factors of mortality associated with repair of aortic dissection are history of stroke, cerebral malperfusion, and length of cardiopulmonary bypass. Postoperative complications are re-exploration for haemorrhage (7.4%), stroke (3.3%), renal failure (10.7%), sepsis, sternal wound infection, transient ischemic attack, global neurological dysfunction and, in rare cases, multi-system organ failure.

REFERENCES