

# SURGICAL MANAGEMENT OF ADULT SUBAORTIC STENOSIS VIA MINI J-STER- NOTOMY:CASE REPORT

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*Abstract: Subaortic stenosis are rare cause of left ventricular outflow tract (LVOT) obstruction. Occasionally they become symptomatic and need operation in the 1st decade of life. Patient satisfaction and cost effectiveness primary advantages of minimal invasive cardiac surgery (MICS). If the persons who had MICS previously need cardiac reoperation later, dissection will be easier related to the less adhesions. We are presenting subaortic membrane case in whom we performed MICS with "J" sternotomy.*

*Key Words: Subaortic mebrane, minimally invasive, cardiac surgery*

*Özet: Subaortik stenoz sol ventrikül çıkımının nadir görülen sebebidir. Genellikle yaşamın ilk dekadında semptomatik hale gelir ve operasyon gerektirir. Minimal invaziv kalp cerrahisi hasta memnuniyeti ve maliyet açısından avantajlıdır. Ayrıca genç yaşta kardiyak cerrahi geçiren hastalarda hayatın ilerleyen dönemlerinde kardiyak cerrahi gerektiğinde yapışıklıkların azlığına bağlı cerrahi kolaylık sağlar. Bu makalede mini "J" sternotomi ile subaortik membran rezeksiyonu uyguladığımız vakayı bildiriyoruz.*

*Key Words: Subaortik membran, minimal invaziv, kalp cerrahisi*

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## INTRODUCTION

Subaortic stenosis are rare cause of left ventricular outflow tract (LVOT) obstruction. Commonly it is asymptomatic. It may be fibrous membrane or it may have tortuous fibrous body with aortic annulus hypoplasia. Minimal invasive cardiac surgery is usable in aortic valve surgery. Lower hospital and ICU stay, patient satisfaction, better pulmonary rehabilitation, less adhesions in the reoperation are the advantages of minimal invasive aortic surgery (MIAVS) (1). We are presenting a succesful surgical repairing of subvalvular and valvular aortic disease with minimally invasive surgery.

## CASE REPORT

A 21-year-old male patient admitted to our clinic with palpitation and shortness of breath on exertion. He had a systolic sufl at the aortic area on auscultation. Transesophageal echocardi-

graphic (TEE) examination revealed a subaortic membrane resulting a 52 mmHg gradient stenosis, and left ventricular concentric hypertrophy (Fig. 1-A,B).



**Figure 1.A:** Preoperative TEE view diffuse subaortic membrane.



**Figure 1.B:** Intraoperative TEE view left out-flow tract (resecting of subaortic membrane).

The aortic valve annulus diameter was normal with mild to moderate aortic insufficiency.

After 6 centimeter skin incision 2 centimeter below the jugulum mini-J-sternotomy was performed from the jugulum downward to the 4th intercostal space (Fig.1-C).

Cardiopulmonary bypass initiated with a standard aortic and two-stage venous cannulation. After standard oblique aortotomy; there was a circumferential diffuse membrane at 2 mm distance to the aortic leaflets and elongation of the



**Figure 1.C and D:** The view of the Mini J-sternotomy, aortic and venous cannulation.

non coronary cusp. The subaortic membrane was completely resected with blunt dissection, and myomectomy was performed at the ventricular septum and non coronary cusp was plicated from the NCC and RCC commissure with external supported by teflon felt. Intraoperative TEE revealed successfully resected subaortic membrane and competent well functioning aortic valve (Fig.2). The patient extubated postoperative 3rd hours, stayed in the ICU unit 8 hours and discharged from the hospital 3rd day. He was followed up period of a year and there was 7 mmHg gradient at the control TEE.

## DISCUSSION

Subaortic stenosis are one of the reasons of LVOT obstruction. Subaortic stenosis have 2 subgroups: Discrete type and tunnel type.

Subaortic stenosis accounts is 8% to 20% of all cases of congenital aortic stenosis (2). Discrete subaortic membrane is progressive disease. It is commonly asymptomatic in infancy and diagnoses 1st decade of life (3). Related to the jet flow through the obstructed segment and its relationship with aortic cusps, aortic cusps degenerate and aortic insufficiency develops progressively. Also septal shear stress stimulates cellular proliferation in the interventricular septum (3).

Subaortic stenosis usually diagnosed 1st decade. Treatment is usually surgical. Surgery is indicated when left ventricle-aortic mean gradient exceeds 30 mmHg in childhood and exceeds 50 mmHg in adult (2,4). Owing to the fact that intrathoracic dissection and trauma are limited, one of the benefits of these minimally invasive approaches may be the creation of fewer adhesions in the long term (5). Therefore MIAVS may be an advantage for future operations like coronary artery bypass in such like young patients.

In some cases myotomy or myectomy requires. Because the recurrence risk is higher in the sharp dissection; blunt dissection is usually performed. Recurrent obstruction is found 16,5% in Erentug's series (3). Remnant membrane tissue and residual gradient is the reason of the recurrence. After aortic incision resection of the subaortic membrane with the support of using cardioscope confirms complete resection (6). Using cardioscope is an atraumatic procedure and it is feasible for imaging remnant tissue and then recurrence rates might be lower in the future.

In the upper mini sternotomy "J" sternotomy usually performed. "I" sternotomy may better results than "J" sternotomy for sternal overriding, instability and fracture. In the I sternotomy small retractor is used for making V-shaped for preventing tearing the lower part of the sternum (7).

Comparison of minimal invasive aortic valve surgery (MIAVS) with a traditional median sternotomy technique demonstrates similar hospital morbidity and mortality (8). But MIAVS results in a shorter length of hospital stay, good sternal

fixation, cosmetic results and higher patient satisfaction (1). Postoperative pulmonary function is better in the MIAVS and rarely need rehabilitation.

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