

## The chordal detachment method in a ventricular septal defect repair operation

*Ventriküler septal defekt tamir ameliyatında kordal ayrıştırma yöntemi*

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Ventricular septal defect (VSD) is typically repaired via a transatrial approach, which usually provides a good exposure for the assessment and repair of VSDs, generally the perimembranous type. Fibrosis and chordal fusion may surround the lesion, and these malstructures may compromise to reach VSDs. In this article, we present a case with the perimembranous-type of VSD surrounded by a tricuspid septal leaflet and many thick chordal attachments. The attachments were carefully dissected, and the VSD was successfully exposed. The defect was then repaired using a Gore-Tex patch.

**Key words:** Chordal detachment; ventricular septal defect repair.

Ventricular septal defects (VSDs) are generally repaired via a transatrial approach since it provides good exposure, especially for perimembranous VSDs. Generally, this defect can be repaired after removing the septal leaflet of the tricuspid valve superiorly. If this incision does not provide a good view, the septal leaflet of the tricuspid valve may be detached from the annulus.<sup>[1,2]</sup> This procedure has been proven to be safe in various clinical studies.<sup>[2,3]</sup>

In some cases, the VSD may be heavily fibrotic or accompanied by chordal attachments. The chorda tendinea may fuse and thicken, probably because of high blood flow or infective episodes. In some cases, chordal attachments may heavily obscure the area of the VSD, and septal leaflet detachment does not provide enough exposure. Therefore, detachment of the chordal

ventriküler septal defekt (VSD), tipik olarak genellikle perimembranöz tip olan VSD'lerin belirlenmesi ve tamirinde iyi bir görüş sağlayan transatriyal yaklaşım ile tamir edilir. Fibroz ve kordal yapışıklıklar lezyonu çevreleyebilir ve bu anormal yapılar VSD'lere ulaşmayı güçleştirebilir. Bu yazıda, perimembranöz tip VSD'si olan ve defektin triküspid septal yaprakcık ve çok kalın pek çok kordal yapışıklıklarla çevrelendiği bir olgu sunuldu. Kordal yapışıklıklar dikkatle diseke edildi ve VSD başarılı bir şekilde ortaya çıkarıldı. Defekt, Gore-Tex yama kullanılarak tamir edildi.

**Anahtar sözcükler:** Kordal ayrıştırma; ventriküler septal defekt tamiri.

apparatus of the tricuspid valve may be necessary to visualize the margins of the defect for safe closure. Kapoor et al.<sup>[4]</sup> first described the chordal detachment method; however, experience is still limited regarding the procedure. Herein we present a case of VSD in which heavy chordal attachments were obscuring the field; hence, a chordal detachment procedure was performed.

### CASE REPORT

The patient was a 20-year-old male with a perimembranous VSD. The operation was performed using cardiopulmonary bypass (CPB) with double venous cannulation and moderate hypothermia. After the right atriotomy incision, the tissue under the septal leaflet of tricuspid valve was observed. The defect was

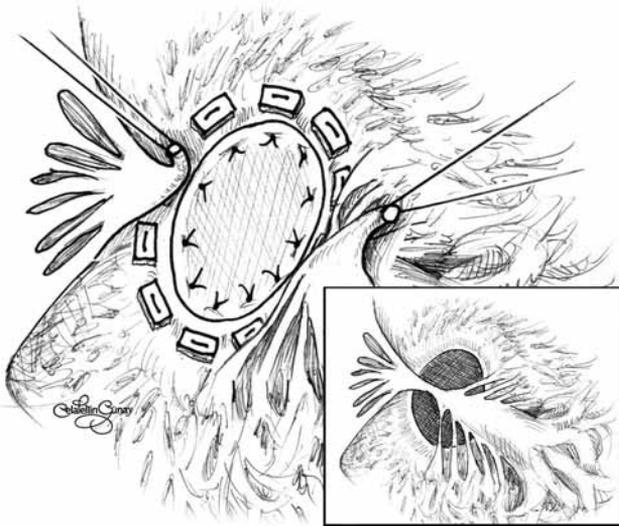


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**Figure 1.** Illustrated view of the repaired defect after chordal detachment.

invisible at first glance; however, a closer inspection with a right angled clamp revealed a defect just beneath the tricuspid valve.

The defect was not fully visible with retraction of the tricuspid valve septal leaflet due to the many chordal attachments around it, so detachment of the septal leaflet of the tricuspid valve was performed. After the detachment, the defect margins were barely visible. The chordae around the defect were incised in order to expose the margins of the defect for safe repair (Figure 1). Care was taken to avoid overzealous incision of the chordal apparatus which was not directly obscuring the surgical exposure. When the exposure was sufficient, the defect was repaired using pledgeted 4-0 polypropylene sutures (Ethicon, Somerville, New Jersey, USA). After the repair, the incised chordae were reattached with 5-0 polypropylene sutures in their original location, and the detached septal leaflet was sewn with 5-0 polypropylene sutures to the annulus in continuous fashion. The right atrium was then closed, and the heart began beating again. An intraoperative transesophageal echocardiographic examination showed no tricuspid regurgitation. The postoperative course was uneventful, and the patient was discharged with no symptoms of VSD.

## DISCUSSION

The transatrial approach provides good exposure for closure of perimembranous VSDs, which are usually positioned beneath the septal leaflet of the tricuspid valve making them difficult to spot. Exposure is important during surgery since concealment might result in residual VSDs, distortion of tricuspid valve

leaflets, or chordae which could result in postoperative tricuspid regurgitation.

Detachment of the septal leaflet of the tricuspid valve is one of the methods utilized to improve exposure. This technique was described by Hudspeth et al.<sup>[1]</sup> in 1962. Since then, some other groups have recommended this technique as it is regarded as reliable and easy to perform.<sup>[2,3]</sup> If septal leaflet detachment does not provide proper exposure or the tissue around the defect has chordal attachments which obscure the margins, chordal detachment can be done concomitantly. Kapoor et al.<sup>[4]</sup> described this technique and reported good results. According to our report, the chordae of the tricuspid valve might be detached when the valve is inserted at the ventricular septum to retract the septal leaflet superiorly. This allows for a better view of the defect. After the repair, the incised chordae are reattached in their original position or placed over the patch. This technique is not only used for better retraction of the septal leaflet of the tricuspid valve, but it may also be utilized when the margins of the defect are not visible because of dense chordal attachments.

In our case, we used this technique to improve our exposure, especially at the margins of the defect, because septal leaflet detachment did not provide enough exposure for a safe repair. During the procedure, we paid special attention to terminate the incision of the chordae when we had adequate exposure. In our experience, the procedure was safe and there was no tricuspid regurgitation after the repair.

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