

CASE REPORT

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ADVANTAGE OF A MORE CENTRAL INCISION ONTO LEFT ATRIUM BY USING ULTRASONIC SCALPEL

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ABSTRACT

Exposure of the mitral valve is of critical importance in mitral valve surgery. The mitral valve is located near the interatrial groove. As we accumulated experience and learned from embryology, we found that a more central left atriotomy was advantageous, and was made possible by interatrial groove dissection using an ultrasonic scalpel. This crucial finding prompted us to report the technique.

Key Words: Mitral valve, Interatrial groove, Mitral valve surgery

INTRODUCTION

Exposure of the mitral valve is of critical importance in mitral valve surgery. The mitral valve is located far from midline sternotomy, but is very close to the interatrial groove. As our experience grew and we learned from embryology, we found that a more central left atriotomy was advantageous, and possible by interatrial groove dissection using ultrasonic scalpel. This significant finding prompted us to report the technique.

THE TECHNIQUE

Under general anesthesia, midline sternotomy is performed and the ascending aorta is cannulated for arterial inflow, and the superior vena cava and right atrial appendage are cannulated for venous outflow. The aortic root is cannulated for cardioplegic solution infusion. The fat pad covering the interatrial groove is dissected under cardiopulmonary bypass by ultrasonic scalpel. The dissection is carried out in the exact groove of Sondergaard until accessing beneath the thin atrial septum with careful attention paid to the coronary sinus vein (Fig. 1). The aorta is cross-clamped and a vertical incision is made onto the left atrium, leaving enough room for the atrial wall to close. Using a self-retaining retractor, atrial tissue above the anterior mitral annulus is hooked up. This makes a tractile and stretched wide view of the mitral valve possible because

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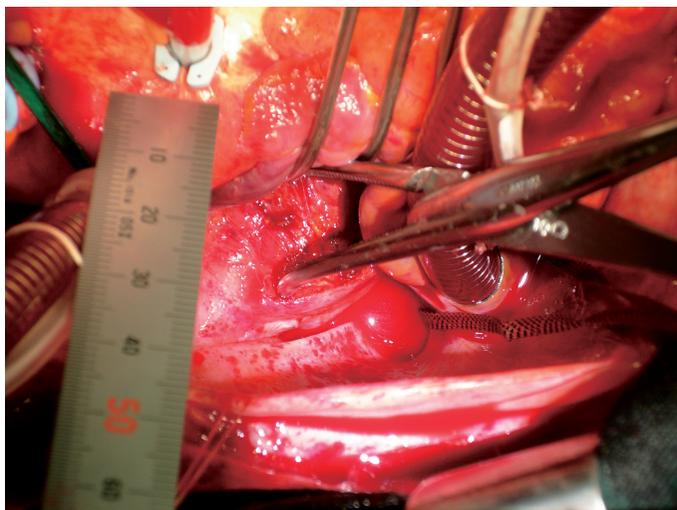


Fig. 1 Interatrial groove was dissected down by ultrasonic scalpel.

the left atrium wall hook-up is optimal. This is quite different from the right side left atriotomy, which usually leaves a redundant left atrial wall to be hooked up. The remaining mitral valve procedure should be undertaken in the usual manner.

COMMENT

Because the mitral valve is such a complex anatomic structure and the maneuvers involved in correcting a regurgitant valve may vary from the simple to the very complex, adequate exposure is an absolute requirement in every operative plan. The first critical step to standard valve repair is the complete and thorough development of the Sondergaard plane reflecting the right atrium off the left atrium to the atrial septum. This was first described in the 1950s by the Danish surgeon Sondergaard to expose the atrial septum for noncardiopulmonary bypass treatment of atrial septal defects¹. Regardless of claims from previous procedures^{2,3}, it should always be possible to dissect out the groove without significant difficulty⁴. The complete and full development of the groove is crucial for obtaining adequate exposure of the mitral valve. With this technique, via blunt and sharp dissection with ultrasonic scalpel, we had no need for any other incision for mitral valve repair or replacement, whether for primary surgery or reoperation. This incision brings the surgeon very close to the mitral valve even in the most difficult anatomic situations. Once the right atrium is dissected off the left atrium, a generous incision in the left atrium is made, avoiding the atrial septum. We have been adopting this incision and approach in 10 consecutive patients and have found that the aortic cross-clamp time decreased significantly from an average 75 minutes to 48 minutes compared to right-side left atriotomy patients. A more central incision onto the left atrium was thought to be advantageous.

CONFLICT OF INTEREST STATEMENT

We have no conflict of interest to disclose.

ULTRASONIC SCALPEL FOR LEFT ATRIOTOMY

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