

Different Methods Of Mitral Valve Annulus Measurements In Totally Endoscopic Mitral Valve

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Objective

Minimally invasive techniques, especially endoscopic mitral valve repair, combine the benefits of reduced scarring and preserved thoracic anatomy while allowing for full mitral valve repair. However, commercially available annuloplasty sizers often cannot be introduced through small working ports, requiring adaptation to these new approaches. This video demonstrates techniques for measuring the ring size for mitral valve annuloplasty without using commercial sizers.

Methods

For totally endoscopic mitral valve repair, a 4 cm peri-oral incision is made in males and a 4.5 cm incision in females, located in the submammary crease. This serves as the primary and only working port after a soft tissue retractor is inserted. The working space is typically 3 x 1.5 cm in width. A one centimeter incision along the anterior axillary line is made for the 3D endoscope. Cardiopulmonary bypass is established via femoral artery and femoral & jugular vein cannulation, an antegrade cardioplegia line is introduced through the working port (Fig.1).

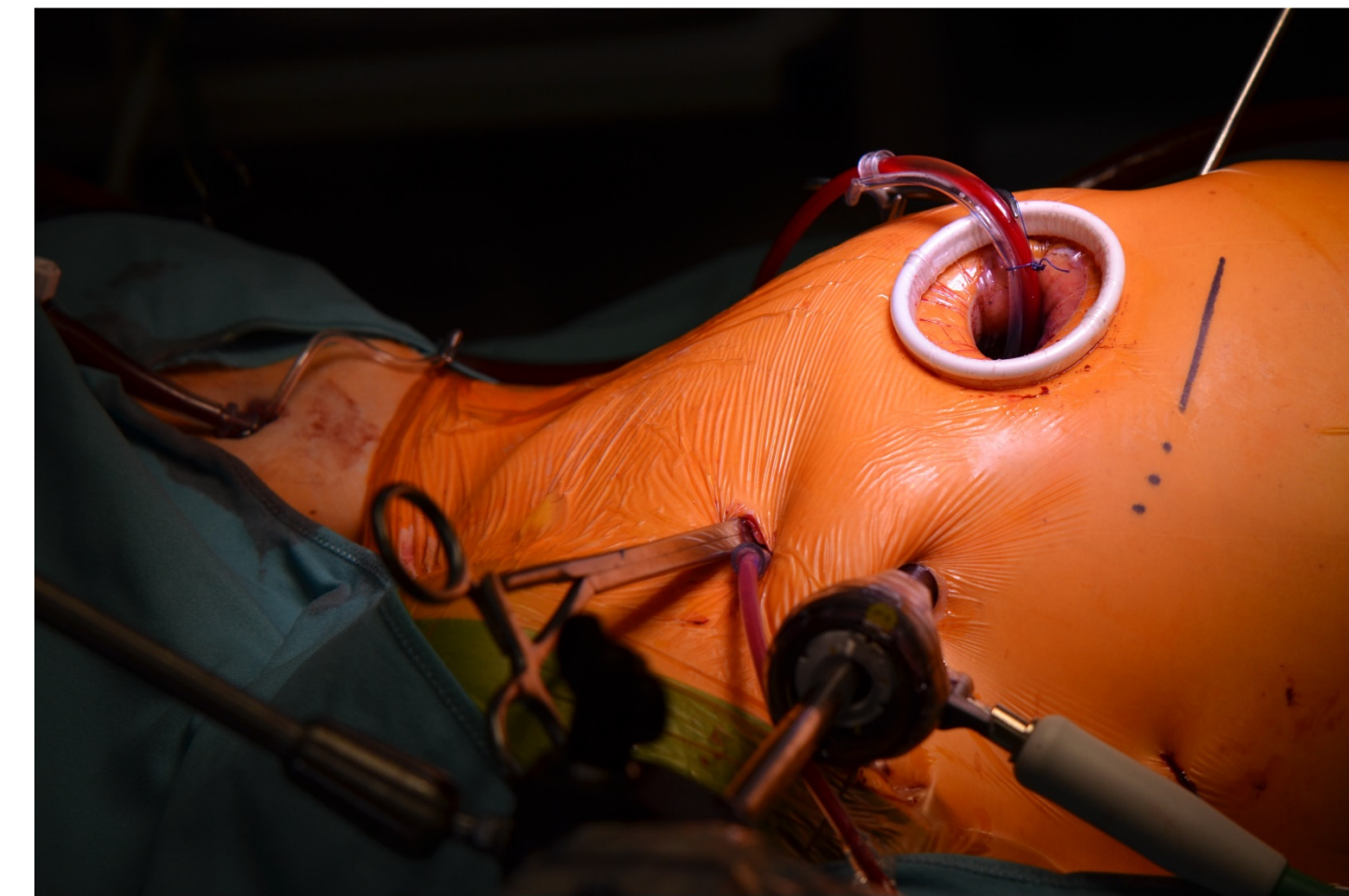


Fig.1 Standard Set-up: Totally endoscopic mitral valve repair

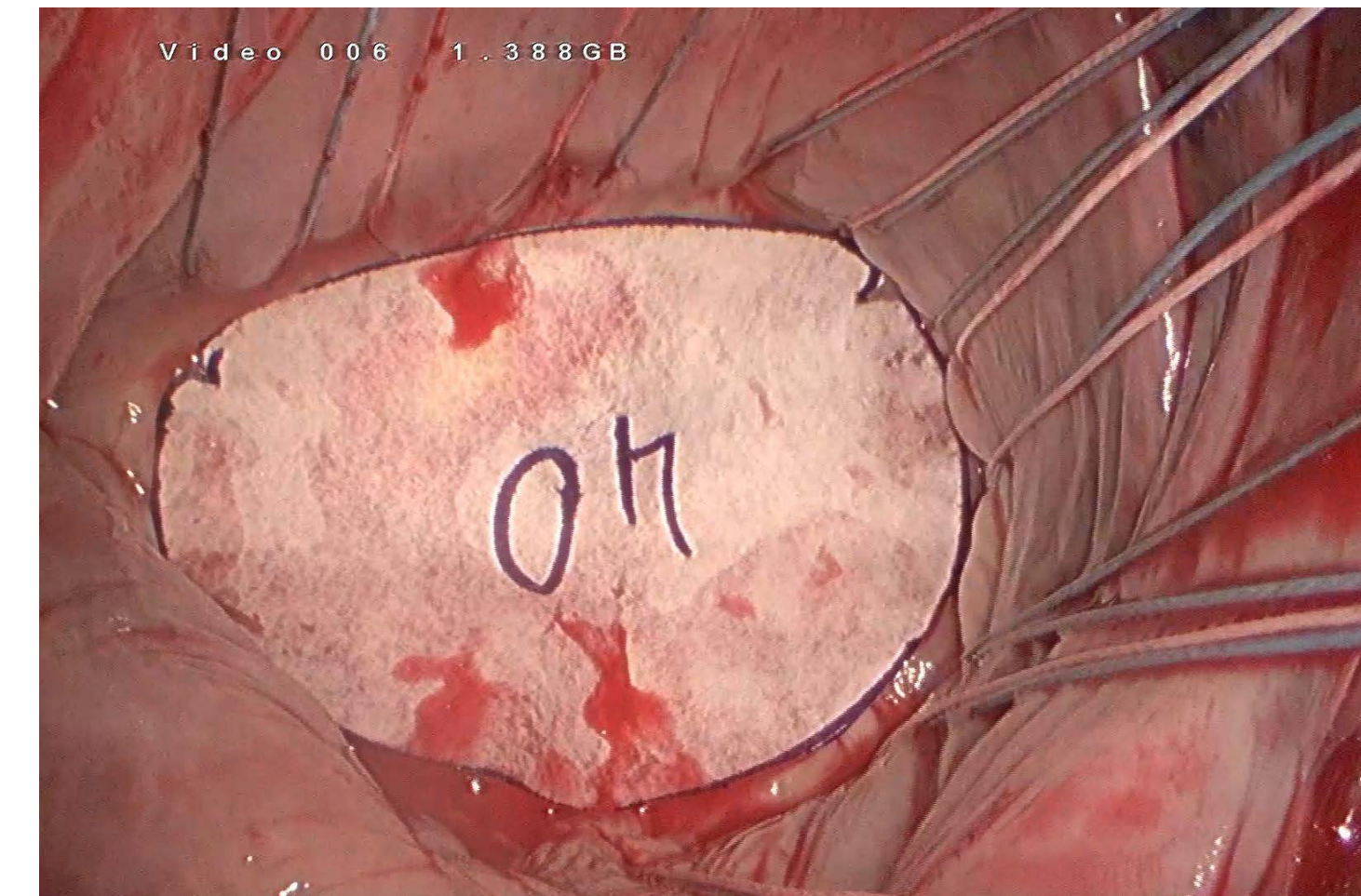


Fig.2 Annulus sizing: paper template

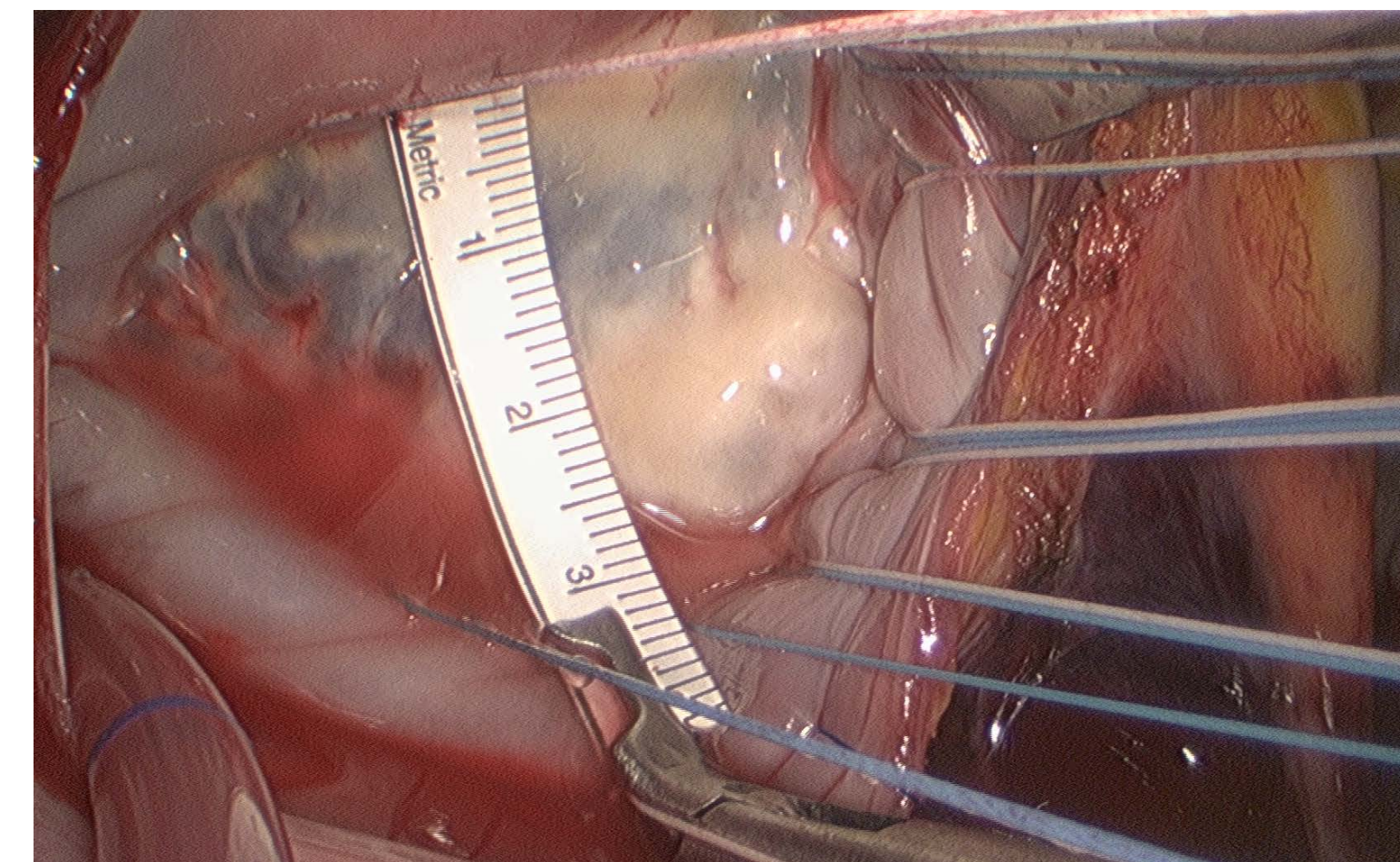


Fig.3 Annulus sizing: paper ruler

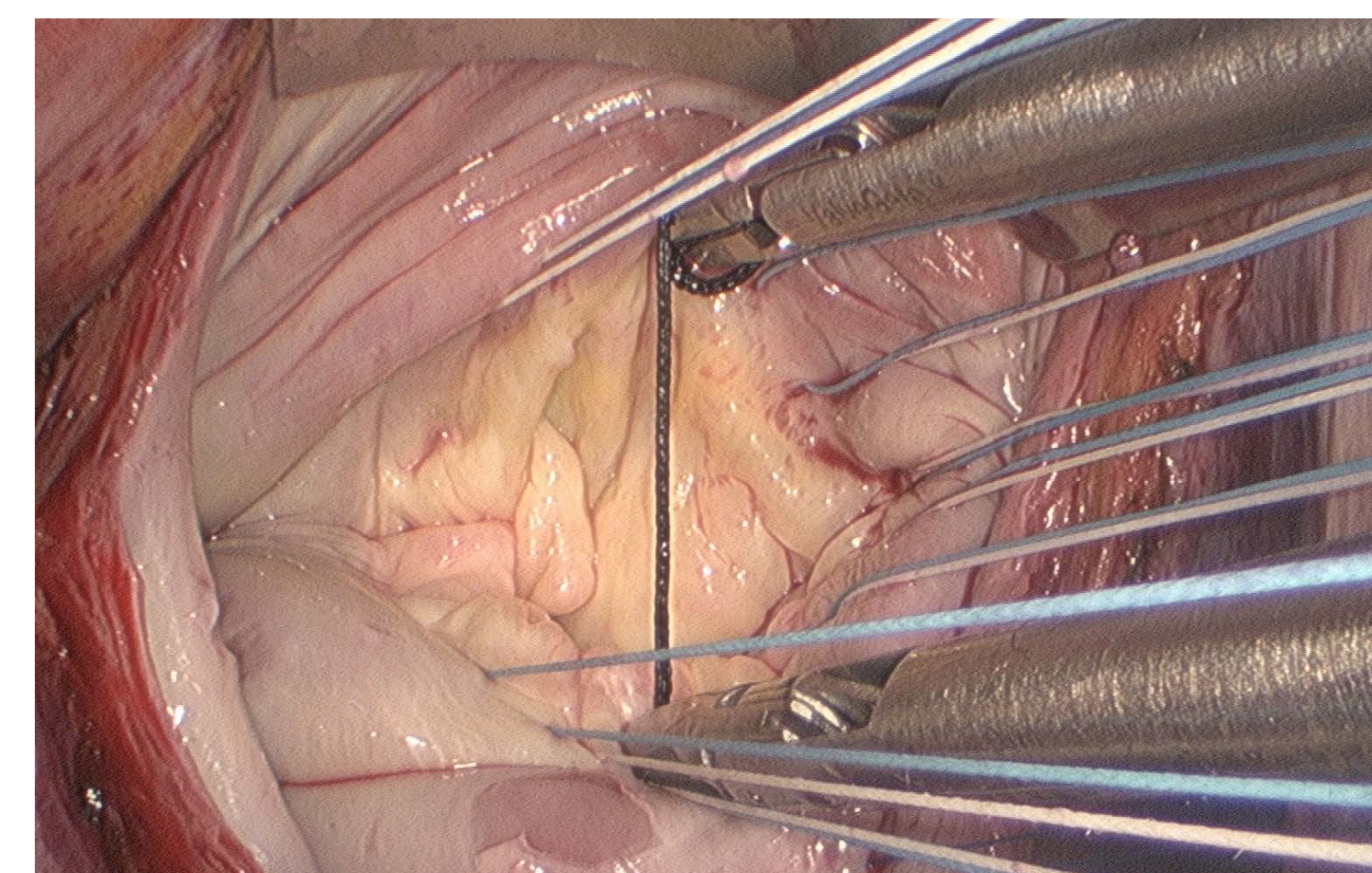


Fig.4 Annulus sizing: thread measurement

Due to the small working port, the commercially available annuloplasty ring sizers do not fit through. Depending on the manufacturer the templates can be detached from its introducer for insertion. The handling of these stiff and slippery templates however is difficult due to space and angulation issues.

To address this, we employed alternative methods for annulus sizing.

Annuloplasty sutures are placed in advance, and the ventricle is flushed with saline to expand the valve leaflets. A paper ruler, is used to take three measurements, measure the trigon-trigon distance, anterior-posterior distance, and length of the anterior and posterior mitral leaflet. When space is extremely limited, a thread is used to measure these distances. The measurements are then compared with the manufacturer's sizers to select the appropriate ring size. In another approach, paper templates of the ring sizers are prepared, based on manufacturer dimensions (Fig. 2-4). Insertion of the annuloplasty ring (Fig.5).

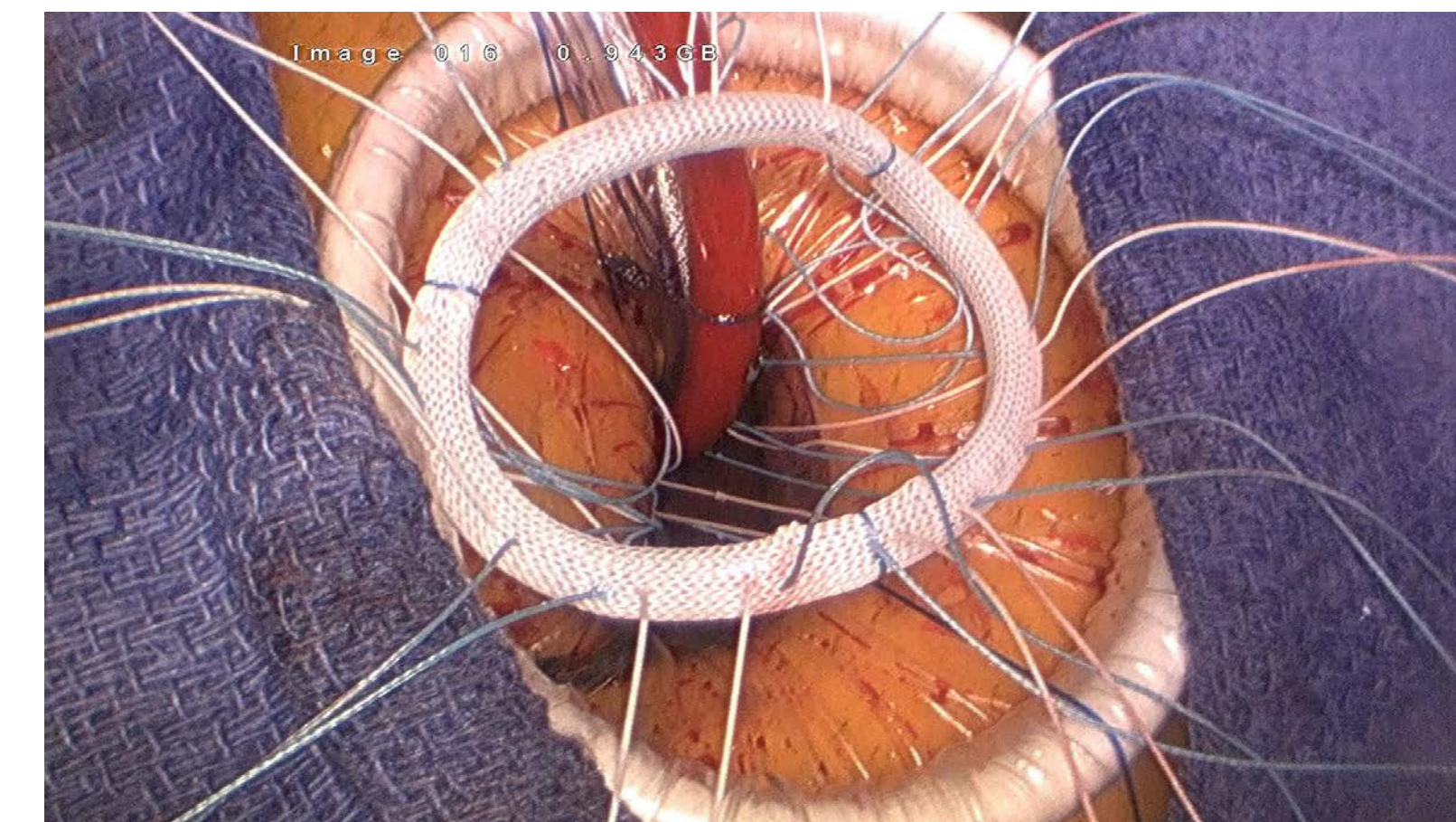


Fig.5 Annuloplastyring

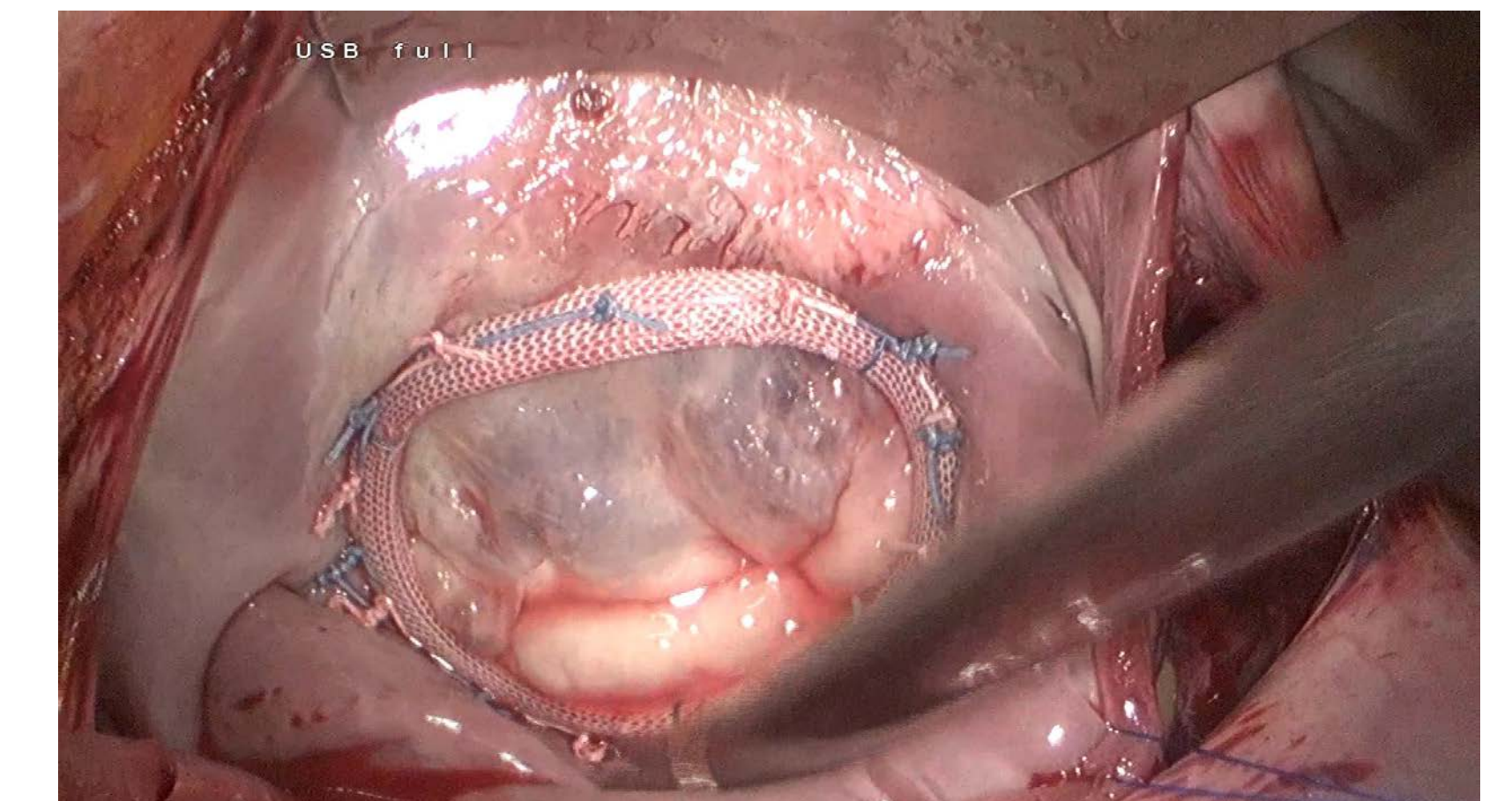


Fig.6 Successful endoscopic mitral valve repair

Results

The procedure results in a successfully repaired (Fig.6), competent mitral valve through a totally endoscopic approach with less trauma and fast recovery.

Conclusion

These simple, adaptable techniques for annulus measurement and mitral valve repair demonstrate that even in confined spaces, optimal results can be achieved with careful planning, precision, and minimal invasiveness