Limited Mitral Tissue Mitral Cleft and Leaflet Expansion

Per Wierup, MD, PhD, Jens Johansson Ramgren, MD, PhD, Kiet Tran Phan, MD, PhD, Lea Christierson, Nina Hakacova, MD PhD

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Limited Mitral Tissue
Mitral Cleft and Leaflet Expansion

Per Wierup¹², MD, PhD, Jens Johansson Ramgren¹, MD, PhD, Kiet Tran Phan¹ MD, PhD,
Lea Christierson³⁴ and Nina Hakacova³ MD PhD

Department of Pediatric Heart Surgery¹, Cardio-Thoracic Surgery² and Pediatric Cardiology³,
Skane University Hospital, Lund, Sweden, ⁴Department of Biomedical Engineering, Lund
University, Sweden

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Correspondence:

Per Wierup MD, PhD
Senior Consultant
Dep. of Cardiothoracic Surgery
Skane University Hospital
22185 Lund
Sweden
Central Picture Legend
Leaflet expansion for mitral cleft with limited tissue.

Central message
Residual clefts need a modified surgical approach and leaflet expansion with autologous pericardium is a useful adjunct in cases with limited tissue.

Perspective Statement
Residual clefts are often associated with limited mitral tissue and need a modified surgical approach with smoothening of the edges around the cleft and when needed leaflet expansion works well.

Case Summary
This video describes the surgical aspects of treating mitral clefts, in the setting of limited tissue. This study was approved by the Swedish Ethical Review Authority 2015/559, 9/8/2015. We discuss the clinical variations of clefts and challenging situation where the classical techniques are insufficient. In grown-up congenital cases, the surgeon needs to address the thickened edges of the cleft, gently peeling of scar tissue and hereby smoothening the edges in order to make them much more pliable, allowing a different closure without creating a restricted anterior leaflet. The frequent combination with restricted posterior leaflet in this setting, is solved by using a partial flexible annuloplasty band.
In rare cases we encounter a severe lack of mitral tissue, and this is most often encountered in small children. Mitral valve replacement in this entity carries an overall dismal prognosis, especially in the younger children with a perioperative mortality between 11% and 36% [1-3] and as high as 52% in children below two years of age [4]. Hence, mitral valve repair is an appealing alternative avoiding most of the complications related to valve replacement. We have developed a strategy with leaflet expansion using non treated autologous pericardium together with a sub-partial annuloplasty made from a strip of PTFE. This annuloplasty increases the coaptation and creates a more stable repair while at the same time allowing the young patients to grow.

The video discusses the technical aspects of this technique and how to avoid the spinnaker phenomenon, which causes a functional mitral stenosis seen with large leaflet expansion. Moreover, it displays an intraoperative video as well as pre-and postop echoes and the echo eight years out from surgery. We have used this technique in eleven children with a mean age of two years. After a mean follow-up of 6.5 years, they are all alive, asymptomatic, without need for subsequent interventions. Their mitral regurgitation is stable and mild, and their mean gradient is low and stable. The children have had an overall positive growth.

Conclusion

Residual clefts require a modified surgical approach. Leaflet expansion is a valuable tool in cases with limited tissue.
References


