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## **Surgical therapy of organic mitral valve disease: Strategy and outcomes**

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## PART I

# SURGICAL TREATMENT OF ACTIVE NATIVE MITRAL VALVE INFECTIVE ENDOCARDITIS

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Infective endocarditis remains a deadly disease, associated with high mortality rates and severe complications [1]. It usually presents as a multi-system disease, a characteristic related on one hand to the wide scope of underlying morbidities typically present in these patients and on the other hand to the development of severe complications of infective endocarditis that often precede the diagnosis [2, 3]. Based on the variety and complexity of patients affected, a multidisciplinary approach is advised [1, 4].

Infective endocarditis most commonly affects left-sided heart valves, most commonly the mitral valve [3]. Surgical intervention during the index hospitalization is needed in about 50% of patients [3, 5]. The guidelines recommend surgical intervention in case of heart failure, signs of uncontrolled infection or for the prevention of peripheral embolization [1]. However, local practice and surgical expertise play a role in determination of the optimal treatment plan. For native mitral valve infective endocarditis, an early and repair-oriented surgical approach has been described in highly experienced centres [6]. In this setting, the threshold for surgery can be lowered to prevent further destruction of a repairable valve and the notion that, in the presence of severe mitral regurgitation, intervention will be necessary at some point in time.

In addition to the indication for intervention, the optimal surgical treatment modality as well as technical details of surgery remain a matter of discussion. Due to the presumed high risk of bacterial colonization of prosthetic materials in the setting of an active infection, it is believed that the use of prosthetic materials should be kept to a minimum. In case of mitral valve repair, prosthetic annuloplasty is therefore often omitted. A previous meta-analysis on the results of mitral valve repair and replacement in the setting of active infective endocarditis, however, demonstrated residual infection to be a rather uncommon event, occurring in only about 0.5% of patients who had undergone valve repair [7]. In a recent publication, Perrotta et al. rightfully speculated that residual infections are most likely related to incomplete resection of all macro-

scopically infected tissue [8]. Radical resection should therefore not be omitted, not even in an attempt to raise the likelihood of an initially successful repair. Residual infective endocarditis is thus possibly not related to the amount of prosthetic materials implanted but to the technical scrutiny of surgical intervention itself. Underlying mitral valve disease is present in about 40% of patients suffering from mitral valve endocarditis [3, 9-11] and the infective process often involves the mitral valve annulus. Complex leaflet as well as annulus repair techniques are often indicated to secure a durable repair after careful resection of all infected tissue has been performed. This provides theoretical background for annular stabilization to be performed in an attempt to support long-term repair durability.

Two recent large, multi-centre studies suggested valve repair to be related to improved overall survival when compared to valve replacement in the setting of active infective endocarditis [12, 13]. Such studies are, however, highly susceptible for selection bias, hard to statistically correct for in a multi-centre setting where the details of patient selection and repair techniques applied vary considerably. As patients receiving valve repair were likely in a better clinical condition with less extensive disease than patient undergoing replacement, the observed superiority might be unrelated to treatment modality. Moreover, on critical evaluation, the survival benefit of valve repair over replacement was largest in the early postoperative period when valve repair is less likely to provide a true survival advantage over valve replacement. Even in highly experienced centres, an absent late survival benefit, reflected by non-diverging survival curves after the early postoperative period, can be observed [6]. This could be related to a relatively high incidence of late reoperation following valve repair for active infective endocarditis [9, 14]. It is a generally accepted fact that the reintervention rate presents only the tip of the iceberg and that the actual prevalence of patients suffering from repair dysfunction will be considerably higher. The data on repair durability after valve repair for infective endocarditis remain scarce. Further refinement of patient selection, surgical repair technique and more liberal use of prosthetic annuloplasty could help improve repair durability in the setting of native infective endocarditis, resulting in a true survival benefit over valve replacement. Due to the theoretical risk of residual infection, the strategy of liberal use of prosthetic annuloplasty materials should be critically evaluated.

The relation of surgical volume and patients-related outcomes in mitral valve surgery remains a matter of debate. Recent studies suggest superior outcomes of surgery for mitral valve infective endocarditis in the hands of experienced surgeons and centres

[12, 13]. The relative low number of patients suffering from infective endocarditis, the high risk of surgery and the complexity of intra- and perioperative care all make the introduction of highly specialized endocarditis centres logistically feasible as well as clinically justified. In the following chapters, the results of a structured mitral valve endocarditis program in a tertiary institution will be evaluated.

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