Preface

Minimally invasive aortic valve replacement

Hello and welcome to the first edition of the *Annals of Cardiothoracic Surgery* (*ACS*) 2015.

It is a great honour to be the guest editor of this issue of the *ACS*, which is entirely dedicated to minimally invasive aortic valve surgery. This issue aims to serve as a resource for all surgeons who are involved—or are planning to be involved—in a minimally invasive program for the surgical treatment of patients with a diseased aortic valve.

To achieve this goal, the most influential experts in the field of minimally invasive aortic valve surgery have been invited to share their expertise on relevant broad issues including indications, outcome reports, risk stratification, learning curve, as well as the distinctive technical challenges related to reoperative aortic valve surgery, double valve surgery, sutureless or rapid deployment aortic valve replacement (AVR), and surgery of the aortic root and proximal thoracic aorta, all through different minimally invasive incisions and approaches. In order to cover this entire voluminous subject, this issue focused on minimally invasive aortic valve surgery will be delivered to *ACS* readers in two volumes. For their continuously inspiring work and tremendous contribution to this *ACS* issue, I must thank all experts that responded to our invitation as well as those who spontaneously submitted their manuscripts and videos.

Over the last two decades, as a consequence of the progressive aging of the general population, the number of aortic valve operations due to degenerative aortic valve diseases has dramatically increased. Data from most important national databases show that mortality after conventional AVR (c-AVR) has decreased, without indication of a decrease in patient risk, which suggests improved outcomes and safer surgery. Thus, conventional AVR through a median sternotomy with mechanical or sutured biological prostheses certainly represents the gold standard—and most common—operation in patients with aortic valve stenosis.

However, despite such excellent results and its well-established position, c-AVR has undergone great development over the last 15 years. Such progress, by way of less invasive incisions and use of new technologies (including TAVI and sutureless valve prostheses), is intended to reduce the traumatic impact of the surgical procedure, thus fulfilling lower risk patients' expectations on the one hand, and extending the operability toward increasingly high-risk patients on the other.

In this issue of *ACS*, CoreGroup International assessed through three systematic reviews and meta-analyses the available evidence on minimally invasive AVR, minimally invasive reoperative AVR, and sutureless AVR (SU-AVR). Also we included the largest single-institutional series from Brigham Women Hospital, Leipzig Heart Center, Cleveland Clinic, and Massa Carrara Hospital evaluated by Drs. Lawrence Cohn, Friedrich Mohr, Eric Roselli, Marco Solinas and Mattia Glauber groups, respectively.

Imaging aspects and step by step surgical techniques for optimal aortic valve exposition and replacement through different minimally invasive incisions are shown and deeply discussed with perspectives and insights from world experts such as Drs. Joseph Lamelas, Mattia Glauber, Eric Roselli and others.

With increasing confidence in minimally invasive approaches, many surgeons have begun to perform interventions of increasing complexity. Drs. Yan, Roselli, Shrestra, and myself will present techniques for root and thoracic aorta interventions through an upper partial ministernotomy, Dr. Joseph Lamelas will show his elegant Miami Method for double valve repair involving a small right anterior thoracotomy and femoral vessels cannulation, while Marco Vola will delight *ACS* readers with a video that demonstrates how totally endoscopic AVR is feasible in selected patients operated by skilled surgeons.

The rapid technological progress has resulted in the natural evolution of sutureless aortic valves from conventional sutured valves. SU-AVR, by avoiding placement and tying of sutures after annular decalcification, has been shown to facilitate minimally invasive approaches while minimizing cross-clamp and cardiopulmonary bypass durations. Shortened operational durations of SU-AVR may help reduce post-operative mortality and morbidity and improve cost-effectiveness, particularly in high-risk patients as well as in those undergoing complex or concomitant procedures. I am extremely grateful to Drs. Glauber, Borger, Misfeld, Dapunt, Santarpino and Fishlein for showing in detail their surgical techniques for the implant of all currently available sutureless and rapid deployment aortic valve prostheses. It is easy to believe that this promising technology will render SU-AVR the standard intervention for patients with aortic valve disease in the near future.

However, given its recent introduction, the evidence outlining its safety, efficacy, hemodynamic profile and potential complications is predominantly limited to small-volume observational studies and occasional comparative publications. In this issue of *ACS*, I am proud to introduce the Sutureless Projects, a multicentre international collaborative research effort

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into SU-AVR under the auspices of the international valvular surgery study group (IVSSG). The IVSSG is formed by a collaborative network of over 32 surgeons from more than 10 countries worldwide, and has been formulated with the aim of providing the best evidence available for SU-AVR. It is envisaged that systematic and collaborative efforts will shape clinical guidelines, optimize patient outcomes and set future directions of research.

I would like to close by thanking the Editor in Chief, Professor Tristan Yan, for the privilege of serving as the guest editor for this issue on minimally invasive AVR. With its innovative formula and outstandingly high quality contents, *ACS* is a clear testament to the brilliance of its founder. Working with Tristan Yan, with his highly efficient editorial staff, and with CoreGroup International, unsurpassed for efficiency, competence and professionalism, has been tremendously stimulating.

I sincerely hope that *ACS* readers will find this issue useful to increase their knowledge on minimally invasive aortic valve surgery in order to support their treatment decisions and improve patient care. Enjoy!

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