Editorial

# Bioprosthetic Heart Valve Replacement: Oral Anticoagulation or Antiplatelet Therapy? A Still Active Controversy

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There are a number of controversies in cardiac surgery. Among them, the issue of compulsory anticoagulant therapy after valve replacement with a tissue valve, also known as bioprosthesis, continues to be a matter of discussion. The key point is to admit that antithrombotic therapy in general may eventually be founded on shaky grounds. When referring to valve replacement with mechanical valves, there are neither doubts nor discussions that life-long oral anticoagulation therapy is the gold standard in terms of therapeutics due to the intrinsic valve structure with metallic components. The addition of immediate postoperative intravenous or subcutaneous heparin may accompany the introduction of anticoagulation usually with oral warfarin.

When referring to tissue valves, there still exists controversy with regard to the most appropriate antithrombotic therapy. Different options have been tried and are already popular within the surgical community: 1) No antithrombotic therapy, 2) Full oral anticoagulation therapy for three months with antivitamin K drugs, 3) Antiplatelet agents for three months, and 4) Combinations of all the above. In other words, there are considerable variations in practice as shown by surveys and registries.[1,2]

The issue of guidelines is also to be considered. Despite the fact that guidelines are luckily not the law, major scientific societies try to establish recommendations on what to do after bioprosthetic heart valve replacement, especially in patients with normal sinus rhythm, regardless of the valve position. The use of antiplatelets is a currently accepted policy.[3-5] If atrial fibrillation is present, there may be fewer doubts at the time to recommend a specific therapeutic regimen. What seems to be clear is that, despite the intrinsic biological nature of tissue valves, there are still chances of early postoperative thrombotic events.[6,7] On the other hand, any antithrombotic therapy has to be appropriately and carefully balanced with regard to drug-induced hemorrhagic events.[6]

Although it was a retrospective study and covering a long period of time, the results described in the seminal paper by Heras et al.[8] helped to define the extent of the problem and showed that there exists a risk of thrombotic events within the first three months after tissue valve replacement, which is the estimated time frame for the prosthetic ring to become endothelialized. There is an expected risk that may peak around 40-60 days after the operation. Therefore, on purity, prophylactic regimens should theoretically be implemented. Real life shows that even though there is an appropriate knowledge of guidelines, the cardiothoracic surgical community has no consensus on this issue as only 60% of the surgeons do not recommend antithrombotic therapy after tissue valve replacement as has been shown by an online survey in CTSNet on this subject.[1] A recently published registry has confirmed the lack of consensus on this matter, despite the guidelines.[2] This renders the problem on the complex side.

There is still little evidence about what to do; however, there is recent information suggesting that anticoagulation with oral warfarin may not be the ideal approach in this setting. In the past decade, a handful of papers have indicated that antiplatelet agents may be quite useful at the time of preventing stroke and other peripheral embolic events.[9-11] An early study showed that antiplatelet therapy was effective in preventing embolization; however, ticlopidine still had some risk of hemorrhagic events.[6] In terms of evidence, there is only one recent prospective and randomized trial, the TRAC study, that has shown, on a pilot basis, that antiplatelet therapy was as effective as oral warfarin in preventing embolic events; in addition, the risk of hemorrhagic events was also reduced when using antiplatelet agents.[12,13] A major limitation of this prospective randomized trial was the reduced sample size. So

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far no other controlled study has addressed this problem.

Joining all together, the still scanty papers published up to now are currently challenging old thinking on this particularly complex issue. Some other recent non-randomized studies are concluding in a similar way that antiplatelet therapy is useful in preventing embolic events with no increased risk of hemorrhage.[14,15] A very recent abstract also indicates, despite some problems in methodology and follow-up, that no oral anticoagulation may eventually be required.[16] Waiting for the publication of the data presented in this abstract, this study is another example of the renewed interest in this issue.[16]

There is still not enough information to draw at strong and powerful conclusions. The ACTION registry[2] has a number of important limitations that have already been discussed,[7] but it may bring additional light as to what is done in real life. This is the power of a registry, which is probably not the most appropriate scientific tool, although its value should not be neglected. Up to now, this registry seems to confirm the aforementioned impression that the practices are diverse; in other words, consensus does not exist. On the other hand, guidelines do reflect society policies[3-5] and the CTSNet Survey also confirmed that there are probably as many policies as the number of operating surgeons.[1]

Bearing in mind the lack of consensus and the confirmation of the diversity of practices, something seems to be of interest: there is a trend not to use oral anticoagulation immediately after tissue heart valve replacement. This may eventually be good news. Physicians in general and cardiologists in particular have always been too rigid in this regard, and full oral anticoagulation has always been started after tissue valve replacement for at least three months. This tendency toward an increased usage of antiplatelet drugs is aimed at reducing the complications of oral anticoagulation; those are not to be neglected. We, surgeons, know that anticoagulation-related hemorrhage continues to be a major part of overall morbidity after valve replacement in general and mechanical valve in particular.[17,18] Therefore, any effort to reduce bleeding should always be welcome.

The TRAC prospective and randomized pilot study,[12,13] the ACTION and ANSWER registries in Europe and the USA[2] and the cohort studies that have already addressed the problem[6,9-11,14-16] are related in some aspects. First, they will contribute in different ways to a future body of evidence supporting the use of antiplatelet drugs in this field. Second, although all these studies have some limitations to a certain extent, they seek to create more awareness among surgeons regarding this still debatable issue. Third, it seems clear that they address the problem of hemorrhage as this continues to be the most important part of the business. For a therapy that looks at reducing thromboembolic events to a minimum and to avoid hemorrhage related to the therapy, it is encouraging to see that antiplatelet treatment is able to offer an appropriate efficacy and safety profile that needs further investigation.

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