Sutureless and rapid deployment bioprosthetic valves: new perspectives.

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Abstract

We carefully read the recent paper by Hammond et al. (1) on the use of sutureless bioprosthetic valve for homograft failure in the setting of infective endocarditis (IE). This article is the latest demonstration that new sutureless and rapid deployment (RD) valve prostheses are safe and easy-to-use devices for surgical aortic valve replacement, and indicates their suitability for different scenarios and peculiar surgical situations as infective endocarditis (IE).

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We carefully read the recent paper by Hammond et al. (1) on the use of sutureless bioprosthetic valve for homograft failure in the setting of infective endocarditis (IE).

This article is the latest demonstration that new sutureless and rapid deployment (RD) valve prostheses are safe and easy-to-use devices for surgical aortic valve replacement, and indicates their suitability for different scenarios and peculiar surgical situations as infective endocarditis (IE).

It is known that IE represents a huge challenge in cardiac surgery, associated with high in-hospital morbidity and mortality. In this contest, surgical procedures are technically complex, scarcely reproducible, and highly dependent from surgeons' skills. This explains the need to investigate a new approach using new generation of bioprosthetic valves, which are known to be technically more reproducible and more reliable. According

to these data, some groups have begun to implant Perceval sutureless (LivaNova Group) prosthesis in cases of IE. The study by Rosello-Diez (2) reported a series of nine patients, with a rate of mortality, paravalvular regurgitation and PM implantation of 22 %, 11% and 11% respectively.

In the Weymann series (3), including nine patients affected by aoritc IE and treated with sutureless bioprosthetic valve implantation, the median EuroSCORE II was 24.5 %, and no case of postoperative mortality, PMi, or perivalvular regurgitation was described. The mean trans-prosthetic gradient was 5.5 mmHg.

We have recently published two papers regarding the use of RD prostheses in patients affected by IE (4-5). One of them (5) described a series of 8 consecutive patients with a mean age of 74.3 ± 7.2 years, affected by aortic IE and treated with RD bioprosthetic valve implantation. One case of in-hospital mortality was noted. None of the patients had post-operative embolic or infective complication. The postoperative echocardiographic controls indicated a mean transvalvular gradient of 16.7 ± 3.0 mmHg and one case of paravalvular leaks (2 +). Two patients underwent epigastric permanent pacemaker implantation. During the follow-up, seven patients were alive, with no evidence of symptoms or recurrences of endocarditis or embolic episodes. No new paravalvular leaks were noted, and the mean gradient on the valves was 12.4 ± 3.4 mmHg.

All these experiences suggest few more considerations.

Firstly: Sutureless and RD prostheses implantation require the use of less foreign materials such as pledgets and stiches and this could be advantageous in reducing IE recurrences.

Secondly: The higher solidity and radial force of the stent could offer more stability in cases with annular involvement and abscess requiring patch reconstruction.

Thirtly: RD and sutureless prostheses implantation does not require manipulation of the annulus, which has usually been already damaged by the infective process.

We strongly believe that these devices, applied in uncommon surgical scenarios, might represent the basis on which international recommendations and guidelines could be extended and improved to guarantee the best results for patients.

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