Author's response to reviews

Title: Mid-term Results in Patients Having Tricuspidization of the Quadricuspid Aortic Valve

Authors:

Meong Gun Song (mgsong@kuh.ac.kr)
Hyun Suk Yang (yang.hyun@gmail.com)
Dong Hyup Lee (dhlee@med.yu.ac.kr)
Je Kyoun Shin (20080186@kuh.ac.kr)
Hyun Keun Chee (20050711@kuh.ac.kr)
Jun Seok Kim (20050125@kuh.ac.kr)

Version: 2 Date: 6 January 2014

Author's response to reviews: see over
Author's response to reviews

Title:

Mid-term Results in Patients Having Tricuspidization of the Quadricuspid Aortic Valve

Authors:

1 Meong Gun Song : mgsong@kuh.ac.kr

2 Hyun Suk Yang : yang.hyun@gmail.com

3 Dong Hyup Lee : dhlee@med.yu.ac.kr

1 Je Kyoun Shin : 20080186@kuh.ac.kr

1 Hyun Keun Chee : 20050711@kuh.ac.kr

1 Jun Seok Kim : 20050125@kuh.ac.kr

1 Department of Thoracic and Cardiovascular Surgery and 2 Department of Internal Medicine, Konkuk University Medical Center, Konkuk University School of Medicine, Seoul, South Korea;

3 Department of Thoracic and Cardiovascular Surgery, College of Medicine, Yeungnam University, 317-1, Daemyungdong, Namgu, Daegu, 705-035, South Korea.

Version: 2 Date: 6 January 2014

Author's response to reviews: see over
Reviewer's report

Title: Mid-term Results in Patients Having Tricuspidization of the Quadricuspid Aortic Valve
Version: 1 Date: 14 October 2013

Reviewer: Tae-Eun Jung

Reviewer's report:
Authors showed that they can perform a aortic valve reconstruction with pericardial patch safely for patients with quadricuspid aortic valve with significant aortic regurgitation. It seems that this procedure can be considered as an alternative procedure for quadriquuspid aortic valve disease.

I agree with your opinion.
Review has no suggested changes for the manuscript

Level of interest: An article of outstanding merit and interest in its field

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
No competing interest.
Reviewer’s report

**Title:** Mid-term Results in Patients Having Tricuspidization of the Quadricuspid Aortic Valve

**Version:** 1  **Date:** 11 October 2013

**Reviewer:** YONGIN LUKE KIM

**Reviewer’s report:**

1. Authors should explain the reason why you fixed a sino-tubular junction with fabric rings which were not used in other previously published similar papers. If there are any reasons, it should be supported by published evidences.

**STJ fixation:**

STJ reduction is based on the following facts: The theory of Frater is that valve function can be restored by reduction of the STJ diameter which has been excessively dilated compared to the size of valve. The diameter of STJ should be fixed because pericardial leaflets do not grow after reconstruction. The STJ is more expansible not because of its histological characteristic but because of the location of commissures. If the commissure is repositioned, the location of STJ is also changed. The ratios among the diameter of upper plane, diameter of base, and height of aortic root are equal during a certain phase of the cardiac cycle. The STJ reduction or fixation is done by suturing using sandwich technique with a fabric made ring or strip inside and outside of the STJ together utilizing 18 pairs of 4-0 monofilament polypropylene suture. Through this procedure, tension to the STJ can be evenly shared. Fixation of the sino-tubular junction is very important new conception to maintain coaptation of the reconstructed valves.


2. Any scientific evidence that the bovine pericardium used in AVRS as a leaflet substitute more suitable comparing to gluteraldehyde fixed autologous pericardium should be described.

_Infected endocarditis was very rare present in the bovine pericardial group than autologous pericardial group._


3. Proper explanation and evidence that bovine pericardium is free from degenerative changes or calcification should be described.

_Calcification of aortic valve leaflets has the same mechanism as that of bone formation. It occurs as a defense mechanism of the human body when a new surface is exposed at the most mobile point. If a new surface is exposed, a hormone called osteopontin attaches on it and calcium accumulates on the area resulting in calcification. Once the valve leaflet is calcified,
it may be broken due to high pressured blood flow then it calcifies repeatedly, and the calcification progressively grows. The diastolic expansibility of the aortic root is remarkably diminished by the impaired movement of the inter-leaflet triangle(ILT) if the calcification progresses to the ILT wall, and then secondary changes like hypertrophy of septal muscle can appear with severe LVOTO. The fact that the expansibility of aortic root is well preserved in a situation of no atherosclerosis or calcification even in old age, means that expansibility of aortic root is dependent on the shrinkage and expansion of the ILT.


A 16-year follow-up of aortic valve reconstruction with bovine and autologous pericardium in young adult patients showed no difference in freedom from structural valve degeneration between two pericardial groups


4. You need some corrections as follows (some details);
Title page: last line, "full list of author" ->" full list of authors",
Abstract: #6th line, "Sino-tubular"-> "sino-tubular",
#11th line, "artificial graft" ->"artificial vascular graft",
aortic valve area index, you should compare preop vs postop result ( you described only postop result),
#Consider LV mass index is not reasonable to assess the efficacy of this AVRS. You may omit this because EDLVD and ESLVD are more important in this paper.
Background: #Quadricuspid aortic valve should be described as "QAV" from the second time description once you noted its abbreviation before.
Method: #9th line, "artificial graft" ->"artificial vascular graft"
# at the end, the value which is statistically significant should be described, like p value.
Results: # you compared preop results of NYHA class, LVEF, LVEDD, LVESD, LVMI, but not of PG and AVIA in your manuscript. You should correct this.
Additionally, you may omit LVMI results here and at Table 2.
Discussion: # Again you should describe continuously same abbreviations ("QAV" instead of "Quadricuspid Aortic Valve") in your whole manuscript.
#Use a same term; cardiac ultrasound -> echocardiography (#1st line of Discussion part).
#8~10th line (page 6), you reported one aorta wrapping case, however, you described that you did not have an enlarged ascending aorta. You should explain this and need a revision. Again in this sentence, "artificial graft" should be written as "artificial vascular graft".
#16th line, you should describe not both AVA and AVAI, but AVAI
only. You may not describe meaningless values.
#19th line (page 6), omit "The LVMI showed significant regression".
#At the last sentence, consider a revision from "in order to test the durability of repair procedure involving..." -> "in order to assess the durability of repair procedures and materials involving...".

The reviewer is correct and have revised manuscript as reviewer comments

**Level of interest:** An article of outstanding merit and interest in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**
I declare that I have no competing interests.
Reviewer’s report

**Title:** Mid-term Results in Patients Having Tricuspidization of the Quadricuspid Aortic Valve

**Version:** 1  **Date:** 18 October 2013

**Reviewer:** Jong BUm Choi

**Reviewer’s report:**
This manuscript is emphasizing fixation of sinotubular junction for aortic valve surgery. Until now on, many surgeons have made well-designed tissue leaflets that can make a good coaptation in aortic root. However, in the dynamic aortic root the well-maden tissue leaflets did not work because they are fixed in size in size-changeable aortic root, unlike the real leaflets. After aortic cross clamping is released, the sinotubular junction is dilated, coaptation of the leaflets splits open and is distorted. For this problem, fixation of the sino-tubular junction is a very important new conception to maintain coaptation and its height without regurgitation. Most of current aortic valve or root surgeries, such as the aortic valve replacements, the stentless valves and even the re-implantation technique (David root reimplantation), have fixed the aortic valve annulus, but the aortic valve reconstruction surgery preserves the annular motion, contraction and dilatation. All human cardiac valves have two functions of closing and opening of valve leaflets and contraction and dilatation of valve annulus. All surgical techniques and prostheses have only leaflet closure and open function without annular motion. It’s a very new surgical conception. As the result, the sinotubular junction fixation is an alternative to fall the valve housing (sewing ring and struts) off the artificial valve, preserving the aortic annular function. However, the long-term durability has to be carefully followed-up, as the authors mentioned that.

The manuscript is acceptable.

I agree with your opinion and we have added manuscript to the Discussion.

Fixation of the sino-tubular junction is very important new conception to maintain coaptation of the reconstructed valves

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**
I have financial relationship with the company or their products.
No conflict of interest. No stocks.
'I declare that I have no competing interests’.