Reviewer’s report

Title: Improving long term outcome for diabetic patients undergoing surgical revascularization by use of the radial artery conduit: a propensity matched study.

Version: 1 Date: 31 August 2012

Reviewer: thomas schwann

Reviewer’s report:

The authors present their extensive experience with radial artery grafting in conjunction with LIMA and SVG in patients with diabetes and compare long term outcomes with patients who underwent coronary reconstruction using the traditional LIMA/SVG configuration. The authors are to be congratulated on their outstanding operative results and focusing attention on the challenges and frustrations of operating on patients with diabetes, an increasingly prevalent patient population who despite increasing surgical sophistication continue to show suboptimal long term survival. The investigators make a compelling case for the routine use of RA as a supplemental arterial graft to the LIMA in this patient demographic by documenting statistically significant long term (up to 12 years) survival benefit. This represents a large contemporaneous experience from a group comfortable with RA utilization who has previously reported superior outcomes with RA grafting in the general CABG population. The authors use propensity matching based on 17 patient and operative characteristics to compensate for significant differences in patient characteristics between the two study groups. As elegant as the study is and as important as the conclusion is however, there are certain elements of the study that need significant modifications to enhance the value of the paper and its message. Furthermore, certain conclusions are over sweeping and not supported by the data presented and must be removed from the manuscript.

Major Compulsory Revisions:

The Discussion Section is unfocused and strays from the main powerful message of the study i.e. RA in conjunction of LIMA and supplemental SVG grafting increases long term survival compared to the LIMA/SVG configuration in diabetics. There are unnecessary and extraneous tangential details that clutter that message and should be removed. The last sentence of the first page of the Discussion does not belong in this section.

Reference 18 does not involve RA and provides no patency data.

Regarding their discussion of Reference 23: the discussion of the findings is inaccurate (long term survival of RA and SVG was identical) and the point of the entire discussion around this reference is unclear at best and needs modification. Referral to the unmatched patient population raises risk of confounding of the outcomes data quoted due to baseline patient characteristics differences.

Regarding the discussion of endoscopic graft harvesting, their assertions are
unsupported by any data in the manuscript and should be removed or comparative data from other studies should be provided to support this assertion. Again this is not the aim of the study and dilutes the message.

The Limitations Section: The second sentence makes no sense. Specifically what is meant by the “largest single site consecutive experience”?

The Conclusion Section: The second sentence is by far too sweeping and not supported as there is no comparison non diabetic group to support the conclusion that “the radial artery can overcome the previously universally acknowledged worse long term survival…” This implies that RA in diabetics approximates survival in non diabetics….clearly not supported by data.

Minor Essential Revisions

The Methods sections define GROUP RA AND GROUP SV. Tables and figures should be labeled consistently.

Table 1 – Should be labeled as patient demographics and as such morality data should not be included

Table 2 – Should be labeled as Operative Outcomes. HbA1C should be in Table 1

Table 3 – Same as above. Mortality is not a Preoperative Data

Table 4 – Same as above.

Consistent labeling of TABLES 1 and 3 and 2 and 4.

With the following modifications, I believe that this is a very important study with significant implications for the practice of contemporary cardiac surgery.

**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:**

Similar areas of research interests, with a similar study being presented at the EACTS in October in Barcelona.