Double Inflow Back-Up System for Arterial Revascularization – 6 Year Follow Up

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Background: The brain blood perfusion is protected by a double inflow "god created" back up system ("Circle of Willis") connecting these vessels. The hands and feet have both double inflow back-up systems with the palmar and plantar arches connecting them. Nevertheless, the heart was not created with such a system nor does the current approach for coronary surgery.

Methods: We applied this evolution principle in 10 patients undergoing surgical revascularization. An in-situ RIMA was anastomosed to the LAD, Radial artery to Diagonal and Ramus branches and then, end to side to the in-situ LIMA, which, in-turn was connected to marginal circumflex coronary arteries, thus creating a double inflow system similar to the palmar and plantar arches. These patients were followed for 6 years and compared to other 10 matched patients who underwent conventional revascularization, using in-situ LIMA and Free RIMA with T or Y graft connections to the left system.

Results: The patients with the "back up" system were all found alive, well and asymptomatic. Extubation time was 6 hours postoperative, ICU stay – 1 day, and hospital stay was 3.5 days. None of the patients required additional revascularization procedure. The patients from the conventional revascularization group were all alive and well and asymptomatic as well. Extubation time was 12 hours, ICU stay – 1.3 days, hospital stay – 4.5 days, no one required additional revascularization procedure.

Conclusion: Our limited experience with the double inflow back up system for arterial revascularization has satisfactory short- and medium- term results comparable to the conventional methods. Long term follow up is required in order to demonstrate advantage of the back up system.