The influence of pulsatile and non-pulsatile extracorporeal circulation on fluid retention following coronary artery bypass grafting

Thompson, Minami, Dramburg, Minami, Vyska, Koerfer- *Department of Thoracic and Cardiovascular Surgery, Heart Centre North Rhine-Westfalia, Bad Oeynhausen, University of Bochum, Germany* *Perfusion, July 1992 vol. 7, no. 3 201-211*

Abstract (summarized)

Thirty male patients undergoing coronary artery bypass grafting were divided into two groups, group I receiving pulsatile perfusion, group II non-pulsatile perfusion.

A double roller pump system for extracorporeal circulation was employed. Intra- and postoperative fluid balances and bodyweight gains were controlled under clinical conditions. There were no significant differences between the groups with regard to clinical data, operative procedure, perfusion parameters, drug treatment or intensive care treatment. The intra-operative mean fluid balance of group I was 794.0ml (66%) lower than that of group II, while the balance 24 hours postoperatively was 136.7ml (37%) lower in group I.

The total mean fluid balance for the pulsatile group was 931.0ml (59%) lower than the non-pulsatile group, in accordance with the bodyweights, which showed a 954.0g (63%) lower outcome in the pulsatile group. Less supplementary volume and higher urine production were the main factors.

It appears that volume saved during pulsatile ECC need not be replaced postoperatively.

These findings indicate that pulsatile perfusion leads to diminished fluid overloading, which could be an important advantage, especially for high-risk patients.