RCT Summary

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Improved outcomes using flow-based 'Doppler guided fluid management' compared to a pressure-based approach to fluid delivery in bowel surgery

Wakeling HG, McFall MR, Jenkins CS, Woods WGA, Miles WFA, Barclay GR, Fleming SC. Intra-operative oesophageal Doppler guided fluid management shortens post-operative hospital stay after major bowel surgery. Br J Anesth 2005; 95:634-642

Clinical Application: Intra-operative

This blinded, randomised controlled clinical trial compared 'best practice' fluid management based on invasive measurement of central venous pressure (CVP) with Doppler guided fluid management (DGFM), the delivery of fluid based on direct measurement of flow using oesophageal Doppler monitoring (ODM)

Protocol Outline

128 consecutive patients undergoing colorectal resection were randomly allocated to intra-operative fluid management based on maintaining central venous pressure at a pre-determined level (CVP group) or primary maximisation of stroke volume as determined by oesophageal Doppler. The study compared the duration of post-operative hospital stay and the time for the patient to tolerate a full diet between the two groups. Additionally, details of fluid volumes given and various bio-chemical 'markers' were recorded.

Results

Patients in the ODM group had a significantly shorter length of hospital stay (median 10 days vs. 11.5 days, $p<0.05$) and were fit for discharge earlier than those in the CVP group (9.5 days vs. 11 days, $p<0.05$. Patients in the ODM group also tolerated a full diet significantly earlier (6 days vs. 7 days, $p<0.001$) and opened their bowels significantly sooner (4 days vs. 5 days, $p<0.05$) than the CVP group. The ODM group also experienced significantly fewer total complications (37.5% vs. 59.3%, $p=0.013$). Nine patients in the ODM group experienced gastro-intestinal complications, compared to 29 in the CVP group ($p<0.001$). Overall, the ODM group used 70 fewer bed days than the CVP group – equating to a saving estimated by the authors to be in excess of £25,000 at 2005 costs.

Commentary

This important trial demonstrates that use of the CardioQ-ODM™ oesophageal Doppler monitor in offers significant outcome benefits when compared to 'best practice' using the invasive central venous catheter and a fluids to achieve a pre-determined 'optimal' central venous pressure.

Additionally, other studies have demonstrated the inability of pressure-based monitoring to follow the kind of fluid delivery algorithm employed and proven in multiple randomised controlled trials undertaken with the CardioQ-ODM as blood pressure is a slow and insensitive indicator of changes in volume status. This study adds further weight to this body of evidence.

Patients in the CVP group were more than five times more likely to suffer gastro-intestinal complications than those treated with the CardioQ-ODM.

Also of note and frequently observed in other studies of DGFM using the CardioQ-ODM, is that the range of fluid given in the ODM group varied widely between patients. This helps to emphasise the importance of DGFM's goal of delivering the right amount of the right fluid at the right time, tailored to individual need.

This is a summary of the referenced clinical trial and should not be used for citation.

Please refer to the source material for research purposes.

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