

Uncalibrated Pulse Contour Techniques for Perioperative Goal Directed Therapy: A Meta-Analysis of Randomized Controlled Trials

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Introduction: Perioperative goal directed therapy (GDT) has been shown to be useful to decrease the clinical and economic burden of postsurgical complications. Many GDT outcome studies have been done with the esophageal Doppler. Uncalibrated pulse contour (uPC) techniques are more easy to use, not operator dependent and not influenced by electric cautery, but their accuracy and precision has been questioned. Whether uPC techniques can be used to guide hemodynamic therapy and improve postsurgical outcome has been investigated by several but mainly small randomized controlled trials producing conflicting results. Therefore, we performed this meta-analysis to investigate whether the use of GDT with uPC techniques is associated or not with a decrease in post surgical morbidity, hospital LOS and mortality.

Methods: A systematic literature review, using MEDLINE, EMBASE, and The Cochrane Library databases through June 2015 was conducted. Data synthesis was obtained by using odds ratio (OR) and weighted mean difference (WMD) with 95% confidence interval (CI) by random-effects model.

Results: In total, 16 studies met the inclusion criteria (1713 patients). uPC methods were the FloTrac (Edwards Lifesciences), the LiDCORapid (LiDCO Ltd) or the ProAQT (Pulsion Medical Systems). The proportion of patients with at least one complications (post-operative morbidity) was reduced by GDT (OR 0.31; CI 0.16 to 0.60; $p < 0.001$). This effect was related to a significant reduction in infectious (OR 0.54; CI 0.42 to 0.70; $p < 0.001$), and abdominal (OR 0.46; CI 0.26 to 0.80; $p < 0.001$) complications (figures 1 & 2). It was associated with a significant decrease in hospital length of stay (WMD -1.74 days; CI -3.38 to -0.11; $p = 0.04$). Mortality was not affected (OR 0.86; CI 0.45 to 1.64).

Conclusion: Perioperative GDT with uPC techniques decreased post-surgical morbidity and length of stay. Because of the heterogeneity of studies analyzed, large prospective clinical trials would be useful to confirm our findings.