

FloTrac Sensor Outcomes Studies

Goal-Directed Therapy Using FloTrac Sensor Improves Outcomes and Reduces Complications in Surgical Patients.

Studies comparing intraoperative goal-directed therapy using the FloTrac sensor with standard management demonstrate improved intraoperative stability, reduced complications, reduced length of hospital stays, and faster restoration of GI function.

Background

An increasing number of studies have shown that intraoperative goal-directed hemodynamic and fluid optimization using the FloTrac sensor and Vigileo monitor results in improved patient outcomes.

This report summarizes three studies that support these findings in both high-risk and low-moderate risk patients undergoing major abdominal and hip-replacement surgery. The randomized, controlled studies demonstrated improved outcomes in a number of endpoints based on goal-directed therapy (GDT) using the minimally invasive, easy-to-use, practical FloTrac sensor, which requires no calibration.¹⁻³

High-Risk Patients Undergoing Major Abdominal Surgery

In a 2010 study published in *Critical Care*, Benes and colleagues evaluated the influence of fluid optimization based on stroke volume variation (SVV) in high-risk patients undergoing major abdominal surgery. Patients were randomized to a control group receiving standard care (n = 60) or a fluid-optimization group guided by the FloTrac sensor (n = 60), with the goal of maintaining SVV < 10% using colloid boluses of 3ml/kg.¹

Results

- Patients in the GDT group experienced fewer hypotensive events (2 [1-2] vs. 3.5 [2-6]; p = 0.0001)
- GDT patients had lower levels of lactate after surgery (1.78 ± 0.83 mmol/l vs. 2.25 ± 1.12 mmol/l; p = 0.0252)

- Fewer patients in the GDT group developed complications (18 vs. 35 patients; p = 0.0033), and the overall number of complications was reduced (34 vs. 77; p = 0.0066) (Fig. 1 & 2)
- Length of stay was reduced for the GDT group (9 [8-12] vs. 10 [8-19] days; p = 0.0421)

Figure 1. Patients with Complications

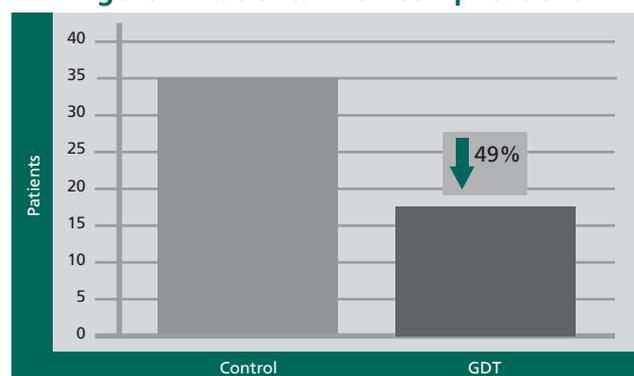
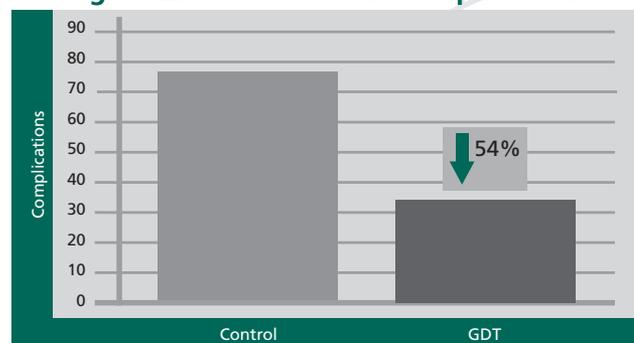


Figure 2. Reduced Total Complications



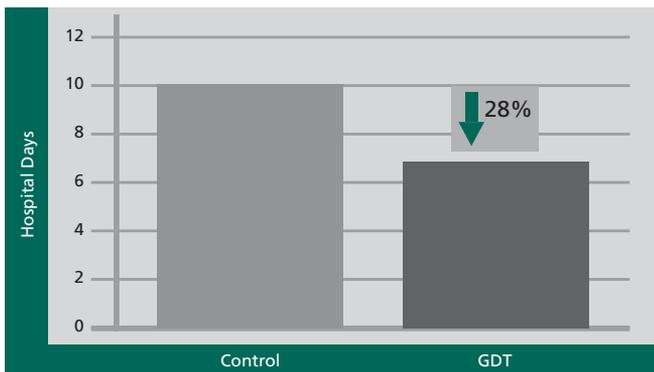
Low-Moderate Risk Patients Having Major Abdominal Surgery

Investigators at Loma Linda University Medical Center in Loma Linda, Calif., evaluated a goal-directed protocol in low-moderate risk patients undergoing major abdominal surgery. Study results were presented at the 2010 ASA meeting. In the randomized, single-blinded, controlled trial, 41 patients were randomized either to a standard management or GDT/FloTrac sensor group. The GDT/FloTrac sensor group received routine fluid management, as well as boluses of albumin to maintain SWV < 12%.³

Results

- Hospital stays were reduced > 2.5 days (7.25 ± 4.6 days vs. 10.1 ± 6.6 days; p = 0.01) in the GDT group (Fig. 3)
- GDT patients experienced a faster return of both GI function (p = 0.002) and the ability to urinate (p = 0.02)
- Significantly higher Quality of Recovery scores were observed (p = 0.01) in GDT patients

Figure 3. Reduced Length of Stay



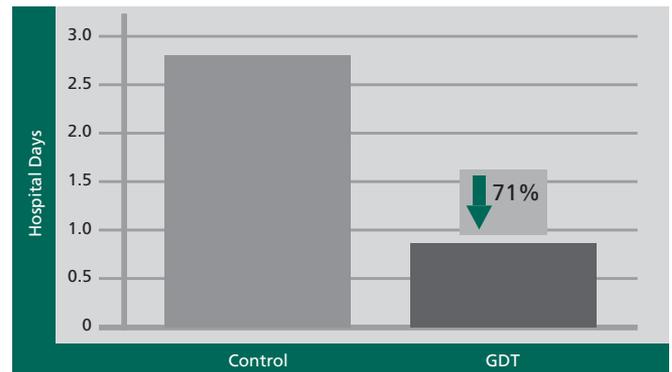
Hip Replacement Surgery

Cecconi and colleagues compared hemodynamic GDT with standard management in a study presented at the European Society of Intensive Care Medicine 2008 meeting. Patients were randomized to a control group (n = 10) guided by clinical judgment, or to a GDT group (n = 10) whose cardiac output was continuously monitored with the FloTrac sensor. The GDT group received fluid challenges guided by parameter readings provided by the FloTrac sensor.²

Results

- Eight of 10 patients in the GDT group achieved a DO₂I greater than the target of 600 mL/m² (two of 10 showed a DO₂I > 600 mL/m² at baseline)
- GDT patients experienced significantly reduced postoperative complications (0.8 ± 0.33 vs. 2.8 ± .03; p < 0.001) (Fig. 4)

Figure 4. Reduced Complications (Per Patient)



References

1. Benes J, Chytra I, Altmann P, et al. Intraoperative fluid optimization using stroke volume variation in high risk surgical patients: results of prospective randomized study. *Critical Care*. 2010;14:1–15.
2. Cecconi M, Fasano N, Specogna B, et al. Haemodynamic management in hip replacement: standard management vs goal directed therapy. Paper presented at: 21st ESICM Annual Congress; September 21–24, 2008; Lisbon, Portugal.
3. Ramsingh D, Gamboa J, Applegate R. Evaluation of a goal directed protocol in low-moderate risk patients having major abdominal surgery. Paper presented at: American Society of Anesthesiologists Annual Meeting; October 18, 2010; San Diego.

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