



Case Study #8

Lost minutes; A choice between the T-line or the NIBP cuff when managing an obese patient

INTRODUCTION

An ongoing clinical study currently investigates the accuracy of the T-line Tensysmeter in comparison to an invasive Arterial line (A-line), in clinically obese surgical patients. During one study case, the T-line proved quite valuable to the Anesthesiologist as a source for accurate and immediate blood pressure measurements. Prior to A-line insertion and after intubation, the NIBP repeatedly failed to measure blood pressure. In contrast, the T-line quickly provided accurate and continuous monitoring critical to starting the case.

CLINICAL EVENTS

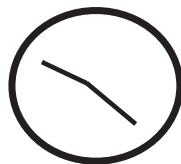
Location: Northwestern Memorial Hospital, Chicago, IL.
Patient Details: 65 y.o. Female, 66" 324 lbs, undergoing a TAH-BSO
Medical History: HTN, Hypercholesterolemia, DM II

Anesthesia: General Anesthesia

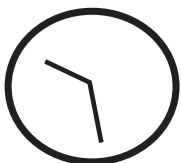
Case Notes: An obese patient was consented and enrolled in a clinical study investigating the accuracy of the T-line as compared to an A-line. The routine OR surgical preparations by the nursing staff as well as anesthesia began without incident.



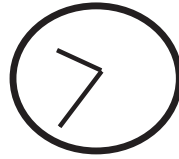
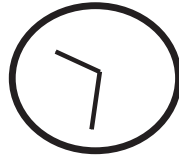
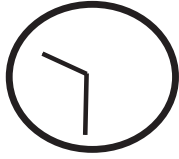
10:19 a.m. The patient was positioned supine on the table, the operating site was verified, and the anesthesia resident placed appropriate anesthesia monitors; including an NIBP cuff on the left upper arm. The NIBP cuff cycled once yielding numbers and anesthesia induction began.



10:22 a.m. Once the patient was induced, the NIBP cuff recycled. This measurement failed when the Velcro released from the patient's upper arm. The cuff was rewrapped onto the arm and then recycled. Again the Velcro unfastened and the cuff inflated off the arm leading to another measurement failure. Both the Anesthesiologist and chief resident were very involved with the intubation and did not recognize the cuff off the arm.



10:29 a.m. Patient intubation completed, anesthesia monitors and cables were reorganized and both Anesthesia staff noticed the cuff



inflated off the arm. The resident attempted to deflate the cuff manually then replaced it on the patient's upper arm initiating another measurement.

10:31 a.m. At this point, clearly disturbed by the lack of blood pressure readings, the Anesthesiologist turned to the resident and the Tensys research personnel and requested that they immediately start both the T-line and the A-line.

10:32 a.m. The T-line had been applied prior to induction, therefore only the sensor shield needed removal to initiate a T-line measurement. Simultaneously the anesthesia resident began the arterial line procedure.

10:35 a.m. The T-line completed its initialization cycle yielding a measurement, with a crisp waveform in real time. With the arterial line in progress, the Anesthesiologist asked the research personnel "What do you have?" The T-line was reading 118/77 which was indicative of the clinical situation.

10:37 a.m. Satisfied with the T-line readings, the attending tells the surgeons to begin the case.

10:38 a.m. Subsequently, the A-line catheter was inserted and displayed onto the multi-parameter monitor, yielding a pressure of 119/59.

DISCUSSION

Oscillometric NIBP monitoring is known to perform poorly in obese patients with large, conical arms. The absence of accurate blood pressure measurements immediately following induction and intubation exacerbates an already anxious time. Currently, these patients are candidates for invasive monitoring as a reliable means to measure blood pressure even though blood gas sampling is not indicated. In this case, the T-line was the surrogate A-line against flawed NIBP; providing accurate, beat-to-beat blood pressure measurements when minutes were critical. This case study is valuable to illustrate the shortcomings of management tools in this patient population. The accuracy of the T-line device may allow a physician to circumvent the need of inserting an A-line in cases where blood gases are not needed.

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