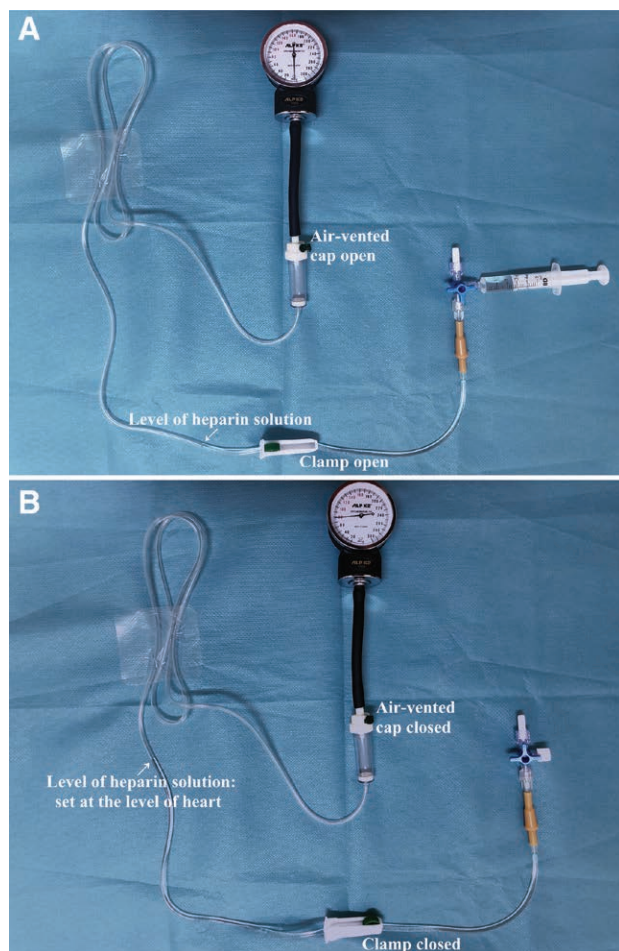


Sphygmomanometer for Invasive Blood Pressure Monitoring in a Medical Mission

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In patients undergoing high-risk surgery or presenting with major comorbidities, invasive arterial pressure monitoring is often used as the standard of care;¹ however, its availability one of the challenges an anesthesiologist may face in remote areas.² After ultraviolet disinfection, a sphygmomanometer and an intravenous infusion set can be assembled to deliver effective continuous arterial pressure monitoring without a functioning monitor (panel A).

This setup described does not allow for a zeroing process. Instead, the heparin solution is injected through the stopcock to make the air column pressure in the tube (shown by the sphygmomanometer) reach the level of the patient's mean

arterial pressure (panel B). When the system is opened to the patient, it can be seen that the sphygmomanometer pointer fluctuates with the cardiac cycle. Its advantages include beat-to-beat blood pressure monitoring and accurate blood pressure reading at low pressures.³ It has the same complications as conventional arterial monitoring, like thrombosis and air embolus. Constant attention is needed to keep the catheter patent, and the tube should be flushed frequently. It also should be noted that this setup can only reflect the trend of mean arterial pressure rather than systolic and diastolic pressures. Simultaneous non-invasive blood pressure monitoring is recommended to overcome this shortcoming. None of these limitations should take away from the usefulness of this device in the field, because only simple pieces of equipment are needed, and the overall trend of pressure will be accurate.

Acknowledgments

The authors acknowledge the support and coordination assistance from the Department of Anesthesiology of Preah Ket Mealea Hospital, Phnom Penh, Cambodia.

Competing Interests

The authors declare no competing interests.

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References

- Kim SH, Lilot M, Sidhu KS, Rinehart J, Yu Z, Canales C, Cannesson M: Accuracy and precision of continuous non-invasive arterial pressure monitoring compared with invasive arterial pressure: A systematic review and meta-analysis. *ANESTHESIOLOGY* 2014; 120:1080–97
- Epiu I, Tindimwebwa JV, Mijumbi C, Chokwe TM, Lugazia E, Ndarugirire F, Twagirumugabe T, Dubowitz G: Challenges of anesthesia in low- and middle-income countries: A cross-sectional survey of access to safe obstetric anesthesia in East Africa. *Anesth Analg* 2017; 124:290–9
- Bartels K, Esper SA, Thiele RH: Blood pressure monitoring for the anesthesiologist: A practical review. *Anesth Analg* 2016; 122:1866–79

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