Brazilian Journal of Anesthesiology xxxx;000(xxx): 1–2

Sociedade Brasileira de Anestesiologia

Brazilian Journal of ANESTHESIOLOGY

CLINICAL IMAGES

Hands-free continuous transthoracic echocardiography and transcranial Doppler using a 3D-printed transducer holder connected to a hydraulic arm

Victor Sampaio de Almeida [a,b,*], **Vinicius Sampaio de Almeida** [c], **Guilherme Oliveira Campos** [a,b], **Rodrigo Leal Alves** [a,b]

[a] *Hospital São Rafael, Salvador, BA, Brazil*
[b] *Instituto D'Or de Pesquisa e Ensino (IDOR), Salvador, BA, Brazil*
[c] *Universidade Federal da Bahia (UFBA), Salvador, BA, Brazil*

Received 26 October 2022; accepted 18 November 2022
Available online xxx

A transducer holder to perform continuous echocardiography has been recently described and the device has a major potential for use in anesthesiology.[1,2] To improve daily practice, we developed a hydraulic arm coupled to a 3D-printed device capable of holding any commercially available ultrasound transducer (Fig. 1). Thus, the device enables the continuous assessment of cardiac output during surgery[3] (Fig. 2). Furthermore, the arm has successfully allowed effective continuous transcranial Doppler monitoring (Fig. 3).

* Corresponding author.
E-mail: victorsampaio14@hotmail.com (V.S. de Almeida).

https://doi.org/10.1016/j.bjane.2022.11.001

Please cite this article in press as: V.S. de Almeida, V.S. de Almeida, G.O. Campos et al., Hands-free continuous transthoracic echocardiography and transcranial Doppler using a 3D-printed transducer holder connected to a hydraulic arm, Brazilian Journal of Anesthesiology (2022), https://doi.org/10.1016/j.bjane.2022.11.001

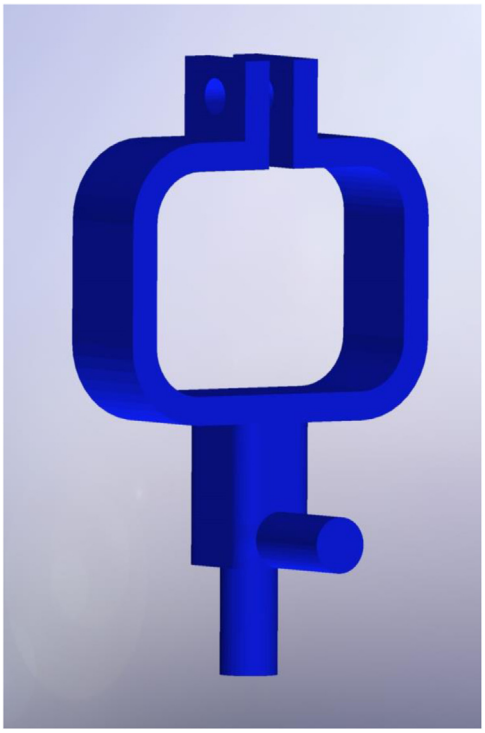

Figure 1 Technical project for 3D printing of the device that connects the hydraulic arm to the ultrasound transducer.

Figure 2 Use of the device to capture echocardiography imaging from the apical 5-chamber window and the alignment of the Doppler to measure flow through the left ventricular outflow tract.

Figure 3 Use of the device for transcranial Doppler through the temporal window with pulsed Doppler of the middle cerebral artery.

Conflicts of interest

The authors declare no conflicts of interest.

References

1. Song H, Tsai SK, Liu J. Tailored holder for continuous echocardiographic monitoring. Anesth Analg. 2018;126:435–7.
2. Alrayashi W, Kelleher S, DiNardo J, et al. Hands-free continuous transthoracic echocardiography: a contemporary evolution of the precordial stethoscope. Paediatr Anaesth. 2021;31:616–8.
3. e Souza RS, de Melo WB, Freire CMV, et al. Comparative study between suprasternal and apical windows: a user-friendly cardiac output measurement for the anesthesiologist. Braz J Anesthesiol. 2021. https://doi.org/10.1016/j.bjane.2021.02.063. Online ahead of print.