

Igel Phantom: An Innovative Model for USG Guided Needling Training

Jesto kurian¹

Abstract

Advancements in Ultrasonography has increased the interest among anesthesiologists to learn regional anesthesia techniques specially the peripheral nerve blocks. But it takes a long learning curve to become an expert in ultrasound guided regional anaesthesia techniques. The training models like blue phantom is expensive and not freely available. Other commercially available phantom models like gelatin based phantom and agar based phantoms though cheap has less shelf life. We devised a novel and cost effective learning phantom using Igel for needling training. Further studies are required for comparing the quality of Igel based phantoms with commercially available phantoms like blue phantom.

Keywords: Ultrasonography; Igel; Phantom.

Introduction

Regional anaesthesia techniques specially USG guided peripheral nerve blocks has become very popular in recent times among the practicing anaesthesiologists and residents. The advances in needles including echogenic needles has changed the perception of regional anaesthesia among the anaesthesiologists. Attaining skill in usg guided regional anaesthesia technique takes a long learning curve. The availability of cost effective training phantoms is also a major hindrance. The cheaper training phantoms described are agar based phantom and gelatin based phantoms [1, 2]. Both are cost effective phantoms but they have few disadvantages. The main disadvantage is that it requires long time to make these phantoms. They also have short shelflife [3].

Igel is a second generation supraglottic device developed by Dr Muhammed Nasir. Its routinely used by anesthesiologists for securing airway and maintenance of general anesthesia. The use of Igel as a training phantom has never been explained earlier. We report the use of Igel as an innovative method and training phantom for needling under USG guidance.

Materials and method

Igel (size 5) is placed over a flat surface and the hollow of the Igel is filled with transparent jelly and both side of Igel is close during a adhesive tape (fig. 1). This will create a hyperechoic linear artefact which simulates the target on the sono image (fig. 2). The USG probe is placed longitudinal along the long axis of I gel just proximal to the non inflatable cuff (fig. 3). The 16 G needle is placed near the USG probe at around 30 degree angle to the surface of Igel and try to pierce the Igel and the needle will pass smoothly through the Igel surface. You will find the entire length of needle passing through the Igel and a linear hyperechoic line will be seen as the target (fig. 4). This will create a real time simulation of body tissue. Needling can be repeated several times without damaging the Igel.

Discussion

The advances in ultrasound technology like 3D and 4D USG has increased the interest in regional anesthesia techniques specially USG guided peripheral nerve blocks [5]. Both practicing anesthesiologists and trainees have shown enormous interest in learning USG guided peripheral nerve blocks in recent times. But for acquiring adequate skills in

these technique it takes a long learning curve. The major hindrance is the non availability of proper training tools.

The commercially available training tools are namely phantoms and simulation videos. The training phantom include blue phantom, gelatin based phantom and agar based phantom. The most popular among these is the blue phantom which is expensive and not freely available. The other phantoms like gelatin based phantom and agar based phantom lack shelf life and is time consuming to prepare [1,2,3].

I gel is routinely used by anesthesiologist as a supraglottic device and is freely available. We used Igel as an innovative tool as a training phantom for needle manipulation under USG guidance. The advantages of Igel phantom are: easy availability, durability, cost effectiveness and shelf life. We found that the image quality was comparable with other available phantom models. Thus Igel can be an alternative cost-effective training phantom for ultrasound guided regional anesthesia. Further studies are required to compare the quality and effectiveness of Igel phantom with other commercially available training phantoms.

Conclusion

Igel phantom can be a cost effective and durable training phantom for learning needle manipulation under USG guidance specially for novice interest in USG guided peripheral nerve blocks. With further studies and modifications Igel phantom can be a go to training tool for learning the skill of needle manipulation under USG guidance for regional anesthesiologists.

¹Anesthesiology Institute Cleveland Clinic Abudhabi LLC, Al Maryah Island Po box 112412, Abudhabi, UAE

Address of Correspondence

Dr. Jesto kurian,
Associate Staff Physician, Anaesthesiology Institute Cleveland Clinic Abudhabi LLC, Al Maryah Island Po box 112412, Abudhabi, UAE
E-mail: jesto84@gmail.com



Dr. Jesto Kurian

© 2020 by Journal of Anaesthesia and Critical Care Case Reports | Available on www.jaccr.com | DOI: 10.13107/jaccr.2020.v06i02.146

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

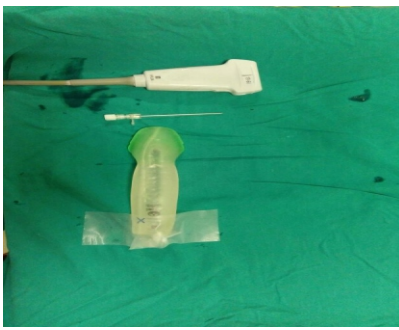


Figure 1: Image showing Igel placed on flat surface with needle and ultrasound probe



Figure 2: Ultrasound image with Igel surface simulating soft tissue target



Figure 3: Image showing the method of placing the ultrasound probe over Igel surface with needle orientation

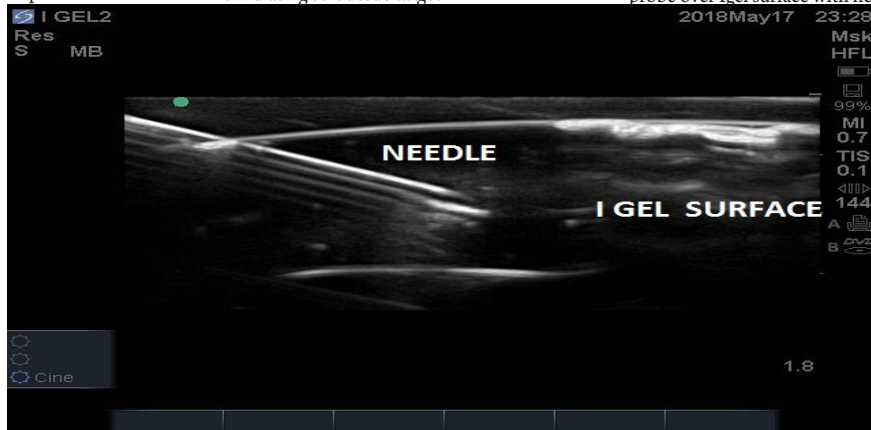


Figure 4: Ultrasound image showing the needle approaching the target simulating the soft tissue target

References

1. Fredfeldt KE: An easily made ultrasound biopsy phantom. *J Ultrasound Med* 5:295
2. Silver B, Metzger TS, Matalon TA: A simple phantom for learning needle placement for sonographically guided biopsy. *AJR* 154:2347
3. Hocking G, Hebard S, Mitchell CH. A review of the benefits and pitfalls of phantoms in ultrasound-guided regional anesthesia. *Reg Anesth Pain Med* 2011; 36:162–170.
4. Nelson, T. R. & Pretorius, D. H. 1992 Three-dimensional ultrasound of fetal surface features. *Ultrasound Obstet. Gynecol.* 2, 166– 174
5. Deam RK, Kluger R, Barrington MJ, McCutcheon CA. Investigation of a new echogenic needle for use with ultrasound peripheral nerve blocks. *Anaesthesia and Intensive Care* 2007; 35: 582–6.

Conflict of Interest: Nil
Source of Support: None

How to Cite this Article

kurian J | Igel Phantom: An Innovative Model for USG Guided Needling Training | *Journal of Anaesthesia and Critical Care Case Reports* | May-August 2020; 6(2): 04-05.