Journal of Anesthesia and Patient Care
Volume 5 | Issue 1
ISSN: 2456-5490

Cover Letter Open Access

Low-Cost Simulation Model for Ultrasound-Guided Femoral Nerve Block Training

Saidani Sarra[1*], Raja Boussassi[2] and Alia Jebri[3]

Faculty of medicine, University Tunis Manar, Tunisia

[*]**Corresponding Author:** saidani sarra, Faculty of medicine, University Tunis Manar, Tunisia, E-mail: sarra.saidani@fmt.utm.tn

Citation: Saidani Sarra; Raja Boussassi; Alia Jebri (2026) Low-Cost Simulation Model for Ultrasound-Guided Femoral Nerve Block Training, J Anesth Pati Care 5(1): 101

Received Date: July 11, 2026 **Accepted Date:** July 17, 2026 **Published Date:** July 25, 2026

Introduction

Ultrasound-guided regional anesthesia (UGRA) is a cornerstone of anesthesiology training, yet early practice on patients raises ethical and safety concerns[1,2]. Affordable simulation models can provide a safe and reproducible alternative[3].

We developed a simple, low-cost phantom to replicate the sonoanatomy of the femoral region for ultrasound-guided femoral nerve block training. A boneless chicken breast was used as the muscle substrate. The femoral nerve was simulated with ground turkey encased in a latex glove, reproducing nerve morphology and perineural echogenicity. The femoral vessels were represented by suction catheter and intravenous tubing filled with ultrasound gel, mimicking vascular echogenicity and compressibility. The assembly was enclosed within chicken breast layers and covered with transparent film for hygiene and reuse (Figure1).

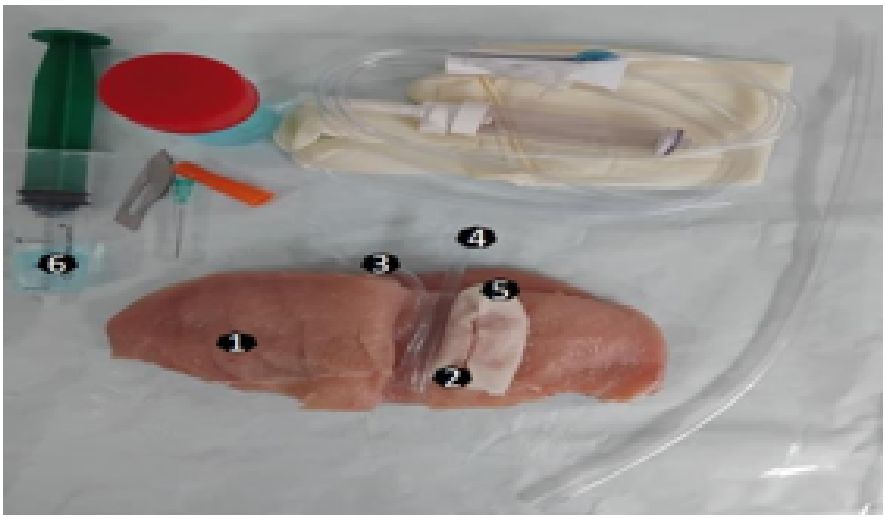

Figure 1. Femoral nerve block simulation model creation

We used a boneless chicken breast to mimic soft tissue and ground turkey shaped as the femoral nerve inside a latex glove segment to simulate the neural sheath. Suction catheter and intravenous tubing filled with ultrasound gel represented the femoral artery and vein, providing realistic ultrasound appearance and compressibility.

- Chicken breast
- Ground turkey meat
- Intravenous tubing reproducing the femoral vein
- Suction catheter reproducing the femoral artery
- A segment of latex glove
- Ultrasound gel.

During a UGRA workshop, anesthesiology residents of varying experience levels successfully identified the simulated femoral artery, vein, and nerve using a 7 MHz linear probe (Figure 2).

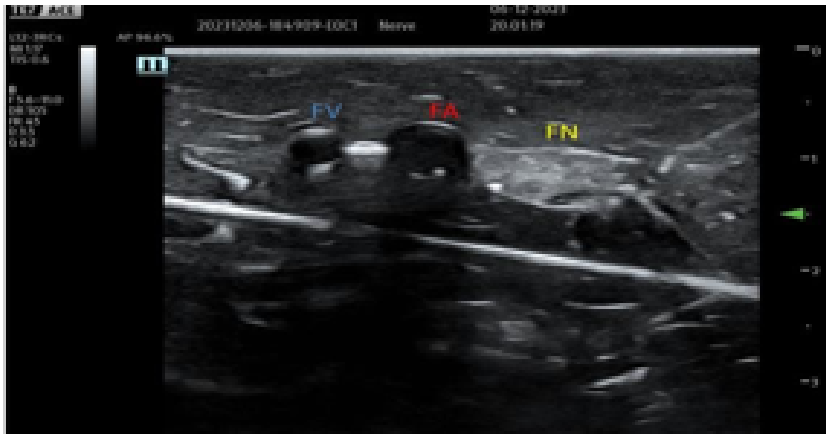

Figure 2. Ultrasonographic image of the femoral nerve block simulation model

The femoral nerve model appeared as a hypo-echoic triangular structure on ultrasound. Its lateral position relative to the artery beneath the fascial plane closely replicated real sonoanatomy.

- FV: Femoral vein
- FA: Femoral artery
- FN: Femoral nerve

The phantom provided realistic vessel compressibility, nerve visualization, and tactile feedback. Needle advancement and hydro dissection were consistently feasible, with authentic tissue resistance. The model required approximately twenty minutes to assemble, at a cost of $1.28, and remained intact after repeated use. Compared to commercial simulators, this phantom offered a reproducible, anatomically faithful, and inexpensive alternative for UGRA training. Its affordability and ease of assembly make it particularly valuable in resource-limited settings.

In conclusion, this low-cost femoral nerve block phantom provides realistic ultrasound imaging and tactile feedback, supporting safe and effective training in UGRA.

Keywords: Ultrasound; Femoral nerve block; Simulation; Phantom; Anesthesia

Acknowledgments

We thank the residents and staff of the Department of Anesthesiology and Intensive Care at Charles Nicolle Hospital, Tunis, for their participation, and Dr. Alia Jebri for technical advice.

References

1. Chen XX, Trivedi V, AlSaflan AA, Todd SC, Tricco AC, et al. (2017) Ultrasound-guided regional anesthesia simulation training: a systematic review. Reg Anesth Pain Med 741–50.

2. Hocking G, Hebard S, Mitchell CH (2011) A review of the benefits and pitfalls of phantoms in ultrasound-guided regional anesthesia. Reg Anesth Pain Med 36: 162–70.

3. Naraghi L, Lin J, Odashima K, Buttar S, Haines L, et al. (2019) Ultrasound-guided regional anesthesia simulation: use of meat glue in inexpensive and realistic nerve block models. BMC Med Educ 19: 145.