

## Background

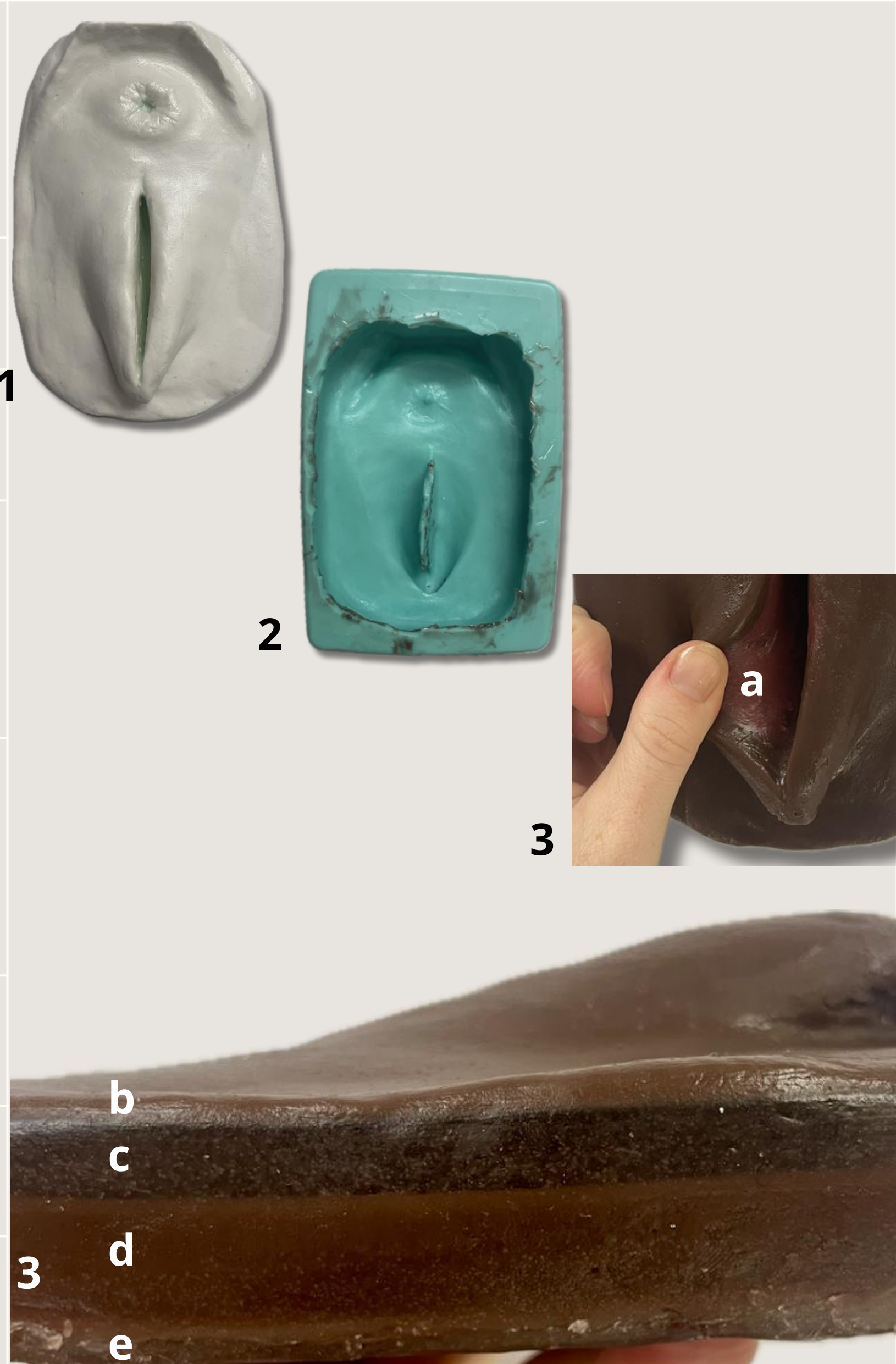
Buhner suturing is considered an essential skill for newly graduated farm animal veterinarians (1). Inspiration for this model was drawn from a presentation on an equine Caslick suture model (2).

## Objective

To develop a high-fidelity bovine vulva model meeting the following key criteria:

- correct size and orientation
- realistic sensation of entering the subcutaneous layer

1	A replica of a bovine vulva region was modelled freehand out of <b>air-dry clay</b> and sealed with <b>acrylic primer</b> .	
2	A reusable <b>mold</b> was created using Mold Star 15#.	
3	A <b>silicone</b> model was cast in layers, with each layer allowed to semicure:	
a	Vaginal mucosa	Thickened% Ecoflex 0030#, blood colour*, 2mm, internal vertical surfaces
b	Skin	Ecoflex 0030#, brown colour*, 4mm, reinforced with strips of powermesh
c	Subcutaneous tissue	Exoflex Gel#, 10mm
d	Muscles	Ecoflex 0030#, blood colour*, 15mm
e	Adhesive layer	Ecoflex gel#, 5mm



*Materials:* # Smooth-On, Macungie, USA; % THI-VEXTM, Smooth-On, Macungie, USA; \* SilcPigTM, Smooth-On, Macungie, USA

## How to use this model?

### Equipment

- Bovine vulva model
- Buhner needle 12"
- Scalpel blade #15
- Umbilical tape 1/4"

### Instructions

- 1.Prepare equipment and teaching materials
- 2.Attach the model to a smooth vertical surface
- 3.Closely supervise students when using blades and needles, and specifically when exiting the skin with the Buhner needle
- 4.Be aware that excessively tightening the Buhner suture may cause the model to detach from the vertical surface
- 5.If required, repair the model (i.e., skin incisions) using additionally applied EcoflexTM 00-30A



### Teaching material

- Skill sheet

## Team's feedback

- We believe we successfully simulated the sensation of subcutaneous needle advancement.
- Our mold has produced four distinct models, demonstrating its replicability.
- While the gel layer temporarily secures the model to a smooth surface, it may weaken over time, and when force is applied with the needle.

### References

- 1.Miller, R.B. et al., 2004. Practitioner-defined competencies required of new veterinary graduates in food animal practice. J. Vet. Med. Educ. 31, 347–365. <https://doi.org/10.3138/jvme.31.4.347>
- 2.Collingsworth, B., Hunt, J., 2022. Equine Caslick's model.

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