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### Clinical Challenge

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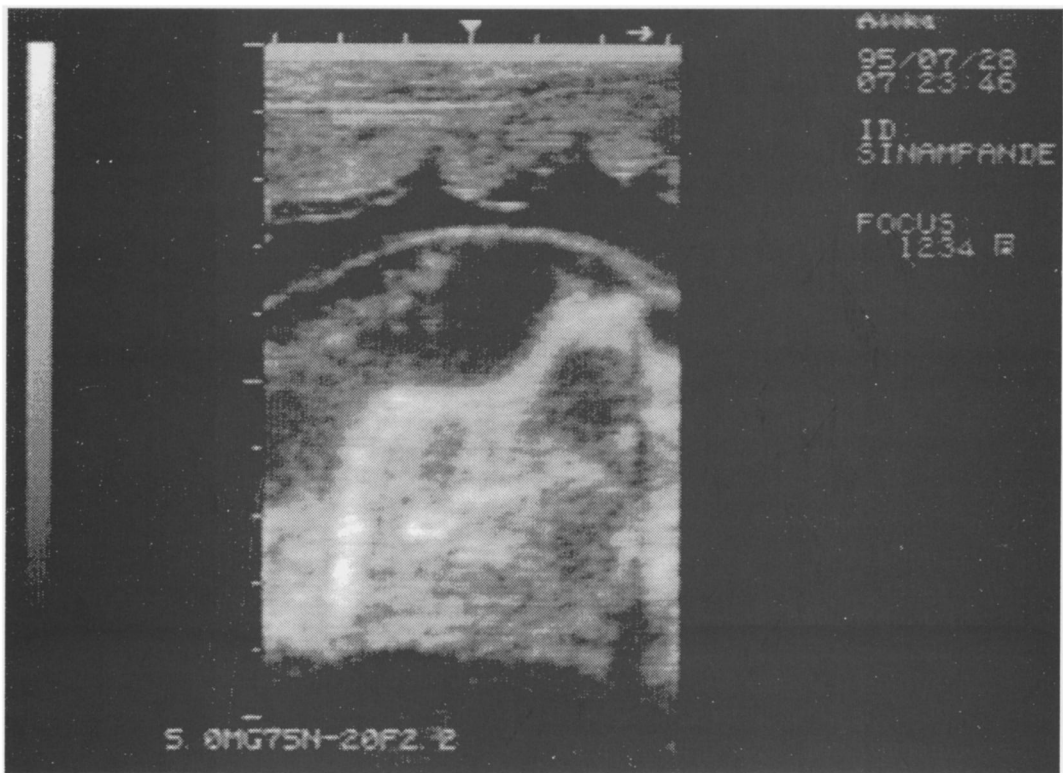
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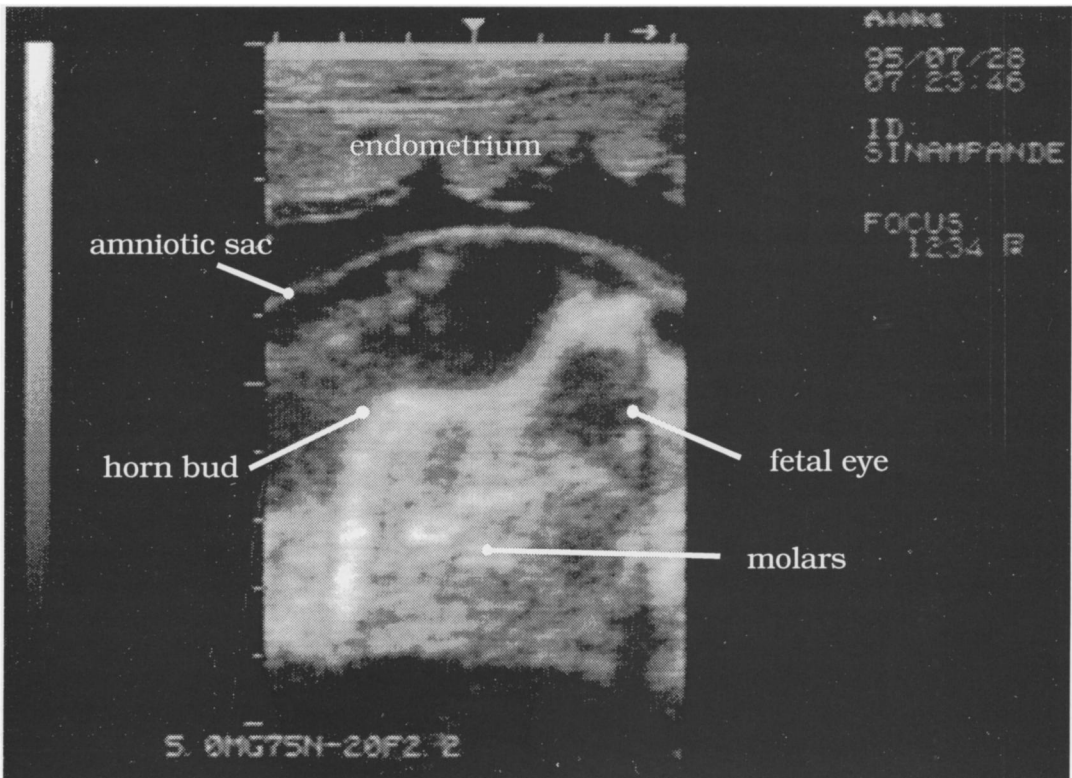
## CLINICAL CHALLENGE

**History:** After several months of positive behavioral conditioning to a free-stall chute,<sup>4</sup> a 15-yr-old wild-caught female black rhinoceros (*Diceros bicornis minor*) was evaluated for reproductive soundness without sedation. The reproductive tract was examined utilizing transrectal ultrasonographic imaging techniques similar to

those used in the mare.<sup>1-3</sup> A 5.0-MHz linear array transducer and an Aloka 500V console (Corometrics Medical Systems Inc., Wallingford, Connecticut 06492, USA) were used to obtain the following images of the uterus in this female rhinoceros. Make your diagnosis from the ultrasonographic image (Fig. 1) before continuing.



**Figure 1.** Transrectal ultrasonographic image of the uterus of a female black rhinoceros. The endometrium and associated folds can be visualized at the top of the image. The uterine lumen contains fluid and an echogenic mass.



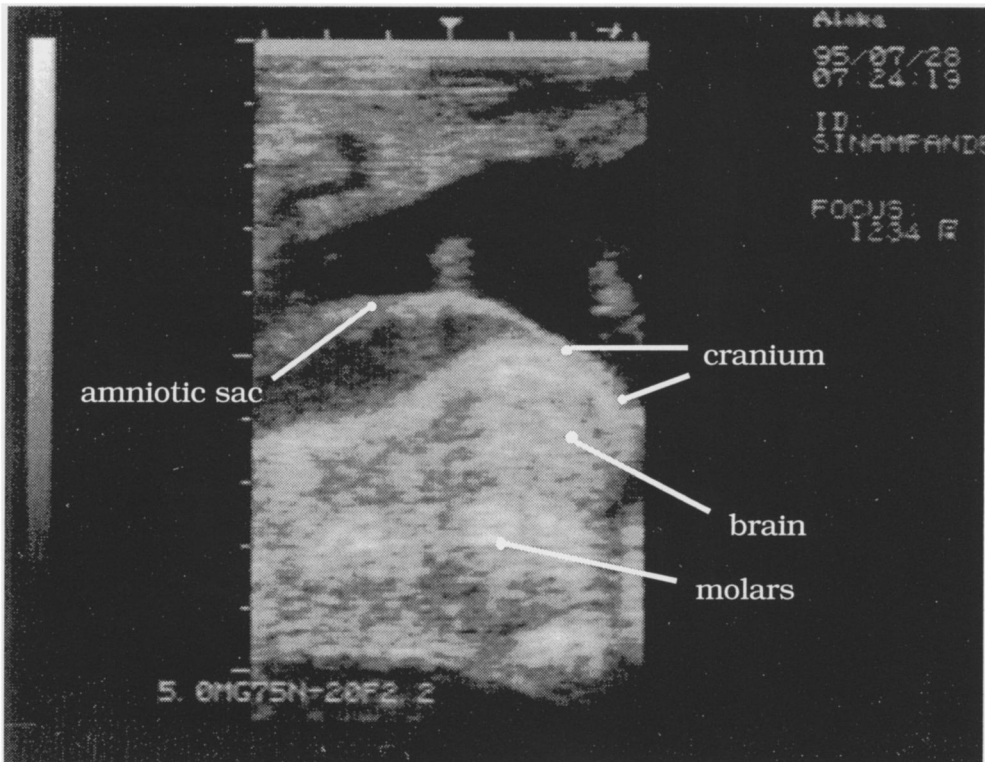
**Figure 2.** Transrectal ultrasonographic image of the head of a late-term black rhinoceros fetus illustrating identifiable structures; oblique sagittal view.

*Diagnosis:* Late-term pregnancy. Based on breeding dates, the fetal age was estimated at approximately 11 months.

*Discussion:* The fetal skull (70 mm length, 55 mm height, and 18 mm fetal eye diameter) can be observed as an echogenic (white structure) on ultrasound. The head is facing to the left and several structures can be identified from the ultrasound image. The fetal eye (bony orbit) is located to the far right and appears nonechogenic or as a black circle. The bony protuberance that supports the horn bud of the developing rhinoceros can be seen as a bump on the tip of the nasal portion of the skull. The amniotic membrane appears as an echogenic line just dorsal to the skull and within the fetal fluids. The molars appear highly echo-

genic and can be observed in sagittal sections through the fetal skull as illustrated in Figures 2 and 3. Anatomic features are labeled in these figures.

The visualization of intrauterine fluid alone would be insufficient for a diagnosis of pregnancy. The identification of fetal parts is essential for confirmation of normal pregnancy as well as for assessments of fetal viability and gestational age. Fetal visualization, even in the late-term rhino, is possible with procedure-conditioned animals and appropriate equipment. In horses, graphs depicting fetal dimensions have been constructed from repetitive ultrasound data, allowing for gestational age estimates;<sup>2</sup> similar research efforts would prove beneficial in the rhino as well.



**Figure 3.** Transrectal ultrasonographic image of the head of a late-term black rhino fetus; midsagittal view.

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