

## **Transvaginal Follicle Aspiration (TVA) for Oocyte Recovery**

Section of Reproduction and Behavior  
New Bolton Center, University of Pennsylvania

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Website: <https://www.vet.upenn.edu/veterinary-hospitals/NBC-hospital/services/reproduction>

### **Reason for follicle aspiration**

Follicle aspiration is a procedure performed to acquire oocytes, or eggs, from follicles on the mare's ovaries. Veterinarians who specialize in reproduction perform the follicle aspirations at the Hofmann Center. Recovered oocytes are then transferred to the Penn Equine Assisted Reproduction Laboratory, or PEARL, at New Bolton Center. Any oocytes that mature in laboratory culture are injected with a single sperm in a procedure known as ICSI (Intracytoplasmic sperm injection). Embryos that develop following the procedure can either be vitrified (frozen) or transferred into recipient mares.

Mares typically present for follicle aspiration due to infertility; mares that can no longer produce embryos via embryo transfer or have reproductive abnormalities that prevent them from becoming pregnant. Follicle aspiration may also be required when mares are being bred with semen from a stallion of poor fertility or a stallion with limited quantities of semen.

### **Overview of the follicle aspiration procedure**

Follicle aspiration is performed with the mare standing under heavy sedation. The follicles on the mare's ovaries are visualized with an ultrasound probe placed in the mare's vagina. The ovaries are held in place against the vaginal wall by manual trans-rectal manipulation. Each follicle on the ovary is punctured by advancing a long needle under ultrasound guidance through the mare's vagina, into the mare's abdomen and then into the follicle. Each follicle is aspirated and flushed several times to increase the chances of recovering the oocyte. The technique is known as transvaginal ultrasound-guided follicle aspiration or TVA and the procedure is performed by veterinary specialists at the Hofmann Center for Reproduction at New Bolton Center.

The TVA procedure is generally performed when the mare is not in heat and when a large number of small to medium size follicles are present on the ovaries. Each follicle contains one oocyte so the number of oocytes recovered is dependent on the number of follicles on the mare's ovaries. The recovered oocytes are classified as "immature" because these follicles were still growing and not yet ready to ovulate. Immature oocytes require maturation in the

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lab before they are ready to be fertilized. Aspiration of immature oocytes can be performed as frequently as once every two weeks.

In older mares that have few follicles, we may elect to aspirate an oocyte from a follicle that has been stimulated to ovulate; termed a pre-ovulatory follicle. Oocytes recovered from these stimulated, pre-ovulatory follicles are considered “mature” and require less time in the lab before they are ready to be fertilized. Once the pre-ovulatory follicle has been aspirated, it is possible to aspirate the remaining smaller follicles on the ovaries to recover “immature” oocytes as well. This procedure can be performed as frequently as once every two weeks.

### **Potential risks of the TVA procedure**

A TVA is not a benign procedure. The following are complications that can occur during and following the TVA procedure:

1. Rectal tears – the rectum of the mare may be perforated during the procedure. Minor rectal tears can be managed medically in the hospital while major tears may require surgery. Serious rectal tears can result in death.
2. Bleeding – bleeding can occur from vessels on the surface of the ovary as well as from vessels within the wall of the vagina. Bleeding into the mare’s abdomen can cause peritonitis and, in serious cases, death. Mares that experience abdominal bleeding require hospitalization.
3. Ovarian infection – the ovary can be infected with bacteria during follicular aspiration. Serious infections can result in an ovarian abscess.
4. Peritonitis – the abdomen can be infected with bacteria during the aspiration procedure. Mares that develop infectious peritonitis will require hospitalization.

### **Anticipated Results**

Typically we recover oocytes from 50% of the follicles aspirated during a TVA procedure. Therefore, the more follicles the mare has on her ovaries at the time of the aspiration, the more oocytes that are likely to be recovered. Unfortunately not all of the recovered immature oocytes will resume development in the lab. The PEARL lab will provide you with information on expected oocyte maturation rates and anticipated embryo development rates for immature oocytes.

TVA performed on pre-ovulatory follicles is generally more rewarding. The mature oocyte is recovered approximately 75% of the time. Because these oocytes are mature, development rates are higher than for immature oocytes. The PEARL lab will provide you with information on anticipated embryo development rates for mature oocytes.

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**Hofmann Research Center for Animal Reproduction**  
**New Bolton Center**  
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### **2024-2025 Transvaginal Oocyte Aspiration (TVA) Contract**

The University of Pennsylvania, New Bolton Center, agrees to collect oocytes from the mare \_\_\_\_\_ (“donor mare”), breed \_\_\_\_\_ age \_\_\_\_\_ registration # \_\_\_\_\_, and to transport the oocytes to the Penn Equine Assisted Reproduction Laboratory (PEARL) at New Bolton Center.

The Owner or Lessee, \_\_\_\_\_ (“Owner”) of the above Donor Mare agrees to the following:

- 1) To pay New Bolton Center for each trans-vaginal oocyte aspiration performed on this mare (approximately \$1,650 per aspiration), and to pay for any hospitalization.
- 2) To pay New Bolton Center for all veterinary fees associated with routine or emergency care of the donor mare.
- 3) New Bolton Center employees will exercise reasonable care for client animals admitted to New Bolton Center but neither the employees nor the University will be held responsible for injury, illness, or death of client animals while housed at New Bolton Center facilities. The Owner acknowledges that TVA is an invasive procedure and understands that complications can include, but are not limited to rectal tears, bleeding, ovarian infection and peritonitis.
- 4) The Owner acknowledges that due to the nature of the procedures, the outcome is inherently uncertain. The Owner understands that the University of Pennsylvania makes no representation, guarantee, or warranty, express or implied, that oocytes will be recovered.
- 5) To pay all charges relating to the donor mare in full at the time of discharge. All other accounts are payable within 30 days of monthly or final invoice. **AFTER 30 DAYS FROM BILLING DATE, INTEREST OF 1.5% PER MONTH ON THE OUTSTANDING BALANCE WILL BE ASSESSED.** The University of Pennsylvania, New Bolton Center, reserves the right to refuse service when the Owner’s account is past due. The Owner/Lessee agrees to pay all costs and reasonable attorney fees incurred by the University of Pennsylvania, New Bolton Center, in attempting to collect any outstanding balance.

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- 6) For oocytes being processed at a facility other than PEARL, the owner assumes the risk of shipping oocytes to the alternate ICSI facility. The owner hereby waives all claims against NBC for any loss or damage suffered by the owner regarding the shipment of the oocytes. The owner agrees to indemnify and hold NBC harmless against any claims or damages including but not limited to attorney's fees and the costs of defense against any such claims or damages relating to the shipment, the processing, or the material.
- 7) **New Bolton Center reserves the right to discontinue follicle aspiration services at its discretion.**

**Acknowledgement: I, \_\_\_\_\_, the owner/owner's agent/lessee of the above listed mare, verify that I have read all program-related information presented with this contract and that I understand the implications. I agree fully to the terms and conditions of the contract listed above.**

**Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**Mare** \_\_\_\_\_ **Owner:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**Phone:** \_\_\_\_\_ **Email:** \_\_\_\_\_

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Credit Card Authorization

*Please call our business office to place a card on file prior to your arrival at 610-925-6400*

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