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Practical In-House Epididymal Semen Collection



Processing and freezing epididymal semen after collection, it is no different than methods for ejaculated semen.

Photo: Courtesy Sandro Barbacini, DVM

Veterinarians and breeders have benefited from the use of Epididymal semen—located in a duct behind the testes—in equine breeding programs dating as far back as the late 1950s. Cryopreserved (frozen) epididymal sperm is a valuable commodity if a stallion will be castrated, or if he unexpectedly dies or must be euthanized.

However, the process of referring the horse to a facility that's equipped to collect, process, and cryopreserve epididymal sperm is expensive and typically reserved for only the most valuable of stallions.

So Robert J. Stawicki, MS, DVM, Dip. ACT, from the Department of Large Animal Medicine at the University of Georgia's College of Veterinary Medicine, and colleagues developed a practical, cost-effective method for performing this procedure in-house, making it available to a larger population of stallion owners. He described this during the 2015 American Association of Equine Practitioners Convention, held Dec. 5-9 in Las Vegas.

"The technique for collecting epididymal semen has been sufficiently refined and can now result in the recovery of high numbers of sperm and up to 100 insemination doses in a cost-effective manner," Stawicki said. "Practices that already collect and cryopreserve ejaculated semen require very little additional equipment to collect the semen from the tail of the epididymis, where the semen is the most mature."

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To date, Stawicki has collected data on processed epididymal sperm from 15 pairs of testicles. Of those cryopreserved epididymal samples, 13 had acceptable post-thaw motility, and seven of 13 inseminated mares (53.8%) became pregnant. This pregnancy rate is deemed acceptable, especially considering that previous studies report pregnancy rates ranging from only 7-30%, said Stawicki. More recently, two studies that used a novel semen freezing extender reported pregnancy rates of 61-92%, which either equal or exceed benchmark pregnancy rates reported for cryopreserved ejaculated sperm.

Stawicki recommended practicing the technique on testicles from routine castrations before attempting the procedure on a client's stallion. Further, Stawicki offered the following tips to ensure a quality product:

1. Prepubescent stallions, stallions, have been recumbent for long periods of time, have had prolonged fevers, or have suffered from a long-term illness are less likely to have freezable sperm;
2. In terminal cases, castrate the stallion prior to euthanasia. Use a standard anesthetic protocol, such as an α -2 agent for sedation and intravenous diazepam and ketamine. Avoid injecting lidocaine into the testicle. Perform an open castration using techniques to minimize the loss of epididymal sperm.
3. Once adept at the technique, remove the epididymis immediately after castration (on site) and place it/them in a cooled semen transport device. Temperature fluctuations negatively impact semen quality.
4. Remove the visceral vaginal tunic covering the surface of the epididymal tail to allow the ducts to expand with the extender flush; otherwise, the high pressure needed to pass the extender could rupture the duct and reduce recovered sperm numbers; and
5. Keep in mind that centrifugation might increase progressive motility (a measure of fertility) of epididymal sperm dramatically. Be conservative with the extender prior to cryopreservation to avoid overdiluting the sperm.

Stawicki summed up his findings, noting that with these techniques and better freezing extenders. "It is comforting to know that clients who invest the money to preserve their stallions' genetics by cryopreservation of epididymal sperm may be able to expect higher pregnancy rates than previously thought possible."