



## **SALVAGING SPERM: Life After Death**

Patrick M. McCue

DVM, PhD, Diplomate American College of Theriogenologists

Loss of a current or future breeding stallion is devastating to an owner. Potentially fatal medical conditions such as colic and severe musculoskeletal trauma are not anticipated. Grief caused by the loss of life is soon compounded by the reality of lost potential...mares that may have been bred and foals that may have been born.

Traditionally, the breeding potential of a stallion is lost with his death. Collection and freezing of semen has made it possible to store or bank genetic material indefinitely. Freezing semen while the stallion is healthy makes sense. Stallions can be collected in the off-season and the frozen semen stockpiled for future use. The frozen semen can be used as needed during the breeding season if the stallion cannot be collected or does not have sufficient semen for all the mares scheduled to be bred.

Semen can also be harvested and cryopreserved following unanticipated or untimely death of a stallion. Spermatozoa are produced in the testis and stored in the epididymis, a convoluted tubular structure located just behind the testis. In the stallion, several billion spermatozoa are present in the epididymis at any given time. Epididymal spermatozoa can live for many hours after death of the stallion. Sperm can be harvested from the epididymis following death, euthanasia or castration of a stallion,

processed like ejaculated sperm and frozen for future use. Several studies have reported that stallion spermatozoa can be harvested from epididymides that have been stored for up to 24 hours. Sperm recovered from the epididymis can be frozen and used for artificial insemination or other assisted reproduction procedures.

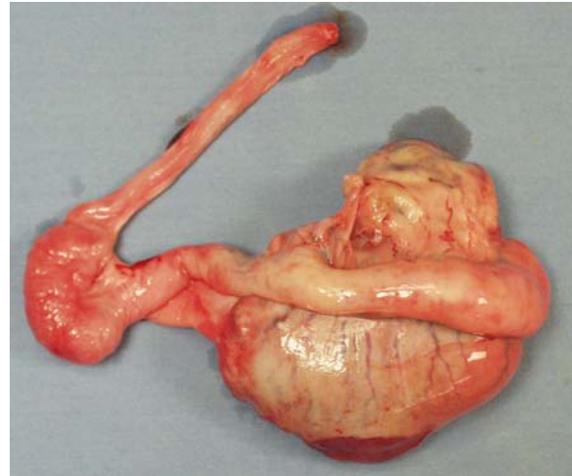
The technique for salvaging sperm from the epididymis of a stallion is as follows. Both testes and associated epididymides are removed using standard surgical castration procedures. Care should be taken to leave the tail of the epididymis and as much of the ductus deferens (the tubular tract that exits the epididymis) intact with each testis. The ductus deferens should be ligated with suture material as high as possible to prevent sperm from leaking out. Each testis and epididymis should be rinsed with saline and placed in a plastic bag. The bags are placed in a passive cooling system designed for shipping cooled semen and sent by overnight courier or by commercial airline to a reproductive referral center that offers the service of collecting and freezing epididymal sperm.

On arrival, the epididymis connected to each testis is dissected free and the lumen is flushed with media. The concentration of sperm is determined and seminal plasma harvested from a known fertile stallion is

added to the sample. It is hypothesized that fertility may also be increased by exposing epididymal sperm to seminal plasma prior to freezing, but breeding trials have not yet been conducted. Epididymal sperm are then frozen using standard techniques. Five to 25 breeding doses, consisting of 800 million sperm per dose, are typically obtained from a pair of testes.

Epididymal sperm has been used to obtain pregnancies in many species using normal insemination techniques and assisted reproductive techniques such as low-dose insemination and sperm injection. In the horse, the first equine pregnancy generated from insemination with frozen-thawed semen utilized epididymal sperm.

If you have a valuable stallion, it is recommended that semen be frozen and stored for future use. In addition, a contingency plan should be made in case of the unexpected death of the stallion. Epididymal sperm can be harvested and some breeding potential can be salvaged. Contact your veterinarian to find out if there are facilities that will collect and freeze epididymal sperm in your area. If not, the service is provided at the Equine Reproduction Laboratory, Colorado State University ([www.csuequine.com](http://www.csuequine.com) or 970-491-8626).



**Testis and epididymis**