

CLINICAL CASES: FROZEN SEMEN REIGNED SUPERIOR!

Kevin D. Dippert, PhD, PAS
Director, Equine Reproduction Concepts, LLC

(Original Print-1998)

An 8-year-old, Warmblood stallion has been breeding a limited number of mares for the last 3 years. In April of 1998, ERC began shipping semen from this stallion to a mare owner in Colorado. This particular client was a breed back from the 1997 season where her mare was pregnant but subsequently lost it. Repeated attempts last year failed to get the mare in foal again. After the first shipment to her this year, ERC received word that the semen was only 20% progressively motile no



Figure 1. Stained preparation of equine spermatozoa.

more than 12 hours from the time of collection. At 24 hours, it was between 5 and 10%. We were a little surprised because that is not normal for this stallion. Last year, his semen was consistently between 40 and 50% motile 12 to 24 hours after collection. Through experience, we at ERC have learned that often times motility estimates from on-farm practitioners are not an accurate assessment of the motility at the time of insemination. Motility readings are commonly being made under less than adequate conditions. Whether they are being made immediately before or after insemination under a make-shift farm set-up or much later at the veterinarian's clinic, one must be aware that some assessments simply are not accurate. In this case however, we felt confident that the motility was being accurately evaluated. It is feasible that an ejaculate every now and then does not ship well so a second shipment from this

stallion was sent out same-day service. Less than 9 hours later, the progressive motility was assessed at 30% prior to insemination. Although it may be an acceptable value for breeding purposes, this was not characteristic of the stallion's cooled samples. At no time had there been a change in the stallion's seminal characteristics that would have raised a concern about his cooling ability. Regardless, it was prudent to retest the longevity of his semen under cooled conditions. A full cool-test panel at ERC revealed that the stallion had more than adequate results; averaging 45, 35 and 30% progressive motility at 12, 24 and 60 hours post-cooling, respectively. Although the test confirmed his ability to cool, it was of no comfort to this client whose mare came up open once again. The finger was being pointed at the stallion's semen as the cause for the recent failure. During the

next heat period, best efforts were once again made to ship the semen as efficiently as possible so the mare could be inseminated at the earliest convenience. Within 9 hours after collection, they received the semen but were frustrated that less than 5% of the sperm were moving in a forward motion. The frustration transcended to ERC staff

as well but it was becoming clear that the problem wasn't related to the stallion's ability to cool well. It seemed evident that the method of handling during shipment was affecting the integrity of the sperm. The ability of stallion semen to withstand the presumed harsh exposure to handling and temperature changes during



Figure 2. Preparing a semen sample for cooled transport.

shipment is not something that can be adequately duplicated during normal testing procedures. Even though the culprit may have been coming to light, finding a way to get viable semen to Colorado was becoming an issue. After some thought, it was realized that several doses of frozen semen on this stallion were in storage. This happened to be a stallion with very acceptable frozen semen based on post-thaw motility (45%), but the ability to get mares pregnant had not been tested yet. With frozen semen, conditions of handling during shipment are not really a concern because those sperm are in a fixed state. The only time this would be an issue is if the straws in the shipping tank were prematurely warmed because of tank damage. The decision was made to short cycle the mare

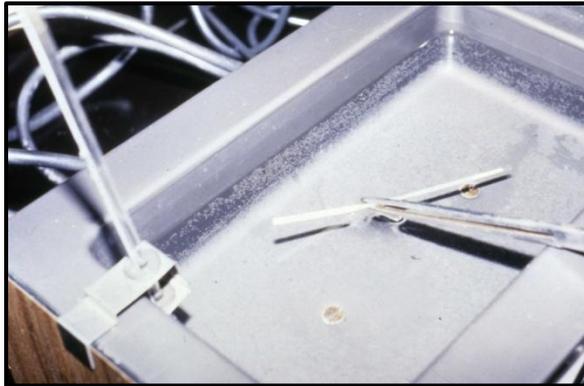


Figure 3. Thawing of frozen semen stored in a 1/2-ml straw.

and breed her the next cycle with frozen semen. Careful attention was made to properly manage the mare for breeding with frozen semen. It was welcomed news to get a call and find out that the mare was pregnant on the first cycle bred with frozen semen. All of the hard work and financial commitment seemed to have ended on a positive note. This was certainly a scenario whereby frozen semen proved a better method of breeding than cooled, transported semen. Interestingly enough, later in the breeding season poor quality shipped semen was also periodically noted from a few other stallions that were previously found to have exceptionally good cooled semen. At least two semen shipments delivered to ERC were noted as having heavy condensation on the inside of the equitainer. This is a result of inappropriate warming during transit and most likely attributable to the poor semen quality found in these samples. As much as we would have liked, this story did not end on a happy note. The mare did resorb the pregnancy around day 30 of gestation.