

PREGNANCY DIAGNOSIS BEFORE COLLECTION AND TRANSFER OF <10 MM HORSE EMBRYOS

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In commercial embryo transfer programs, horse embryos are typically collected and transferred at 7 or 8 days of age. Reported success rates of transfer of day 9 horse embryos are conflicting. Although it has been reported that ultrasonographic detection of horse embryos is possible as early as at day 9 post-ovulation, there have been no reports about the ultrasonographic detection of embryos prior to embryo collection attempts. The aims of the present study were to determine: (1) detection rate of <10 mm embryos diagnosed by ultrasonography; (2) embryo recovery rate in mares positively diagnosed pregnant with <10 mm embryos; (3) embryo transfer success rate for <10 mm embryos; (4) pregnancy rate after transfer of <10 mm embryos.

Twelve mares were artificially inseminated during 18 estrous cycles with fresh or shipped cooled semen using current breeding techniques. Beginning on day 7 post-ovulation or day 9 after hCG administration (to induce ovulation) mares were examined daily by transrectal ultrasonography (5 MHz transducer) and twice daily on day 9 post-ovulation until day 11. Mares diagnosed pregnant had their cervixes catheterized with a 37 Fr. silicone catheter and their uteri flushed with Ringer's solution with 1% (v/v) bovine calf serum at 500 or 1000 ml increments. All but one embryo measured 3–5 mm at the time of collection and were transferred transcervically using a disposable artificial insemination rod; one embryo measured 6–7 mm in diameter and was transferred loaded into a 34 Fr. flushing catheter. The success rates of transfer were documented by transrectal ultrasonography immediately after transfer and daily thereafter to follow embryo development.

Two mares examined only once at 9 days post-ovulation were excluded from the study. Pregnancy rate = 9/16 (56.25%); embryo recovery rate = 9/9 (100%); embryo transfer success rate = 6/9 (66.7%); embryo transfer pregnancy rate = 2/6 (33.3%); one embryonic vesicle was no longer present 4 days after transfer and the remaining pregnancy was terminated at 22 days of gestation). The only two successful transfers were established in recipient mares that ovulated 4–5 days after the donor mare.

In conclusion, <10 mm embryos were successfully detected by ultrasonography before embryo collection and transfer. Pregnancies resulting only from transfer of embryos to recipients with 4–5 days of asynchrony warrant further investigation. The development of equipment designed to hold and transfer larger horse embryos may improve success rates.

Keywords: Equine; Embryo; Ultrasonography