Evaluating the efficacy of a silicone Y-design intrauterine device as a horse contraceptive in a captive breeding trial

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Due to continued on-range population growth there are upwards to 70,000 feral horses against a BLM range ecologist established goal of 27,000. Therefore, the need to identify an effective means of contraception for feral horses on the Western range remains a BLM priority. As reported at the 2017 Therio Conference we experienced unexpectedly high loss rates over the first two months with a previously published silastic O-ring intrauterine device (IUD) and also with other IUD size and durometer (hardness) variations.[1] We also observed that a majority of the IUDs were expelled within 14 days; we considered that this may be a result of uterine expulsatory forces or by short cycling the mares and inducing estrus with subsequent frequent breeding behavior after placement of the IUD. Therefore in the next phase of this study we hypothesized that co-administration of a long-acting progesterone at the time of IUD insertion would increase IUD retention by preventing these aftereffects. Furthermore, in human IUDs a fundus seeking design ameliorates normal uterine expulsion forces, therefore, we extrapolated from those data to formulate an IUD 'Y' design (of 50 and 60 durometers) to test for a $\geq$75% retention rate. Two acclimated breeding pods, with one stallion per group, were used in this study. Within each group ten mares randomly received either a 50 or 60 durometer Y-design IUD. Additionally, every other mare received an intramuscular injection of either saline, or long-acting progesterone. This process allowed for an equally randomized, split plot design of equal numbers of mares (ten mares) in each treatment for IUD hardness, and co-administration of progesterone. Of the mares receiving a 50 durometer IUD, eight of ten retained their IUD over the first two months (20% loss rate, 80% retention). Of the mares receiving a 60 durometer IUD, nine of ten retained their IUD over the first two months (10% loss rate; 90% retention). Co-administration of long-acting progesterone aided in retention over the initial cycle's expulsive forces as ten of the ten treated mares retained their IUD over the first two months (100%). At this phase of the study these data indicate that the 60 durometer Y-design IUDs are superior to 50 durometer Y IUDs: 90% vs. 80% retention over 60+ days. Also, that co-administration of progesterone helps overcome the initial 14-day loss rate: none of the mares that received progesterone at the time of IUD placement lost their IUD, whether she received a 50 or 60 durometer IUD.

Keywords: Intrauterine device, feral horse, Y-design, O-ring, progesterone

Reference

1. Baldrighi JM, Lyman CC, Hornberger K, et al: Evaluating the efficacy and safety of silicone O-ring intrauterine devices as a horse contraceptive through a captive breeding trial. Clin Therio 2017;9:417.