Evaluating the efficacy and safety of silicone O-ring intrauterine devices as a horse contraceptive through 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 for an effective means of contraception has significantly increased. A contraceptive that is reversible would allow for the preservation of genetic diversity in targeted populations and alleviate some of the concern over contraception in wild horses. In this study we evaluated the efficacy and safety of an O-ring intrauterine device (IUD) based on earlier studies indicating a greater than 80% retention rate. With this background information we hypothesized that a silicone O-ring IUD with a durometer grade (hardness) of 50 would be retained within the uterus and would be capable of preventing pregnancy in mares under normal pasture breeding conditions. Acceptable rates of loss for the IUDs were predetermined to be not more than 25% during the first month and less than 50% during the three-month trial period. If these parameters were not met the study would then transition to determining “best” fit. Additionally, we also wanted to determine the incidence of adverse reactions to IUDs regarding inflammation, endometrial fibrosis, and cyclicity. The first IUDs inserted had a loss rate of 3/5 over a two month period without stallion exposure. Therefore, five groups of IUDs, of differing sizes and durometers, were manufactured and the second group of O-ring IUDs were inserted into the uterus of 20 young, reproductively healthy mares; the mares were immediately turned out with stallions after IUD insertion. Retention of IUDs was monitored via transrectal ultrasonography at 3-5 day intervals. Biopsy samples were collected at the time of IUD insertion and IUD removal for comparison. After the first 45 days of the pilot study the inserted O-ring IUDs experienced an overall loss rate of 60%, with some IUD configurations having a loss rate of 100%. At that point the IUDs with the lowest rate of loss were selected to be further refined and inserted into a larger group of mares. Three durometer types were inserted in three groups consisting of eight mares each. This step tested the hypothesis that higher durometer IUDs would be less malleable to uterine contractions (during estrus and during the process of breeding) and less likely to be expelled. Over the one-month evaluation period that followed, 11/24 IUDs were lost; many of which were expelled within the first week after insertion. There was no significant increase in endometrial inflammation or fibrosis. Several mares did experience deviations from normal cyclicity. Finally, no pregnancies were established.

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