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Cervical transposition test at estrus as a tool to select ewes for transcervical embryo collection

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The use of multiple ovulation and embryo transfer (MOET) program in sheep is limited by anatomical particularities of ovine cervix, making non-surgical embryo collection method (transcervical) more difficult or even impracticable. Therefore, the cervical morphology screening prior MOET becomes an interesting strategy. Thus, this study aimed to evaluate a cervical transposition method as a tool to select ewes able of being submitted to non-surgical embryo collection. Adult Santa Inês ewes (n=50) were superovulated using Day zero protocol (Pinto et al., *Theriogenology*, 113:146-52, 2018) followed by natural mating. The cervix transposition test was performed with Hegar dilator at estrus and at the embryo collection time. The latter test determined whether the ewe would be submitted to non-surgical or surgical embryo collection method. Prior the test, in both moments, ewes were sedated with acepromazine maleate i.v. (0.1 mg.kg⁻¹, Acepran, Vetnil, Louveira, Brazil) and diazepam i.v. (0.4 mg.kg⁻¹ Diazepam, Teuto, Anápolis, Brazil). The test at the embryo collection time was preceded by a hormonal protocol of cervical dilation based on estradiol benzoate i.v. (20 µg/mL; RIC-BE; Agener União, São Paulo, Brazil) and cloprostenol i.m. (0.12 mg; Estron; Agener União, São Paulo, Brazil) both administered 12 h prior to the moment of embryo collection, oxytocin i.v. (100 IU; Ocitocina Forte UCB, Centrovét, Goiânia, Brazil) administered 15 min prior to embryo collection and epidural anesthetic with ketamine (2.0 mg.kg⁻¹; Cetamin; Syntec, São Paulo, Brazil). A maximum of three attempts were performed to insert the Hegar dilator through the cervix. The test outcome was considered positive when Hegar dilator was successfully inserted through the cervix in any attempt, otherwise it was considered negative. Results of the first test were related to results obtained in the second test and classified as follows: true positive (TP, animals with positive results in both tests), true negative (TN, animals with negative results in both tests), false positive (FP, animals with positive result in the first but negative in the second test) or false negative (FN, animals with negative result in the first but positive in the second test). The cervix transposition test was evaluated calculating sensitivity (SENS), specificity (SPEC), positive (PPV) and negative predictive value (NPV), accuracy (Acc), and Kappa index (κ). The SENS, SPEC, PPV, NPV, and Acc were 85.7, 66.6, 85.7, 66.6, and 80.0%, respectively. Agreement between both test was considered moderate ($\kappa = 0.52$). The high SENS and Acc verified in the study demonstrated that cervical transposition test at the estrus using a Hegar dilator has the potential to be included in MOET programs as a screening strategy to direct ewes for a surgical or non-surgical embryo collection.

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