CONCEPTION RATE AND LITTER SIZE IN BITCHES AFTER TRANSCERVICAL INSEMINATION WITH FRESH AND FROZEN SEMEN

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ABSTRACT

Study was conducted to compare conception rate and litter size in bitches inseminated following Transcervical route with fresh and frozen semen. Twenty bitches of different breeds were equally divided into two groups viz., Group I and II each. Semen collected from respective male dogs of different breeds was evaluated and cryopreserved with Tris egg yolk extender. All the bitches in both the groups were subjected to vaginal exfoliative cytology and vaginoscopy from day 5 of proestrus to determine the time of insemination. Artificial insemination was performed in bitches using the endoscopic transcervical technique in Group I and II with fresh and frozen semen, respectively. The conception rate was 50.00 and 30.00 per cent in group I and II, respectively. The litter size obtained in group I and II was 6.25 ± 0.10 and 3.00 ± 1.00 respectively with a range of 6 to 8 and 2 to 5. Hence, it is concluded from the study that the conception rate and litter size in bitches was higher for fresh semen compared to frozen semen following transcervical insemination technique.

Key words: Endoscopic Transcervical insemination, Bitches, Conception rate

INTRODUCTION

Artificial insemination in bitches has become an increasingly accepted and successful method of producing offspring under circumstances where natural mating is not possible due to anatomical, psychological or physical problems, or geographical constraints. Intra uterine semen deposition was an essential part of the successful use of frozen canine semen (Andersen, 1975). Endoscopic transcervical insemination was developed as an alternative technique to the Norwegian catheter (Wilson, 2001).This technique provided intra uterine deposition of semen and involved minimal stress to the bitch and possible repeat inseminations. The ability to do repeat inseminations has been reported to increase conception rates or litter size (Farstad and Anderson-Berg, 1989). Hence, the present study was conducted to compare the conception rate and litter size in bitches inseminated following Transcervical route with fresh and frozen semen.

MATERIALS AND METHODS

Twenty healthy cycling bitches of different breeds between 2 to 6 years of age brought to the Small Animal Gynaecology and Obstetrics unit of Madras Veterinary College Teaching Hospital for breeding advice were utilized for this study. Particulars such as date of spotting, number of previous estrous cycles, number of previous crossings and whelping were recorded. Two stud dogs maintained at the Department of Animal Reproduction, Gynaecology and Obstetrics, Madras Veterinary College, Chennai were used as semen donors.

Vaginal smears were obtained from all the twenty bitches at alternate days starting from day 5 of proestrual bleeding until day 1 of diestrus by cotton swab technique. The stages of estrous cycle were identified as per the Feldman and Nelson (1996). Artificial inseminations were started when smears showed more than 80 per cent of superficial plus cornified cells and were continued to be performed on alternate days until day 1 of diestrus. All the bitches were also subjected to vaginoscopy at 2 days interval starting from day 5 of proestrus till day 1 of diestrus. Vaginoscopy was performed using rigid vaginoscope (Karl-Storz, GmbH, Tiuttlingen, Germany). The changes in the mucosal fold contours, colour of mucosa and fluid present, were assessed and different stages of estrous cycle were

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identified as per Lindsay (1983) and inseminations were performed on alternate days throughout the period of mucosal shrinkage with angulation. Semen was collected from the male dogs by digital manipulation technique without the presence of estrus female bitches and evaluated and diluted with Tris-egg yolk diluent. Semen straws were frozen by conventional freezing and stored in liquid nitrogen containers until use. Transcervical insemination technique was attempted in bitches at appropriate stage of oestrus. A minimum of 150 to 200 x 10^6 spermatozoa were used for insemination of fresh or frozen semen. On day 30 following last insemination, pregnancy was confirmed by using ultrasonography to determine conception rate.The whelping rate and litter size were estimated following whelping.

RESULTS AND DISCUSSION

The conception rate of 50.00 per cent was obtained in this study following endoscopic transcervical insemination technique using fresh semen. A higher conception rate of 65.7 (Linde Forsberg and Forsberg, 1989), and 100 per cent (Silva *et al*., 1996) was reported in different studies. Unsuccessful catheterization of cervix prevented intrauterine deposition of semen on few occasions in some bitches might have contributed to the lower conception rate when compared to earlier studies. Similar findings have been reported by Thomassen *et al.* (2006). A 30 per cent conception rate was achieved in the present study following intrauterine deposition of frozen semen by endoscopic transcervical insemination technique. The conception rate obtained was higher than the report of Battista *et al.* (1988) in a similar study. However, still better conception rate was reported by Thomassen et al.(2006) (75 per cent).

Silva *et al.* (1996) compared the effect of insemination route (intravaginal vs intra-uterine) upon the fertility of frozen thawed dog sperm and found no significant difference. However, a study by Linde-Forsberg *et al.* (1999) showed significantly higher pregnancy rate and litter size for intrauterine insemination using the Norwegian catheter. However, Linde-Forsberg *et al.* (1999) achieved the same pregnancy rate for intravaginal and intrauterine (via endoscopy) inseminations (58.9 per cent and 57.9 per cent, respectively) similar to the findings of Silva *et al.* (1996) who also obtained 60 per cent conception rates for intravaginal insemination and intrauterine insemination via laparotomy (60 per cent for each technique). Intrauterine inseminations with fresh and frozen semen yielded 6.25 ± 0.10 and 3.00 ± 1.00 respectively with a range of 6 to 8 and 2 to 5 litter size in this study. The result obtained in this study was similar to the earlier reports of Linde-Forsberg (2001), who obtained a litter size of 6.5 in a similar study. Higher litter sizes of 5.4 (Linde-Forsberg *et al*., 1999); 5.0 (Linde-Forsberg, 2001) and 5.7 (Thomassen *et al*., 2006) were reported when compared to the 3.0 litter size obtained following intrauterine insemination by transcervical method using frozen semen.

Hence, it is concluded from this study that the conception rate and litter size in bitches was higher for fresh semen compared to frozen semen following transcervical insemination technique.

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