Abstract

The goal of reproduction management is to have cows become pregnant at a biologically optimal time and at an economically profitable interval after calving. The timing of examination of animals after parturition besides permitting precise assessment of normal process of involution should also provide satisfactory time for treatment and response prior to the start of the breeding period. The purpose of treating postpartum cows with PGF2α analogue not only aims at reducing the postpartum interval, but it also counters the damage done by postpartum bacterial infection and this is done via means of augmenting cyclicity, whilst enhancing uterine defence and repair.

The present study was carried out on 70 dairy (Jersey, Jersey cross and Holstein Friesian breed) cows of Livestock farm, CSKHPKV, Palampur. The animals were divided into two major groups: Normal puerperium (n=60) and abnormal puerperium (n=10) group. The former group was further divided into three subgroups of 20 animals each. The first two subgroups were administered a single exogenous dose of 500 mcg PGF2α analogue (Cloprostenol; Zydus Animal Health Ltd.) either on day 8 (Group I; PG8) or 25 (Group II; PG25) postpartum. The third subgroup served as untreated control. Likewise, the cows of abnormal puerperium group were also divided into two subgroups (n=5 animals each) which were also treated with PGF2α analogue on either days (8 or 25) postpartum. Our methodologies were mainly concentrated around subjective analysis through trans-rectal examinations.

Detailed clinic-gynaecological examinations were performed at 4 day intervals from 4 to 60 days postpartum. Additionally, nature and odour of lochia was monitored at frequent intervals (7, 14, 21 and 28 days postpartum) to rule out the possibility of
infection. A routine ovarian examination was done in order to establish resumption of cyclicity. This detail was fortified with presence of other signs of estrus. Lastly, the fertility parameters were analyzed from the data collected from records maintained in the Livestock farm.

Minimum duration of cervical and uterine involution was observed in animals of Group I when compared to the animals of other groups. This indicated towards the efficacy of exogenous administration of PGF$_2\alpha$ in early phase of postpartum. A considerable effect of parity on involution was established where the duration in primiparous cows was significantly shortest in comparison to bi- and pluriparous cows. However, when the influence of different seasons on the involution pattern was monitored, no significant interpretation could be made.

No notable outcome of exogenous PGF$_2\alpha$ administration on regression of pregnancy corpus luteum was observed. Apparently, it also did not seem to control evacuation of lochia as the days taken for disappearance of lochia were similar in all the animals.

There was a salient finding where a highly significant correlation between the side of first ovarian activity to that of previously gravid horn was recorded. In majority (67.8%) of the cows the corpus luteum formed during first estrous cycle, was detected in the contralateral ovary. No such typical pattern was observed in subsequent cycles. Additionally, the corpus luteum of first estrous cycle was observed to be more on ipsilateral ovary (although less than that of contralateral side) in PGF$_2\alpha$ treated than untreated control groups cows.

Earliest resumption of cyclic activity was seen in animals of Group II, ascertaining the role of PGF$_2\alpha$ in augmenting postpartum cyclicity when administered in later phase of postpartum. A significant influence of parity on postpartum cyclicity was inferred in terms of earliest resumption seen in pluriparous cows.

A marked improvement in various fertility parameters (Conception rate to first insemination, number of inseminations per conception, overall conception rates and exhibition of behavioural estrus) was recorded in Group II cows.
There was a negative impact of postpartum uterine infection on cervical and uterine involution. The fertility parameters were also adversely affected. However the resumption of ovarian cyclicity seemed to be unaffected by the puerperal infection.

Since, an improved response was demonstrated after exogenous administration of PGF$_2$α in different phases of postpartum, its role may thus, be implicated in altering the rate of involution, earlier resumption of ovarian activity and improving various fertility parameters.

**Conclusions**

- Administration of PGF$_2$α during early postpartum period (day 8) hastened the rate and decreased the duration of gross uterine and cervical involution.
- Gross cervical and uterine involution was completed early in primiparous cows.
- The majority of the first corpus lutea postpartum developed in the ovary contralateral to previously gravid horn (Ovary with regressing CL verum).
- The overall conception rate, number of inseminations per conception and conception rate to first service was recorded to be higher in cows that were administered PGF$_2$α in later postpartum phase (day 25).
- A negative effect of postpartum infections on involution and fertility parameters was observed.