



Progesterone administration in aborting bovines: An etiology of fetal maceration

PRAVESH KUMAR¹✉, VIVEK SHARMA¹, AKSHAY SHARMA¹, MADHUMEET SINGH¹ and ANANYA¹

Dr. G.C. Negi College of Veterinary and Animal Sciences, CSKHPKV, Palampur, Himachal Pradesh 176 062 India

Accepted: 18 March 2020; Received: 30 January 2021

Keywords: Bovines, Fetal maceration, Laparo-hysterotomy, Progesterone

Progesterone, a key hormone secreted from corpus luteum, is essential for establishment and maintenance of pregnancy, embryo growth and plays an important role in endometrial secretions (Loneragan *et al.* 2016). Although, supplementation of this hormone in threatened abortions animals may prevent it, however, this may also subject such animals to reproductive ailments like fetal maceration (Saurabh *et al.* 2018) and pyometra (Kumar and Saxena 2018). Fetal maceration may occur at any stage of gestation and has been observed most often in cows and buffaloes (Roberts 1971, Azizunnesa *et al.* 2010, Purohit and Gaur 2011). Fetal maceration is common sequel of fetal mummification and generally occurs in the event of death of fetus after formation of the fetal bones, regression of corpus luteum and failure of abortion (Noakes *et al.* 2001, Sood *et al.* 2009). Putrefaction and autolysis of soft tissue of the fetus present in uterus results in foul, fetid and reddish grey vulvar discharge (Noakes *et al.* 2001). In nutshell, fetal maceration is generally characterized by history of intermittent straining; elevated temperature and pulse along with anorexia and drop in milk production which is usually seen for several days (Roberts 1971).

The present study was carried out in Teaching Veterinary Clinical Complex of the institute over a period of one year. All animals were brought to the campus with history of progesterone administration at different period of time after showing signs of ensued abortion. In the first case, cow was having history of fetid discharge from last 1½ month. Progesterone was administered two months back by local veterinarian to prevent ensued abortion. Presence of crepitating bones along with uterus of shot-put ball size (Fig.3.) was felt on per-rectal examination, whereas cervix was found partially opened (one finger) on per-vaginal examination. However, in second case of cow oozing out of discharge from vulva was reported by the owner for last twenty days with the history of progesterone administration one month back. On per-rectal examination, crepitating bones along with debris was felt in uterine cavity and cervix

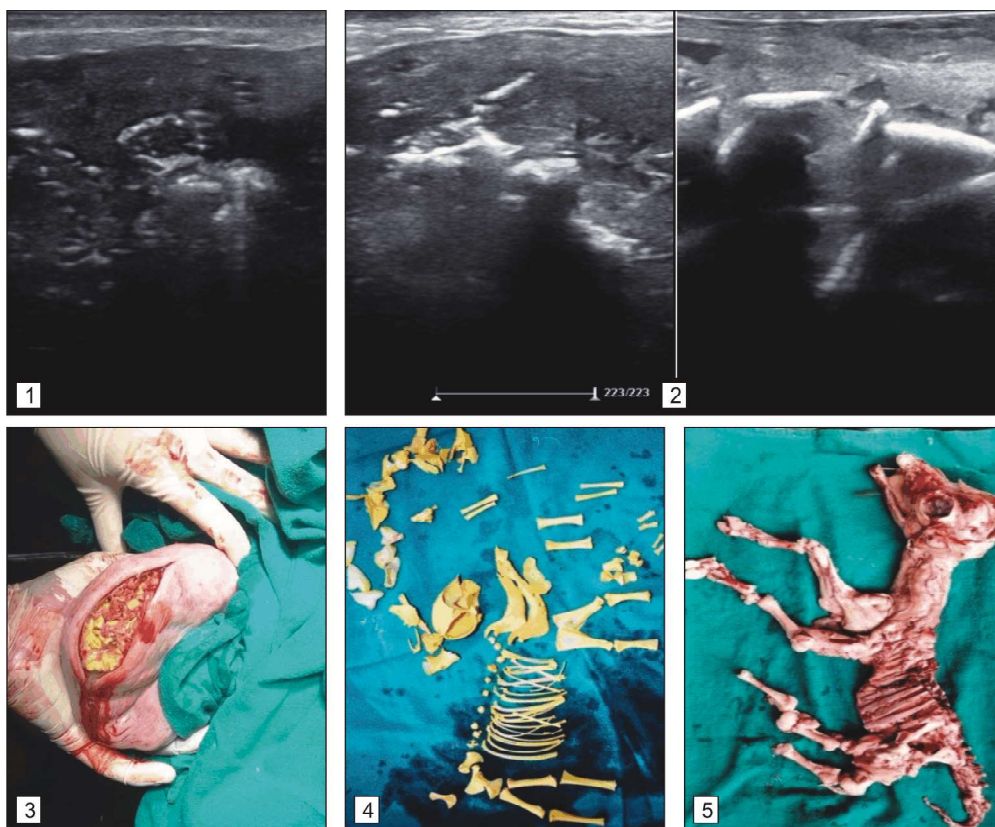
was found partially dilated on per-vaginal examination. Trans-rectal ultrasound scanning also divulged the presence of bones with hyper-echoic density (bones) in the uterus (Fig. 1.). In both cases, rectal temperature, heart, respiration and pulse rates were in normal range.

Since cervix was indurated in both these cases, right flank laparo-hysterotomy was resorted to remove the macerated contents (Figs 3 and 4). Post-operative treatment included Inj Intacef Tazo (Ceftriaxone and Tazobactam, Intas Pharmaceuticals) @ 4.5 g i/m and Inj. Melonex (Meloxicam 5 mg/ml; Intas Pharmaceuticals) @ 0.2 mg/kg b.wt. i/m for 7 days. Feeding, defecation and urination remained normal during treatment period. Only first cow was able to conceive again as observed in further follow-up.

The third case was of a buffalo, which was presented with a history of fetid vaginal discharge since last 15 days and administration of progesterone one month back with the intention to prevent ensued abortion. On recording of general body parameters, buffalo was having fever (104°F). Per-rectal examination revealed presence of fetal bones in uterine cavity, however, cervix was found partially dilated (3–4 fingers) on per-vaginal examination. Trans-rectal ultrasound scanning divulged the presence of pus like material (snowy appearance) along with bones having hyper-echoic density (Fig. 2). As cervix was partially dilated, the macerated fetus was removed by gentle manual traction (Fig.5). Post-operative treatment included Inj Intacef Tazo @ 4.5 g i/m and Inj. Megludyne @ 1.1 mg/kg b.wt. i/m (Flunixin meglumine, 50 mg/ml; Virbac) for 7 days. Feeding, defecation and urination remained normal during treatment period but animal was not able to conceive again.

Administration of progesterone inhibits the intake of intracellular calcium ion necessary for myometrial contractions (Klauke and Hoffmann 1991) and results in incomplete abortion due to partial dilatation of cervix and uterus. Therefore, progesterone should not be administered once process of abortion has been initiated. As a consequence, putrefaction and autolysis of the fetus and its membranes occur with passage of time because of bacterial invasion (Roberts 1971, Noakes *et al.* 2001). In bovine abortion from fourth to seventh month with fetal

Present Address: ¹Department of Veterinary Gynaecology and Obstetrics, DGCN COVAS, CSKHPKV, Palampur, Himachal Pradesh, India. ✉Corresponding author e-mail: pk9919@rediffmail.com



Figs 1–5. 1. Hyper-echoic density of bones inside uterus of a cow. 2. Uterus of buffalo filled with pus showing hyper-echoic density (left image) whereas bones inside uterus (right image). 3. Macerated contents inside uterus of a cow. 4. Bones removed from macerated foetus of a cow. 5. Macerated fetus of buffalo.

emphysema, the fetus may be removed by careful and gradual gentle traction if cervix is sufficiently dilated (Roberts 1971). In prolonged cases cervical dilatation cannot be performed by hormone therapy (Prostaglandins and Estrogen) because of indurated cervix (Roberts 1971). However, macerated fetus can be removed by laparohysterotomy by upper right flank approach if the size of the fetal bones is smaller (Kumar *et al.* 2017) or through left upper flank approach for better approach of uterus (Dalal *et al.* 2018, Dutt *et al.* 2018). Prolonged duration of fetal maceration often leads to severe degenerative and sclerotic changes in endometrium and reduces the future fertility of the animal (Roberts 1971, Noakes *et al.* 2001).

SUMMARY

The aim of the present study was to assess the effect of progesterone administration in aborting animals as the veterinarians/para-veterinarians very often use progesterone to prevent ensued abortion in cows and buffaloes. It is suggested that the use of progesterone should be avoided in aborting animals once its process has set in.

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