

# Retained Placenta in Cattle: The Effect of Treatment or Nontreatment on Puerperal Diseases and Subsequent Fertility

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**Heinonen, M. and K. Heinonen: Retained placenta in cattle: The effect of treatment or nontreatment on puerperal diseases and subsequent fertility. Acta vet. scand. 1989, 30, 425-429.** – In order to examine the effect of treated and untreated retained placenta (RP) on fertility and on the occurrence of puerperal and fertility diseases, the records of 248 cows with RP were examined: 199 cows were treated with intrauterine tetracyclin or systemic therapeutics, and 49 were left untreated. One hundred and ninety-six herd mates without RP served as controls. The fertility of the cows with RP was lower than that of the controls. The effect of treatment on fertility was neither beneficial nor harmful. The untreated cows with RP seemed to be treated more often for endometritis and repeat breeding than either the treated animals or the controls. Mastitis within 1 week after calving was more common in both groups of RP cows than in the controls. Most cases of mastitis in the treated RP group could be diagnosed at the time of RP treatment.

cow; parturition; diseases.

## Introduction

It has been suggested that retained placenta (RP) may impair the future fertility of cows (*Dyrendahl et al. 1977*), but some investigators refuse this finding (*Muller & Owens 1974*). Several methods have been suggested for the treatment of RP, and controversial results have been published. No treatment has proved superior to others in improving fertility of cows with RP. However, other benefits of intrauterine treatment of RP have been reported. Intrauterine antibacterials decrease putrefaction and the disagreeable odor associated with RP (*Arthur 1979, deBois 1982*), which is probably why herdsmen often ask for veterinary treatment of the disorder. Reduced fertility has been reported after such treatment as manual removal of the placenta with or without supportive chemotherapy (*Arthur 1979, deBois*

1982). If RP is to be treated, the method used should be proven to have no detrimental effect on the fertility and future health of the animal.

The present study aimed 1) to examine the effect of treated and untreated RP on fertility, and 2) to study the incidence of veterinary treatment for puerperal diseases and fertility disturbances among cows with and without RP.

## Materials and methods

The study was conducted within the practice area of the Hautjärvi Ambulatory Clinic, College of Veterinary Medicine, Finland, between August 1984 and May 1987. Over the study period the records of 248 dairy Ayrshire and Friesian cows with RP were examined. The placenta was considered retained if it had not been expelled within 24 h

after calving. One hundred and ninety-nine cows which calved between August 1984 and July 1986 were treated as follows (treated group: RP-T): 1-6 days after calving an attempt was made to carefully remove the retained placenta manually, after which intrauterine tetracyclin boluses (3 g) were administered. If the placenta was not easily removed, the parts extending out of vagina were cut off and the rest of the membranes was left in the uterus. In case of fever no removal was attempted and the cow was treated with systemic - and occasionally also intrauterine - therapeutics. The udder of the cow was checked for clinical mastitis and treated if necessary. Forty-nine RP cows that calved between September 1986 and May 1987 were left untreated (untreated group, RP-NT). A control group (NON-RP) of 196 cows without RP was collected by asking the farmers to indicate a cow that had calved at the same time as the affected animal.

Data for each cow, including parity, calving date, body temperature, treatments administered and day of treatment for RP as well as the incidence of puerperal diseases (paresis puerperalis, acute puerperal metritis and clinical mastitis before 1 week post partum) were collected from the patient records at the Ambulatory Clinic.

Acute puerperal metritis was defined as body temperature above 39.5°C and abnormal vaginal discharge. Fertility disturbances (endometritis, ovarian cysts, anestrus, subestrus and repeat breeding) during the following lactation period were also obtained from the patient records. Endometritis was defined as abnormal vaginal discharges after 3 weeks post partum (p.p.).

The interval from calving to the first insemination and pregnancy, and the fertility rate at the first insemination were calculated for those animals which were pregnant by 150 days p.p. If they were not pregnant by that time, they were considered barren. Pregnancies were confirmed 2 months after the last insemination by means of rectal palpation. The unpaired t-test and chi-square test were used in the statistical analyses of the data.

## Results

The parity of the cows in the RP-T, RP-NT and NON-RP groups was 3.4±0.1 (range 1-13), 4.2±0.3 (1-9) and 3.2±0.1 (1-11), respectively. Figures in this text are presented as the mean±standard error of the mean (S.E.M.).

The RP-T cows were treated 2.3±0.1 (range 1-6) days after calving. At the time of treatment the body temperature of 12 (6.0%) cows in the treatment group was above

Table 1. Fertility parameters of cows (mean±S.E.M.): RP-T = retained placenta with treatment (n = 199), RP-NT = retained placenta with no treatment (n = 49), NON-RP = no retained placenta (n = 196).

	First service, days p.p.	Service period, days	Days open	Pregnant at first service, percent	Barren, percent
RP-T	85.1±2.2 <sup>a</sup>	16.9±2.4 <sup>a</sup>	96.1±2.4 <sup>a</sup>	48.0% <sup>a</sup>	24.7% <sup>a</sup>
RP-NT	75.3±2.8 <sup>b</sup>	15.5±3.9 <sup>ab</sup>	93.0±4.9 <sup>ab</sup>	47.1% <sup>ab</sup>	20.0% <sup>ab</sup>
NON-RP	79.9±1.5 <sup>ab</sup>	11.0±1.5 <sup>b</sup>	89.9±1.9 <sup>b</sup>	62.2% <sup>b</sup>	10.4% <sup>b</sup>

a, b: Groups with different superscripts within the same column differ significantly in terms of the variable listed ( $p < 0.05$ ).

n: Number of cows.

Table 2. Percentage of cows given veterinary treatment for paresis puerperalis, mastitis and puerperal metritis within 1 week post partum, and for fertility disturbances during the lactation period. For abbreviations see Table 1.

	n	Paresis puerp.	Mastitis	Puerperal metritis	Fert. disturb.
RP-T	199	8.0% <sup>a</sup>	16.6% <sup>a</sup>	2.0% <sup>a</sup>	18.6% <sup>a</sup>
RP-NT	49	26.5% <sup>b</sup>	12.2% <sup>a</sup>	2.0% <sup>a</sup>	32.6% <sup>b</sup>
NON-RP	196	6.1% <sup>a</sup>	4.1% <sup>b</sup>	0% <sup>a</sup>	13.3% <sup>a</sup>

a,b: Groups with different superscripts within the same column differ significantly in terms of the variable listed ( $p < 0.05$ ).

n: Number of cows.

39.5°C. Twenty-nine cows (15%) were treated for mastitis. Systemic therapeutics (penicillin, tetracyclin or trimethoprim-sulfa) were administered to 34 (17%) cows with elevated temperature and/or mastitis.

The fertility parameters of each group (days to the first service, length of service period, days open, pregnancy at the first insemination, number of barren cows) are summarized in Table 1.

Within the RP-T group neither the day of treatment nor the type of treatment had any effect on fertility. When intrauterine treatment alone ( $n = 132$ ) or systemic treatment ( $n = 24$ ) was given the mean intervals from calving to the first insemination were 85.9±2.5 days and 80.3±5.1 days, the mean intervals from calving to pregnancy 96.0±2.5 and 96.5±6.6 days, and the pregnancy rates at the first insemination 42.5% and 56.6%, respectively. None of the differences were statistically significant ( $p > 0.05$ ).

The number of veterinary first treatments for paresis puerperalis, mastitis and acute puerperal metritis within 1 week p.p. and for fertility disturbances during the lactation period are presented in Table 2.

Table 3 shows the percentages of cows which received veterinary treatments for endometritis, ovarian cysts or delayed ovulation, sub- or anestrus and repeat breeding during the lactation period.

In both RP groups the fertility was similar regardless of the existence of endometritis. Cows with ( $n = 15$ ) and without ( $n = 179$ ) endometritis had a mean interval from calving to the first insemination of 84.2±4.9 and 83.1±2.0 days, from calving to pregnancy of 107.8±7.5 and 94.2±2.2 days, and fertility rates at the first service of 46.7% and 44.9%, respectively. None of the differences was statistically significant ( $p > 0.05$ ).

The total culling rate of cows in groups RP-T, RP-NT and NON-RP were 28.6%,

Table 3. Percentage of cows given veterinary treatments for endometritis, ovarian cysts or delayed ovulation (Cyst), an- or subestrus and repeat breeding during the lactation period. For abbreviations see Table 1.

	n	Endo-metritis	Cyst	An/sub-estrus	Repeat breeding
RP-T	199	5.5% <sup>a</sup>	10.0% <sup>a</sup>	7.0% <sup>a</sup>	2.5% <sup>ab</sup>
RP-NT	49	14.3% <sup>b</sup>	4.1% <sup>a</sup>	8.2% <sup>a</sup>	8.2% <sup>a</sup>
NON-RP	196	1.5% <sup>a</sup>	6.1% <sup>a</sup>	5.1% <sup>a</sup>	1.5% <sup>b</sup>

a,b: Groups with different superscripts within the same column differ significantly in terms of the variable listed ( $p < 0.05$ ).

n: Number of cows.

32.6% and 3.6%, respectively. The culling rate of NON-RP cows was significantly ( $p < 0.001$ ) lower than that of both other groups.

### Discussion

The fertility of treated and untreated RP cows was compared with that of the controls. In an earlier study (Heinonen *et al.* 1988) within the same practice area, the fertility parameters (mean interval from calving to pregnancy  $88.9 \pm 2.7$  days and pregnancy rate at the first service 60.0%) were similar to those of the control group in this study, showing the control group to be representative of the area. The pregnancy rate at the first insemination was lower and the interval from calving to pregnancy longer in both RP groups than in the control group. Neither beneficial nor harmful effects on fertility were observed with the treatments used here. A positive correlation has been shown between RP and paresis puerperalis: The incidence of RP is at least twice as high in cows with paresis puerperalis than in those without (Pelissier 1976). In our study there was no difference between treated cows with RP and those without RP. The risk of paresis puerperalis increases with age, which may account for the high incidence of the disease in the RP-NT group, whose parity was almost 1 year higher than in the other groups. In the RP-T group 16.6% (32 cows) were treated for mastitis within 1 week after parturition. Most of these (29 cows) were diagnosed and treated when treating RP. Correspondingly, in the RP-NT group 12.2% of the cows were treated for mastitis. Most likely a great proportion of these cases would have been diagnosed if the cow had been examined for mastitis as in the RP-T group. Early diagnosis enables treatment during the colostrum period, which diminishes milk wastage due to antibiotic residues. Clinical ma-

stitis within 1 week after parturition was treated 3-4 times more frequently in RP cows than in the controls. The incidence of mastitis with RP (15% in our study) was higher than in an earlier study, which reported acute mastitis simultaneously with RP in 7% of cows (Dyrendahl *et al.* 1977).

In one study (Sandals *et al.* 1979), RP alone did not impair reproductive performance, but metritis complex, in the presence or absence of RP, caused significant deterioration in fertility parameters. We did not observe a similar effect. It is probable that not all cases of endometritis were found since not all animals were checked. All treatments were given as a result of the herdsmen requesting veterinary investigation. Examining the treatments for fertility disturbances during the lactation period shows that RP-NT cows were treated more often than the other animals for endometritis and repeat breeding. The farmers were advised to watch these cows very carefully after 3-4 weeks post partum, and in case of abnormal vaginal discharge to call for veterinary assistance. This may have affected the incidence of treatment for endometritis, but most of these animals were treated much later than advised. Although the RP-NT group seemed to have endometritis more often, the finding of a decreased rate of treatment for this in the RP-T group may be a statistical finding with no proof of a cause-effect relationship.

The culling rates of 28.6% and 32.6% in RP-T and RP-NT groups are comparable with previous findings of 26% in Finland (Anon. 1986). The low culling rate of the NON-RP group may result from the study being partly retrospective. When asked to specify cows that had calved close to those with RP the farmers could not recall what cows had been removed from the herd but were able to identify those which were still alive and producing.

Cows with RP had reduced fertility and this was not altered in any way with the treatments used here. No detrimental effects on future health were noted in treated animals, but two arguments were found in favor of treating an RP cow: 1) A diagnosis of mastitis simultaneously with RP enable treatment to be started early, and 2) the treated RP cows seemed to need less treatment for endometritis and repeat breeding than their untreated counterparts.

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#### Sammandrag

*Kvarbliven efterbord hos kor: Effekten av behandling eller utebliven behandling på puerperala sjukdomar och senare fertilitet.*

Effekten av behandling eller utebliven behandling av kvarbliven efterbord (RP) studerades hos 248 kor med RP: 199 kor behandlades antingen intrauterint eller systematiskt, medan 49 forblev obehandlade. Normala kor (n=196), som kalvade samtidigt som RP-kor från samma besättningar fungerade som kontroll. Fertiliteten hos kor med RP var samre an hos korna utan RP, men behandlingen hade ingen effekt på senare fertilitet hos kor med RP. De obehandlade RP-korna behandlades oftare for endometrit och symptomlosa omloppningar an de behandlade eller kontroll korna.

Inom en vecka efter kalvningen behandlades korna med RP oftare for mastit an kontroll korna. I de flesta fallen kunde man diagnostisera mastiterna hos behandlade RP-kor vid behandlingstidpunkten for kvarbliven efterbord.

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