

The Clinical and Morphological Characteristics of the Uterus of the Goat during the Period of Involution

A. H. TIELGY, M. FATHALLA, M. A. OMAR AND S. AL-DAHASH

Department of Surgery and Obstetrics, College of Veterinary Medicine, University of Baghdad, Al-America, Baghdad, Iraq (Tielgy, Fathalla and Al-Dahash) and Department of Animal Reproduction, National Research Centre, Dokki, Cairo, Egypt (Omar)

SUMMARY

Two goats were slaughtered at zero, 24, 62 hours and five, seven, nine, 12, 15, 18, 21, 25, 28, 32 and 36 days after kidding in order to study the involutory changes of the uterus.

Uterine and vaginal discharges were varied in volume and nature and ceased before the end of day 5 postpartum. Uterine contents were found in greater volumes on days 7 to 9, in lesser volumes thereafter until no longer present on days 12 to 15 postpartum.

Dimensions and weights of the genital tracts were returned to their initial nonpregnant state within a period of 28 days after kidding.

RÉSUMÉ

Les caractéristiques cliniques et morphologiques de l'utérus de la chèvre, au cours de la période d'involution

Cette expérience visait à étudier l'involution utérine, chez la chèvre. À cette fin, les auteurs en sacrifièrent deux à la fois, aux intervalles suivants: immédiatement après la parturition et 24 et 62 heures, ainsi que cinq, sept, neuf, 12, 15, 18, 21, 25, 28, 32 et 36 jours plus tard.

Le volume et le nature des écoulements utérins et vaginaux varièrent, mais ils cessèrent avant la fin du cinquième jour après la parturition. Le contenu utérin atteignit son point culminant, aux jours #7 et #9 après la parturition; il diminua ensuite progressivement, pour disparaître complètement entre le 12^e et le 15^e jour après la parturition.

Les dimensions et le poids du tractus génital reprirent progressivement leurs caractères de non-gravidité, dans les 28 jours qui suivirent la parturition.

INTRODUCTION

The expulsion of the placenta during

the beginning of the puerperal period is known to precede certain processes in genital organs, especially involution of the uterus and its return to a condition suitable for implantation and maintenance of the new zygote (11).

Since there is so little information about the goat in the available literature in regard to this subject, we decided that this study should be done.

MATERIALS AND METHODS

Twenty eight pregnant goats, three to four and one half years old and weighing 24 to 32 kg were brought to the facility of the Department of Surgery and Obstetrics, for at least a period of two months before parturition. They were examined and found to be free of infectious diseases. Pregnancy was confirmed by use of an ultrasonic doppler fetometer and by radiography.

Information was recorded on the time of parturition, the number of kids born (their sex, weight and condition), as well as the time of placental expulsion and the presence of vaginal secretions.

Goats were slaughtered in pairs at each of the following times (after weighing): at zero, 24, 62 hours and five, seven, nine, 12, 21, 28, 32 and 36 days after parturition.

The female genital organs and attached ligaments were eviscerated and observed to determine the gravid side and were weighed after removing the adipose tissue.

The length of the uterine horns was measured and the diameter of the uterus at the bifurcation was recorded. The diameter of the cervix and uterine body were measured. The genital tract was opened along the longitudinal axis for the vagina to the end of each horn.

The color, nature and volume of secretions, as well as the shape, color,

dimensions and weight of the caruncles were recorded.

Statistical analysis of the data was computed using the correlation regression (12).

RESULTS

The placentae were passed in all goats within a period ranging from 30 minutes to five hours after parturition.

Some dams did not have uterine secretions from the vulva during the puerperal period. Others had as much as 200 mL of bloody discharges containing cotyledonary remnants of varying amounts and nature. The uterine secretions decreased considerably by 60 hours and ceased at five days postpartum. On the first day after kidding, discharges from the vulva were small in volume and contained placental debris. The clots of blood ceased gradually in two goats.

Three dams had yellowish to brownish uterine discharges from the vulva on the fourth and fifth day postpartum, which were maintained till the twelfth day and ceased on the fifteenth day in two animals. The third goat had a red clotted secretion with a foul smelling odor that stopped at the eighteenth day postpartum.

In one goat that was slaughtered 60 hours after kidding, there was a small part of the placenta attached to uterine caruncles. The uterus did not involute as in those goats that had passed the placenta at parturition. On days 7 to 9 postpartum, the volume of uterine discharge was 50-60 mL and contained blood, tissue debris and sloughed caruncles within the uterine cavity, cervix and sometimes in the vaginal cavity. The uterine discharge was very viscid in nature in some of the goats (Figure 1). The volume of uterine discharge decreased to 20 mL on day 32

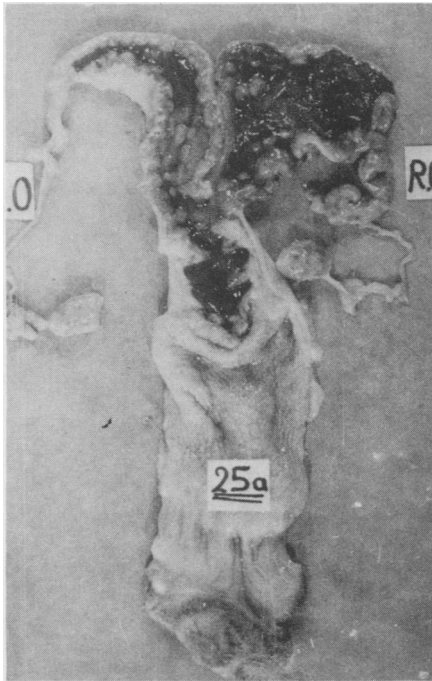


FIGURE 1. Twenty-five days postkidding. There is viscid material inside uterine cavity.

and to 15 mL or less on day 36 postpartum respectively.

The weights of the uteri are shown in Figure 2. There is a sharp decrease during the first two weeks, followed by a gradual decrease in the next two weeks. The weights remained fairly constant after the first month postpartum.

A decrease in the lengths and diameters of the pregnant horns of the uteri were gradual as the correlation regression between the dimensions and postpartum intervals were -1.524 , -0.257 and -0.190 respectively. There was great variation in different dimensions

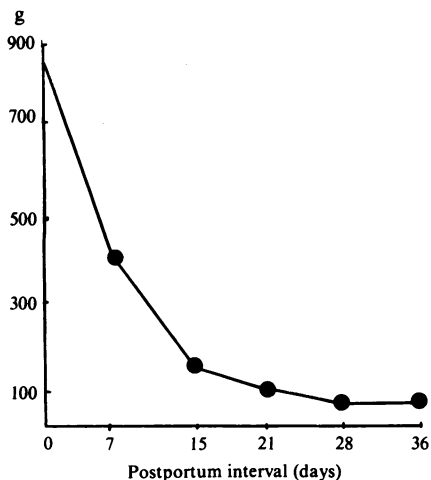


FIGURE 2. The weights of the uteri of goats at intervals postpartum.

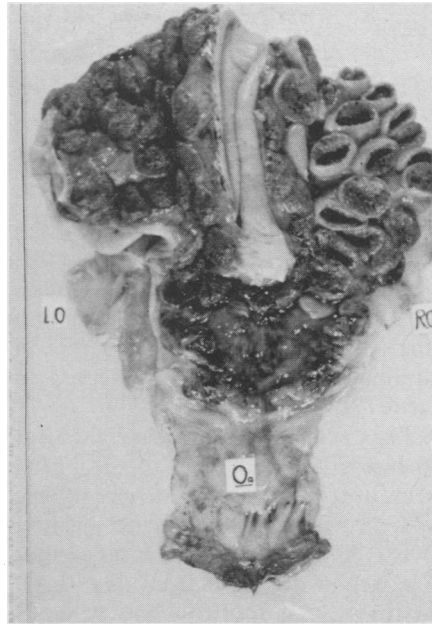


FIGURE 3. The uterus at parturition. The concave surface of the caruncles of nonpregnant horn contrast with the convex shape in the pregnant horn.

of the nongravid horn and the correlation regressions were -0.890 , -0.229 and -0.359 respectively. The gravid horns were similar to the nonpregnant horn by day 28 after kidding.

The length of the intercornual ligament decreased sequentially until day 28 postkidding. It remained constant in length in the last period of observations. The correlation regression was 0.160 . Although there was a similar gradual decline in uterine body length with the correlation regression of -0.170 , the variations were less than that of uterine horns.

The involutionary changes of the uterine caruncles were of two types, one form consisted of a change from a concave shape into convex after separation of fetal membranes to resemble that of cows (Figures 1, 3 and 4). In the other form, they consisted of caruncles that were either concave, convex or flat (Figure 5).

After kidding, the opening of the external os of the cervix was about 4 cm. The internal os was edematous and contained mucoid discharges, while at 60 hours postkidding the opening of the external os was less than 1 cm in diameter.

DISCUSSION

The finding in the goats that the fetal membranes are expelled within five

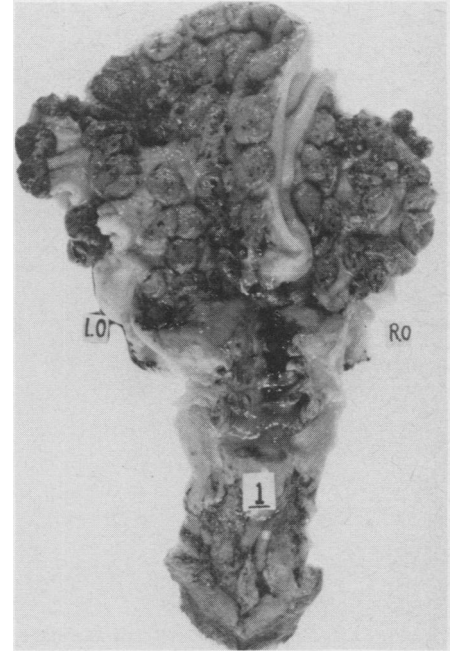


FIGURE 4. Twenty-four hours postkidding. All caruncles have convex surface and petechial hemorrhage.

hours postkidding compares well with other ruminants. Roberts (11), stated that if the placenta in cows and ewes is retained longer than eight to 12 hours the condition is considered pathological.

The discharge of a significant

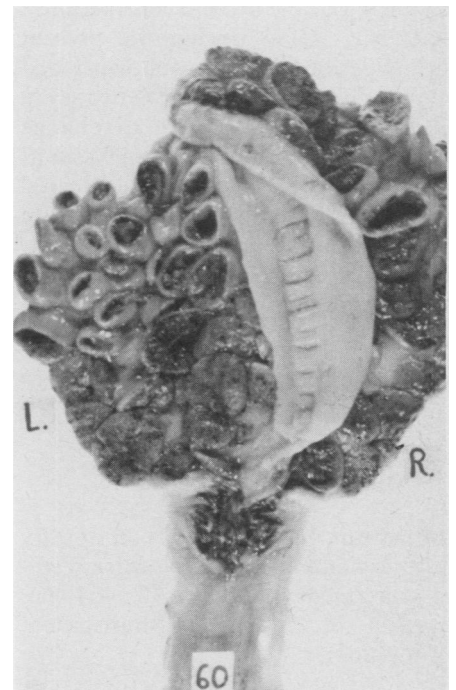


FIGURE 5. Sixty-two hours postkidding. Some of the caruncles are still concave but others have convex surface particularly in the right pregnant horn.

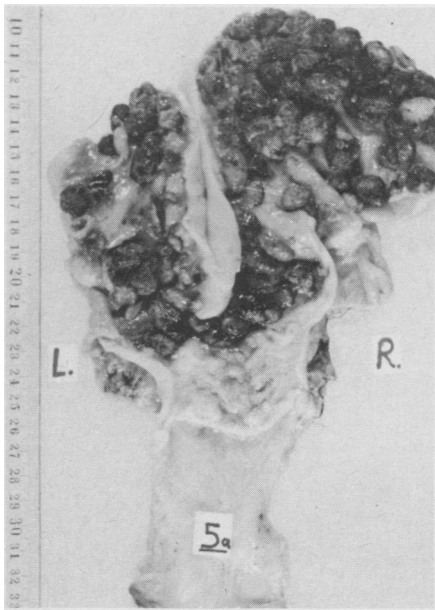


FIGURE 6. Day 5 postkidding. All caruncles have convex surfaces and there is necrosis and sloughing.

volume (200 mL) of mucoid fluid mixed with clotted blood and some fetal membrane debris from the vulva within the first 48 hours has been attributed to uterine contractions (5). In the present study it was found that the discharge decreased to a few millilitres at the beginning of the third day after parturition. This might be due to a slowing of the uterine contractions.

It was found during the present investigation that the yellowish discharge commenced about five to seven days postkidding. The discharge increased in amount between 9 and 12 days when the color changed to red (which apparently originated from sloughed caruncular surface), thereafter they decreased due to their excretions through the cervix or by adsorption of the uterus. Such observations

are similar to the findings in cattle (9). The bloody lochia ceased at 15 days postpartum, after complete sloughing of caruncles in most cases studied.

The brownish foul smelling discharge seen in some goats on the fifth day may be related to the infection during the peripartum period through the dilated cervix (4). The fact that this ceased completely before day 18 postpartum probably was due to the uterine leukocytosis that plays a role in eliminating infection as observed in cattle (3).

The decrease in uterine weight after 60 hours to about 50% of the initial value at parturition was in accordance with data from measurements in cattle (1,10). Similarly the decreases in uterine weight observed from day 3 to 9 postpartum, and from day 9 to 15 postpartum are in agreement with the observations for cattle and ewes (2,7,8,13). In our study it was 7% which is similar to that occurring in ewes (2,8,13).

During the second stage and at the beginning of the third stage of parturition, the cervical opening could allow the admission of two hands, but directly after expulsion of the kids only four fingers could be admitted, one finger at 24 hours and less at 60 hours postkidding due to rhythmic uterine contractions (4,6).

The cervical mucosa had some contusions due to expulsion of feti through the birth canal (4,7). At 18 days postkidding the cervical opening was closed and its dimensions returned to the nonpregnant state on day 28 postpartum.

On the basis of the present findings, it is concluded that the involutionary changes of the genital tract in goats

would appear to be complete within 28 days postkidding.

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ABSTRACT

Jernstrom, M. Some views on sterility treatments in cattle. *Nordisk Veterinaermedicin* (1980) 32: 464-466. (Box 77, S-27 201 Simrishamn, Sweden).

A long-term (ten year) trial of the effects of a longer rest period after calving is reported. Three artificial insemination associations were

involved, two serving as controls. In the test group (14 201 cows), simple massage of the ovaries to prevent haemorrhage or adherence, without enucleation of the corpora lutea, was used; oestrus was not induced earlier than 60 days post partum. Also in the control group, no antibiotics were used and iodoform paraffin was used for intrauterine treatment. In the test group, the number of cows requiring

sterility treatments was 5.4% compared with 14% and 20% control values, and there were 65% of pregnancies in the test group, compared with 64% and 59% in the control groups. The increase in milk yield was greater in the test group than in controls.

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