



DYNAMICS OF MORPHOLOGICAL CHANGES IN THE RIGHT OVIDUCT DURING POSTNATAL ONTOGENESIS IN LOCAL-BREED GOATS

Mallayev Muhridin G'ofur o'g'li

Termiz State University of Engineering and Agrotechnologies

*Assistant at the Department of Zootecology, Veterinary and Sericulture, PhD
in Veterinary Sciences*

Tangirov Kayum Jurayevich

Termiz State University of Engineering and Agrotechnologies

*Acting Professor at the Department of Zootecology, veterinary and
sericulture, Candidate of veterinary sciences*

Abstract: This article investigates the dynamics of changes in the right oviduct during postnatal ontogenesis in local-breed goats raised in the Surkhandarya Region. The length of the right oviduct was 1.2 ± 0.02 cm during the first 3 days after birth and increased to 16.23 ± 0.4 cm by 60 months of age, with an overall growth coefficient of 13.52-fold. The width increased from 0.03 ± 0.001 cm to 0.29 ± 0.005 cm, with a 9.67-fold growth rate. The thickness increased from 0.03 ± 0.00 cm to 0.13 ± 0.004 cm, with a growth coefficient of 4.33-fold.

Keywords. Goat, postnatal ontogenesis, morphometric parameters, growth coefficient, absolute value, oviduct, ampulla.

Introduction. One of the main directions of the agrarian policy of our country is the accelerated development of livestock farming in the Republic on the basis of private ownership and its transformation into one of the profitable sectors. Great attention is being paid to improving the standard of living of the population and ensuring a stable supply of the domestic market with essential food products such as meat and milk. Goat farming is considered a convenient and profitable sector for



private and subsidiary farms. Goat wool and down are used to produce various clothing items and other products. Goat milk and meat are widely used as food products. Goat milk has medicinal and dietary properties; in particular, milk obtained from goats grazing on pastures is considered one of the most effective remedies for tuberculosis. This is because pasture-raised goats rarely contract tuberculosis. Goat milk, as an environmentally friendly product, should constitute an important part of the diet of young children. Only 2.6% of the milk produced worldwide comes from goats. To address the problem of increasing livestock numbers, it is necessary to understand the biology of animal reproduction, including knowledge of the structure and development of the organs of the reproductive system. The morphology of the reproductive system of goats mainly differs according to age in terms of the histomorphological characteristics of the reproductive organs at different stages of the reproductive cycle. Considering the productive characteristics of goats and environmental conditions, the study of the reproductive organs of goats is undoubtedly relevant.

Oviducts (*oviductus*) are paired hollow tubular organs. They begin at the anterior border of the ovary as a freely expanded funnel-shaped structure and gradually narrow, connecting to the terminal part of the uterine horn [1, pp. 36–38].

The initial expanded part of the oviduct is called the ampulla. The terminal part, located near the uterine horn, narrows and forms the isthmus. The epithelium of the oviduct produces oviductal fluids, which are important for the viability and motility of gametes and provide a favorable internal environment for sperm storage and fertilization. The oviduct transports the ovum to the uterus and spermatozoa toward the ovary, and also connects the ovary with the uterus. It consists of three sections - infundibulum, ampulla, and isthmus - with an average length of 10.0–16.0 cm [2, pp. 50–52].

According to the authors, the oviducts are paired organs that perform a conducting function for reproductive gametes and zygotes. Fertilization of the ovum



occurs in the upper third of the oviduct. The oviducts are located in the broad ligament of the uterus and consist of convoluted tubes approximately 2–3 mm in diameter and 10–18 cm in length. They are covered by a serous membrane, beneath which smooth muscle is present and consists of longitudinal and circular layers. The inner layer is composed of a mucous membrane arranged in longitudinal folds and lined with columnar ciliated epithelium containing a small number of goblet cells. The parts of the oviduct are not uniform and become narrower toward the uterine horns; in this direction, the muscular layer becomes thicker. The oviduct terminates at the ovarian end in the fimbria or “oviductal funnel.” In goats, this funnel is freely positioned around the ovary and prevents ovulated Graafian follicles from falling into the abdominal cavity. According to the authors, in Saanen goats, the oviducts have a length of 14.2 cm on the left side and 14.4 cm on the right side. In Arbia goats aged 6–12 months, the right and left oviducts were found to have lengths of 16.555 cm and 17.688 cm, respectively [3, pp. 120–122].

According to the data of researchers, the average lengths of the right and left oviducts in Arbia goats during the period of 12–36 months were 17.0 cm and 17.81 cm, respectively. These lengths were found to be significantly greater than those of the oviducts in Red Sokoto goats, Black Bengal goats, and Anatolian goats. During the same age period, the average weights of the right and left oviducts were 0.45 g and 0.46 g, respectively. The oviducts of Arbia goats were longer than those of other breeds, which was noted to be associated with the breed under study [4, pp. 345–358].

In the studies of the authors, the folds of the oviducts were divided into three groups: low folds without secondary folds, medium folds, and high folds containing secondary folds. During the process of fertilization, the mechanical activity of the ciliated cells of the oviductal mucosa and the peristaltic contractions of its muscular layer play an important role. As a result of this process, remnants of the radiation membrane are formed and removed from the surface of the ovum [5, p. 220].



Researchers have determined that the length of the oviducts in sheep and goats is 15.0–16.0 cm, in Bengal goats 10.15 cm, and in Anatolian wild goats 5.811 cm. Compared with domestic goats, wild goats were found to have shorter oviducts [6, pp. 325–328].

Materials and methods. The study was conducted on the oviducts of local-breed goats kept at the “Vaxshivor-tepa,” “Jo‘ra cho‘pon,” and “Bobo-zangi” farms in the Oltinsoy district of the Surkhandarya region. Scientific examinations were performed on the oviducts of animals at the following stages of postnatal ontogenesis: 3 days, 3, 6, 12, 18, 36, 48, and 60 months of age.

The study was conducted using 80 oviduct samples obtained from 40 goats. Animals belonging to the studied age groups, with the same coat color and constitutional type, clinically healthy, and of moderate body condition were selected for sampling. For examination, the oviducts were anatomically dissected, and their length, thickness, and width were measured using a caliper.

General morphological methods developed and applied by N.P. Chirvinsky were used for processing the oviducts and determining their morphometric parameters. Laboratory analyses were performed at the “Zooinjenering, veterinariy va sericulture” Department of the Termez institute of agrotechnologies and innovative development and at the laboratory of the Surkhandarya regional state center for animal disease diagnosis and food safety.

All numerical data obtained as a result of the scientific examinations were mathematically processed according to the method of V.K. Merkuryeva.

To determine the age-related dynamics of the oviducts in goats, the growth coefficient was calculated. The growth coefficient was determined by dividing the length, width, thickness, and weight of the oviducts of adult animals by the corresponding parameters of the oviducts of younger animals, while the entire studied period of postnatal ontogenesis was determined using the formula developed by K.B. Svechin:



$$K = \frac{V_t}{V_o}$$

K – growth coefficient;

V_t – absolute value of the oviducts of adult animals;

V_o – initial value of the oviducts.

Mathematical and statistical analysis was performed using Student's and Fisher's criteria in Microsoft Excel spreadsheet software.

Research results. The absolute value of the length of the right oviduct was 1.2 ± 0.02 cm during the first 3 days of postnatal ontogenesis in goats. At the 3-month stage, it increased to 2.8 ± 0.07 cm ($K=2.33$; $p<0.03$), while at 6 months of age, this process increased rapidly, reaching 12.32 ± 2.83 cm ($K=4.4$). At the subsequent stage, i.e., at 12 months of postnatal ontogenesis, it reached 11.36 ± 0.39 cm ($p<0.04$). At 18 months of age, rapid growth was observed, reaching 14.82 ± 0.32 cm ($K=1.30$; $p<0.03$), while at 36 months, a significant increase was recorded, reaching 15.72 ± 0.45 cm ($K=1.06$). An increase was observed from 48 to 60 months of age, with the length increasing from 14.41 ± 0.38 cm at 48 months to 16.23 ± 0.4 cm at 60 months, and the growth coefficient reaching 1.13-fold. The overall growth coefficient of the absolute length of the right oviduct from 3 days to 60 months of postnatal ontogenesis was 13.52-fold.

The absolute width of the right oviduct increased from 0.03 ± 0.01 cm during the first 3 days of postnatal ontogenesis to 0.051 ± 0.002 cm at 3 months of age ($p<0.04$), with a growth coefficient of 1.7-fold. At 6 months of age, a rapid increase in width was observed, reaching 0.22 ± 0.06 cm ($K=4.31$), while at 12 months it increased to 0.22 ± 0.01 cm ($p<0.03$). From the 18-month stage of postnatal development in goats, a rapid increase was observed, reaching 0.48 ± 0.02 cm at 18 months ($K=2.18$). At 36 months, a slight decrease to 0.26 ± 0.008 cm was observed, followed by a significant decrease to 0.23 ± 0.004 cm at 48 months ($K=0.88$; $p<0.02$). At 60 months, it increased to 0.29 ± 0.005 cm ($K=1.26$). The growth coefficient of



the right oviduct width from the initial postnatal stage to 60 months of age was found to increase 9.67-fold (Figure 1).

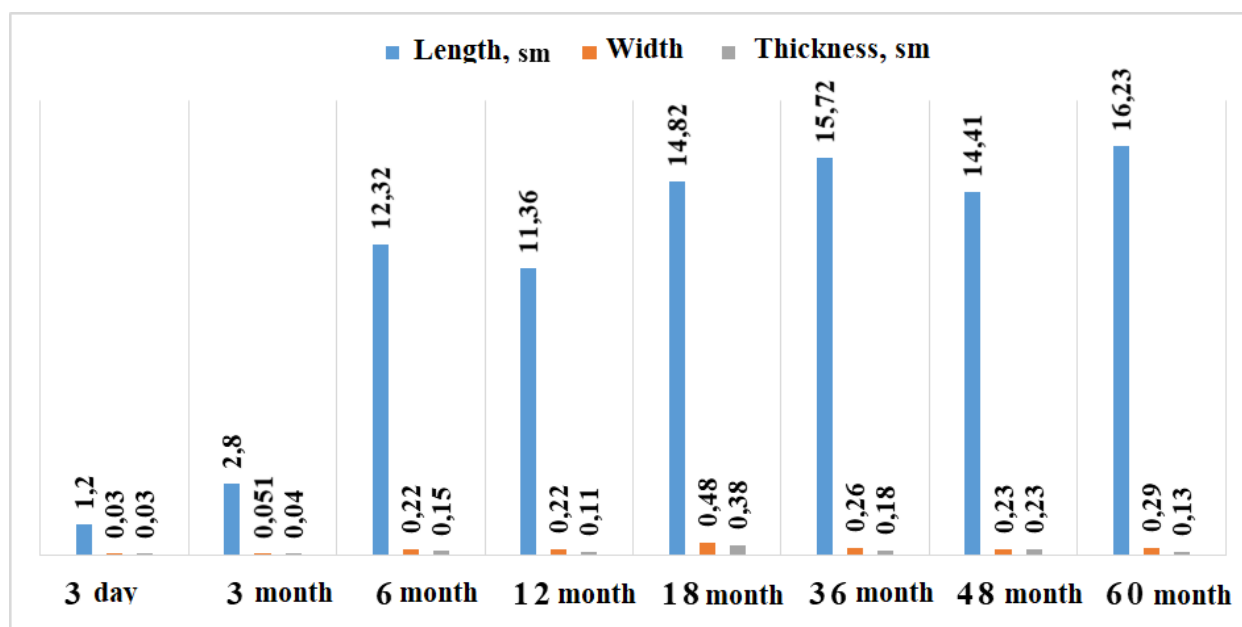


Figure 1. Morphological parameters of the right oviduct in local-breed goats (M).

The absolute value of the thickness of the right oviduct changes proportionally to its linear dimensions from the first 3 days to 60 months of postnatal ontogenesis. From 3 days to 3 months of postnatal development in goats, the parameter remained relatively unchanged, increasing from 0.03 ± 0.00 cm to 0.04 ± 0.00 cm ($K=1.33$; $p<0.02$). This parameter then increased rapidly up to 6 months of age, reaching 0.15 ± 0.00 cm ($K=3.75$; $p<0.03$). At 12 months of age, it decreased significantly to 0.11 ± 0.003 cm, while from 18 months it increased rapidly again, reaching 0.38 ± 0.01 cm ($K=3.45$). At 36 months of age, it decreased to 0.18 ± 0.004 cm ($K=0.47$; $p<0.02$), increased to 0.23 ± 0.01 cm at 48 months, and reached 0.13 ± 0.004 cm at 60 months of age. The growth coefficient of the absolute thickness of the right oviduct from 3 days to 60 months of postnatal ontogenesis was 4.33-fold.



Morphometric parameters of the right oviduct in goats

Age of the animal	Length, sm			Width, sm			Thickness, sm		
	M±m	K	P	M±m	K	P	M±m	K	P
3 day	1,2±0,02		0,02	0,03±0,001		0,02	0,03±0,00		0,02
3 month	2,8±0,07	2,33	0,03	0,051±0,002	1,7	0,04	0,04±0,00	1,33	0,02
6 month	12,32±0,28	4,4	0,02	0,22± 0,06	4,31	0,03	0,15±0,04	3,75	0,03
12 month	11,36±0,39	0,92	0,04	0,22±0,01	1,0	0,03	0,11±0,003	0,73	0,03
18 month	14,82±0,32	1,30	0,03	0,48±0,02	2,18	0,04	0,38±0,01	3,45	0,04
36 month	15,72±0,45	1,06	0,03	0,26±0,008	0,54	0,03	0,18±0,004	0,47	0,02
48 month	14,41±0,38	0,92	0,03	0,23±0,004	0,88	0,02	0,23±0,01	1,28	0,04
60 month	16,23±0,4	1,13	0,02	0,29±0,005	1,26	0,02	0,13±0,004	0,56	0,03
3-60 months		13,52			9,67			4,33	

Conclusion.

In conclusion, the morphometric parameters of the oviducts in goats during postnatal ontogenesis demonstrate a consistent age-dependent pattern of growth and development. The length of the right oviduct increased from 1.2±0.02 cm at 3 days of age to 16.23±0.4 cm at 60 months, with an overall growth coefficient of 13.52-fold. The width increased from 0.03±0.001 cm to 0.29±0.005 cm, corresponding to



a 9.67-fold growth rate. The thickness increased from 0.03 ± 0.00 cm to 0.13 ± 0.004 cm and was characterized by a 4.33-fold growth coefficient.

These changes in the morphometric dimensions of the oviduct clearly demonstrate the age-related patterns of reproductive system development in goats. Relatively slow growth of the oviducts was observed during the initial postnatal stages, whereas rapid growth and active tissue differentiation occurred during the 6–18-month period. Stabilization of the morphometric parameters during the 36–60-month stages of development indicates that the oviduct has reached a certain level of morphofunctional maturity.

REFERENCES

1. Katare B, Singh G, Kumar P, et al. Histomorphological studies on the oviduct of goat (*Capra hircus*) during follicular and luteal phases. *Haryana Vet.* 2015; 54(1): 36–38.
2. Долганова, С.Г. Макро и микроморфология яичников и яйцепроводов коз / С.Г. Долганова // Овцы, козы и шерстяное дело. -№2. - М., 2007. - С. 50-52.
3. Силантьев Д.В., Зеленовский Н.В. Морфология и васкуляризация яичников и маточных труб коз зааненской породы на этапах постнатального онтогенеза / Д.В. Силантьев, Н.В. Зеленовский // 2013. № 1. С. 120-122.
4. Rennak, Kh., Chikhaoui, M., & Mahouz, F. (2024). Biometrical Changes in Reproductive Tract of Arbia Goats According to Age, Body Condition, and Pregnancy. *Iranian Journal of Veterinary Medicine*, 18(3), 345-358.
5. Хибхенов, Л.В. Морфофункциональная характеристика яичников, яйцепроводов и матки яков в онтогенезе / Л.В. Хибхенов // Дисс. на соиск.. д.б.н. - Улан-Удэ, 2000. - 220 с.
6. Bahadır A, Yıldız H. Veterinary Anatomy (Locomotor system and internal organs). Revised 5th ed. Ezgi bookstore, 2014 : 325–328.
7. Mallayev M.G'. Echikilar postnatal ontogenezida jinsiy organlarning morfofunktional xususiyatlari. 2026-yil. 50-bet.