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Gross anatomical studies on the ovary and uterus of Black Bengal Goat

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Abstract

The present study was conducted in the department of anatomy, histology and embryology, faculty of veterinary and animal sciences, West Bengal University of animal fishery science, Kolkata. Total 15 specimens of adult black Bengal goat were collected from different slaughter house of Kolkata. After slaughter of animals the samples were collected and brought to the departmental laboratory for detailed study. Female genitalia comprised of ovaries, fallopian tube, horn of the uterus, vagina and vestibules. There were two ovaries and each of them was found to be oval shaped and pale in colour situated in the corresponding abdominal cavity behind the kidneys and supported by the broad ligament named utero-ovarian ligament. Broad ligament was attached to the lesser curvature of the horn. All the above mentioned findings may be utilized by the physiologist, embryo-transfer technologist, animal breeder and other related workers for the development of the goatery husbandry.

Keywords: Black Bengal goat, Ovary and Uterus

Introduction

Goat is the first domesticated animal for food purpose. Domestication of goat took place about 10,000 years ago in the mountains of west Asia. Goat is small, sturdy and easily adaptable animal and is the species of food animal having widest distribution over the globe. The animal husbandry practice is mainly dependent upon the reproductive performances of the species consumed because highly variable structural differences are encountered particularly in the female reproductive systems among the domestic animals. It is therefore become matters of prime importance to study the structural organization of the female genitalia of a particular species.

Goat meat has no religious bar in all sections of society, also goat meat has less fat which is desirable feather liked by man. Goat meat has ready market due to heavy demand. So the reproduction is outcome of a coordinated series of physiological phenomenon in male and the female goat. For reproduction of animal the detailed knowledge of gross anatomical disposition on varies components of female genitalia of Black Bengal goat is required. The female reproductive system includes two ovaries, two uterine tubes (fallopian tubes or oviduct), uterus, vagina and vulva. The oviduct has three parts as isthmus, ampulla and infundibulum. The uterus consists of two horns, a body and cervix. The vagina extends from uterus to vulva. Vulva consists of two labia, vestibules and clitoris. The ovum is expelled from the ovary and received by the infundibulum and carried to the uterine tube where fertilization normally occurs. The result of this investigation will certainly be a useful tool to the animal physiologist and breeders for better understanding and functional aspects of all these organs in this animal under normal as well as altered physiological condition.

Materials and method

The present study was conducted in the department of anatomy, histology and embryology, Faculty of Veterinary and animal sciences, West Bengal University of animal fishery science Kolkata. Total 15 specimens of adult Black Bengal goat where collected from different slaughter house of Kolkata. After slaughter of animal the samples were collected and brought to the departmental laboratory for detailed study. Immediately after collection, gross anatomical observations were done by dissecting microscope and naked eye. The length, the width, thickness of ovary and uterus was measured by electronic slide caliper. The weight of ovaries were taken by weighing balance and the reproductive tract was incised and internal

structure was seen by dissecting microscope and stereoscopic microscope.

Results and Discussion

Gross anatomical structure of ovary and uterus of Black Bengal goat have been study in this investigation. Female genital system comprised of ovaries, fallopian tube and horn of uterus, vagina and vestibules. There were two ovaries and each of them was found to be an oval shaped pale in colour organ situated in the corresponding abdominal cavity behind the kidneys and supported by the broad ligament named utero-ovarianligament. The uterus comprised of two horns (left and right horn) and a body. The body of uterus was well developed and the length of horns varies slightly but shape and size was almost equal.

Ovary

Both the ovaries were oval in structure with pale yellowish colour. The ovary was observed intimately attached to the fold of peritoneum. It was placed in a cranio-caudal direction within a fold of fallopian tube. The ovary was situated a little above the middle of the pelvic inlet and attached to the broad ligament by mesovarium.

Well-developed ovarian artery was found in broad ligament. The length of the right ovary range from 1.61 to 1.24 cm, average length was 1.36 ± 0.68 cm. the width of right ovary range from 1.14 to 0.81 cm. the average length was 1.05 ± 0.68 cm. the length of left ovary range from 1.49 to 1.0 cm and average length was 0.69 ± 0.18 cm. the width of the left ovary range from 1.20 to 0.9 cm and average length was 1.13 ± 0.13 cm (Table - 1). The length of the right ovary was slightly greater than the left ovary. The dorsal surface was free and ventral surface was attached to the broad ligament. The length of each ovary was greater than the width. Both the ends were rounded.

The surface of ovary was smooth, convex and found the presence of prominent mature follicles. These prominences were found to be translucent. The caudal end was rounded and cranial end was wider and a part of fimbriated margin of the infundibulum of the fallopian tube was attached to this end. The average weight of the left and right ovaries were 0.76 ± 0.071 gm, range from 1.2 to 0.56 gm and 0.73 ± 0.073 gm, range from 0.972 to 0.55 gm respectively.

Both the ovaries were oval in structure with pale yellow in colour. The ovary was observed to be intimately attached to the fold of the peritoneum. The ovary was placed in a cranio-caudal direction with in a fold by fallopian tube. The ovary was situated at a little above the middle of the pelvic inlet and attached by broad ligament. These findings are in virtual agreement with those of Andrews *et al.*, (1962) [1], Breazile *et al.*, (1971) [4], Nickel *et al.*, (1973) [11], Ommer *et al.*, (1995) [12], Banerjee (1998) [2], Pineda (2003) [13], Gupta *et al.*, (2004) [8] and Tyagi *et al.*, (1993) [14].

The average length of the right and left ovary were 1.36 ± 0.198 and 0.69 ± 0.18 cm respectively. The average width of right ovary and left ovary were 1.05 ± 0.068 cm and $1.13 \pm .013$ cm respectively. These findings are more or less similar to the findings of Gupta *et al.*, (2004) [4], May *et al.*, (1970) [10], Nickel *et al.*, (1973) [11], Getty (1975) [7] and Ommer *et al.*, (1995) [12]. The average weight of right ovary was 0.73 ± 0.073 gm and left ovary was 0.76 ± 0.074 . This observation is similar to the observation of Banerjee (1998) [2] but it is not similar to the finding of Pineda (2003) [13].

Uterus

The uterus was largest component of the genitalia. The uterus was found to be completely bicorunate. The horns were curved slightly flexuous narrow thick wall cylindrical tube and it was extended at the beginning and then became forward, upward direction. Subsequently it was downward from a small length and then proceeded forward along the floor of the corresponding aspect of the abdomen. The terminal part of the horn ended as the isthmus of the fallopian tube. The length of the horn, right and left sides were 14 ± 0.61 cm and 12.5 ± 0.63 cm respectively (Table- 2). In the horn of the uterus there was found good number of prominent mucosal folds.

The body of uterus was well developed and ranged from 1.8 to 1.5 cm and average length was 1.59 ± 0.21 cm (Table- 2). The body was larger due to presence of common peritoneal covering on the caudal most part of the horn it was found to be dorso- ventrally flat tube and was laterally attached with the broad ligament. The broad ligament was moderately thick and contained the vessels. The body was bifurcated cranially, formed horns and caudally continued with the cervix. The cervix was well developed and clearly visible. The wall was very thick and centrally there was narrow canal.

The uterus was longest component of genitalia. It was completely bicornuate. The horns were curved slightly flexuous, narrow thick walled cylindrical tubes. It extended at the beginning then became forward and upward direction. Subsequently it went downward for a small length and then proceeded forward along the floor of the corresponding aspect of the abdomen. The average length of right and left horn was 10.08 ± 0.61 cm and 10.93 ± 0.63 cm respectively (Table- 2). These present findings are in accordance with Getty (1975) [7], Frandson *et al.*, (1992) [6], Banerjee (1998) [2], Pineda (2003) [13], Ommer *et al.*, (1995) [12], whereas these present findings are not similar to the findings of Dyce *et al.*, (1987) [5]. The body of uterus was well developed and short. The average length was 1.59 ± 0.21 cm, this finding is in accordance with Frandson *et al.*, (1992) [6], Getty (1975) [7], Dyce *et al.*, (1987) [5], Ommer *et al.*, (1995) [12], Banerjee (1998) [2] whereas the present finding is not similar to the findings of Pineda (2003) [13], who stated that length of body of uterus could be as long as 10 to 12 cm. The body was continued with the cervix and attached by the broad ligament. The cervix was thick, well developed and centrally has a narrow canal. This present finding is similar to the finding of Andrews *et al.*, (1962) [1], Hafez (1993) [9], Bearden *et al.*, (1997) [3], Banerjee (1998) [2] and Pineda (2003) [13].

Table 1: Ovary

S. No.	Name of the organs	Max. range	Min. range	Mean	Standard Deviation	Standard Error
1	Left Ovary Length (cm)	1.49	1.0	0.69	0.18	0.214
2	Left Ovary Width (cm)	1.20	0.9	1.13	0.13	0.131
3	Right Ovary Length (cm)	1.61	1.24	1.36	0.198	0.198
4	Right Ovary Width (cm)	1.14	0.81	1.05	0.068	0.055
5	Right Ovary Weight (gm)	0.97	0.55	0.73	0.073	0.123
6	Left Ovary Weight (gm)	1.2	0.56	0.76	0.074	0.104

Table 2: Uterus

S. No.	Name of the organs	Max. range	Min. range	Mean	Standard Deviation	Standard Error
1	Right Horn of Uterus Length (cm)	14.00	9.5	1.08	0.61	0.635
2	Left Horn of Uterus Length (cm)	12.5	10.00	10.93	0.63	0.653
3	Body of Uterus Length (cm)	1.8	1.5	1.59	0.21	0.242

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