

HISTOLOGICAL STUDY OF UTERUS IN OSMANABADI GOAT

Bagade P.S., Mugale R.R, Thakur P.N. and Kapadnis P.J.

Department of Veterinary Anatomy,
College of Veterinary and Animal Sciences, Udgir [M.S.]

Abstract: The histoarchitecture of uterus in Osmanabadi goat comprised of three layers from within outward as endometrium, myometrium and perimetrium. The endometrium showed mucosal folds and the surface epithelium was lined by simple columnar epithelium, but at some places pseudostratified columnar epithelium was observed. The endometrial glands were interspersed in the highly vascular stroma. The myometrium was the thickest tunic of uterus and mainly composed of inner circular and outer longitudinal bundles of smooth muscle fibers separated by connective tissue. Perimetrium was the outmost layer consisted of loosely arranged connective tissue, numerous lymph, blood vessels and nerves.

Keywords: Histology, Uterus, phases of estrous cycle, goat.

INTRODUCTION

There is very close relationship between fertility and functions of genital organs and hormonal statuses and histological & histochemical changes of reproductive organs.

Considering the importance of uterus in reproduction, the present study is undertaken to study the histology of uterus in Osmanabadi goat.

MATERIAL AND METHODS

The study was conducted on 24 healthy Osmanabadi goats at different stages of estrous cycle. For the present study, the genititalia were brought to the laboratory of the department of Anatomy in ice pack thermos for the further study. The tissue pieces of 3-5mm thickness were cut from different parts of uterus and preserved in 10% neutral buffered formaline.

The tissue preserved in 10% neutral buffered formaline were then processed for routine paraffin embedding method and were cut at 3-5 μ thickness [Singh and Sulochana, 1978]. For sectioning, manually operating rotary microtome was used. Following methods were used for staining these sections.

1. Harri's haematoxylin and eosin for general histological observations [Mukherjee, 1990] Crossman's modification of Mallory's triple stain for muscle, collagen, and elastic fibers [Singh and Sulochana, 1978]. Masson's Trichrome stain for collagen and muscle fiber [Mukherjee, 1990]. Verhoeff's stain for collagen and elastic fibers [Mukherjee, 1990] Silver

impregnation stain method [Singh and Sulochana, 1978]. The micrometry on histological structure of uterus from the stained sections was conducted by using ocular micrometer.

The data obtained were subjected to statistical analysis as per standard procedure adopted by [Panse and Sukhatme, 1967].

RESULT AND DISCUSSION

The histoarchitecture of uterus in Osmanabadi goat comprised of three layers from within outward as endometrium, myometrium and perimetrium [Plate-1]. These findings are in agreement with the reports of Junsqueira and Carneiro [1971] and Bloom and Fawcett [1975] in Human, Sane *et al.* [1982] in goat, DiFiore [1989] in human, Banks [1993] in bovine, Dhale [2001] in Osmanabadi goat and Banubakode [2002] in goat.

The endometrium comprised of mucosa and mucosal folds. The surface epithelial lining consisted of simple columnar epithelium, but at some places pseudostratified columnar epithelium rested on the basement membrane in between the intercaruncular areas was observed [Plate-2]. Similar observations were reported by Kalkar [1971] in buffalo, Agarwal and Bhattacharya [1980] and Banubakode [2002] in goats. The 'Clear cells', having clear space around the dark basophilic nuclei and were marked between the epithelial cells and basement membrane. This finding confirmed the views of Joshi [1974] in goats. The endometrium was composed of two zones differing in structure and function [Plate-1]. The superficial layer or the functional zone and the thin deep layer or the basal zone. The superficial part of functional zone consisted of richly vascular loose connective tissue while the deep part of functional zone was having less cellular loose connective tissue. Similar observations were recorded by Joshi [1974] in goats and Dellmann and Brown [1986] in domestic animals. The endometrial stroma was highly cellular, thick, edematous, vascular and interspersed with glands. The uterine glands contained simple columnar epithelium and distributed throughout endometrium, except the caruncular area,. Similar observations were made by Kalkar [1971] and Chawan [1987] in buffalo and Dellmann and Brown [1986] in domestic animals.

The myometrium of uterus was mainly composed of inner circular & outer longitudinal bundles of smooth muscle fibers separated by connective tissue. The myometrium was the thickest tunic of uterus. In the present study, three layers were presented i.e. stratum submucosum [circular], stratum vasculare and stratum subserosum [longitudinal]. Similar observations were recorded by EL- Sheikh and Abdelhadi [1970] in Egyptian buffalo, Bloom

and Fawcett [1975] in human, Sane *et al.* [1982] in goat, Chawan [1987] in buffalo, Dellman and Brown [1987] and Banks [1993] in bovine.

Perimetrium was the outmost layer consisted of loosely arranged connective tissue, numerous lymph, blood vessels and nerves. Smooth muscle cells were present in the perimetrium. Similar findings were observed by Sane *et al.* [1982] in goat, Dellmann and Brown [1986] in bovine and Chawan [1987] in buffalo.

SUMMARY

The present study was conducted on 24 samples of uterus of Osmanabadi goat. The histoarchitecture of uterus in Osmanabadi goat comprised of three layers from within outward as endometrium [Stratum mucosa], myometrium and perimetrium [Serosa].

The endometrium showed mucosal folds and the surface epithelium was lined by simple columnar epithelium, but at some places pseudostratified columnar epithelium was observed. The endometrial glands were interspersed in the highly vascular stroma.

The myometrium was the thickest tunic of uterus and mainly composed of inner circular and outer longitudinal bundles of smooth muscle fibers separated by connective tissue.

Perimetrium was the outmost layer consisted of loosely arranged connective tissue, numerous lymph, blood vessels and nerves.

LITERATURE CITED

- [1] Banubakode S.B. [2002]: Histological, histochemical and immunohistological changes in Oviduct & uterus during different phases of estrus cycle and early pregnancy in goat Ph.D. thesis submitted to MAFSU, Nagpur
- [2] Banks, William J. [1993]: Applied Veterinary Histology, PP 452-455. Mosby Year Book Inc., 11830, Westline Industrial Drive, St. Louis, Missouri 63146.
- [3] Bloom, William and Don W. Fawcett [1975]: A Textbook of Histology X Ed. PP 858-883 W.B. Saunders Co. Philadelphia.
- [4] Chawan, S.R. [1987] Histological study of the uterine horns of the murrh buffalo [*Bos bubalis*] in diestrus. A dissertation submitted to K.K.V.: Dapoli for M.V.Sc. degree.
- [5] Agrawal, K.P. and N.K. Bhattacharya [1980]: Pre and post pubertal development of Uterus of Barberi goat. Ind. J. Anim Sci. **50** [1]: 46-52.
- [6] Dellmann, H.D. and E.M. Brown [1987]: Textbook of Veterinary Histology Second Edn. Lea and Fibbers, Philadelphia pp 330-333.

- [7] Dhale, S.N. [2001] Histology and Histochemistry of uterus in goat. A dissertation Submitted to Marathwada Krishi Vidyapeeth, Parbhani for M.V.Sc. degree.
- [8] Di-Fiore, Mariano S.H.[1989] Atlas of normal histology, IV Edn. Edited by Victor P. Eroschenko pp 220-240. Lea and Febiger, Philadelphia.
- [9] EL-Shaikh, A.S. and H.A. Abdelhadi [1970]: Anatomy and Histology of reproductive tract in the Egyptian buffalo. Ind. J. Ani. Sc. **40** [3]: 213-222.
- [10] Joshi C.L. [1974]: cited by Bhattacharya, M. and R.P. Saigal [1984]^b: Histomorphological and histochemical studies on the uterus of goat [*Capra hircus*] during the reproductive cycle. Ind. J. Anim Sc. **54** [7]: 645-649.
- [11] Kalkar, D.O. [1971]: Histological study of the uterus of Indian buffalo [*Bos bubalis*] in proestrus stage. M. V. Sc. Thesis submitted to M. P. K. V. Rahuri.
- [12] Sane, C.R.; Luktuke, S.N.; Deshpande, B.R. ; Kaikni, Velhankar, D.P.; Hukeri, V.B. and Kodagali, S.B. [1982]. A Text Book of Reproduction in Farm Animals. Verghese Publishing House. Bombay. pp. 21-24.
- [13] Junqueira L. and J. Carneiro [1971]: Basic Histology 4th edn. Pp 476-479. Lange Medical Publications, Maruzen, Asia.

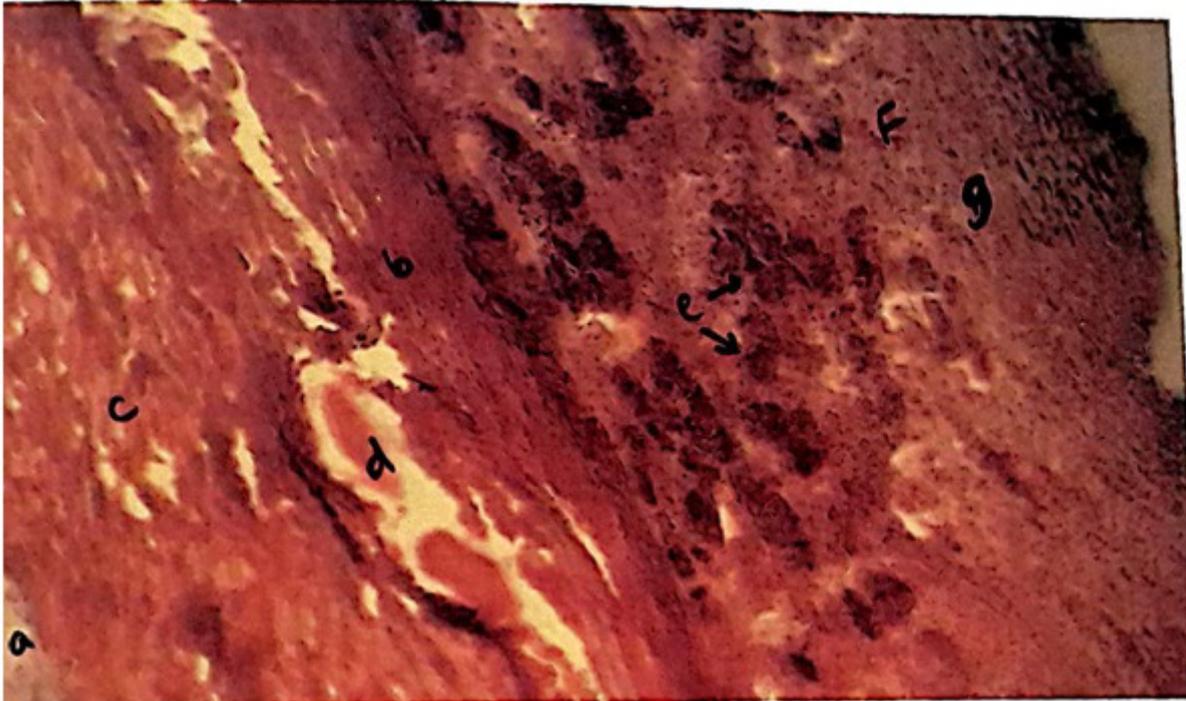


Plate No. 1 Microphotograph of Uterus during estrous phase showing
[Masson's Trichrome 10X]

- a. Perimetrium b. Myometrium circular c. Myometrium longitudinal d. stratum vasculare
e. endometrial glands f. endometrium g. caruncle

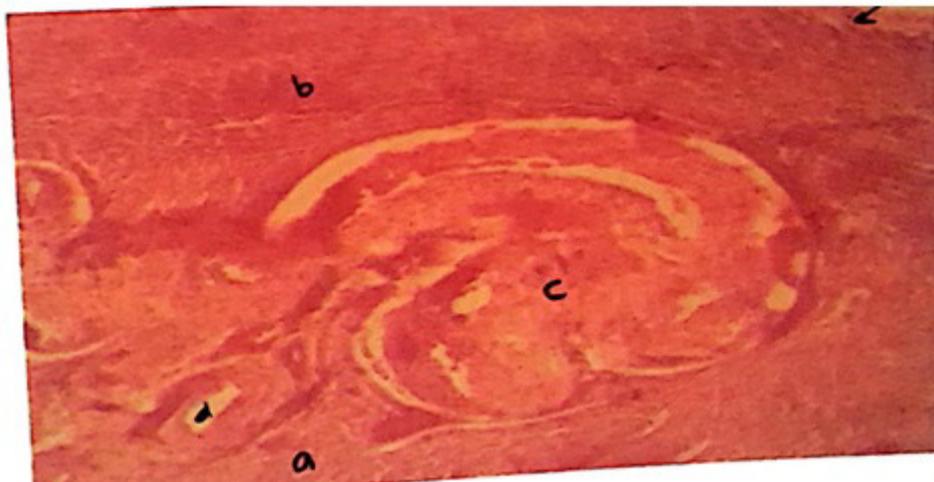


Plate No. 2 Microphotograph of Uterus during diestrous phase showing
[H E 10X]

- a. Myometrium Circular b. Myometrium Longitudinal c. Stratum vasculare d. Blood Vessels e. Perimetrium