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Research article

Morphological and Histological Study of uterus in domestic Iraqi sheep

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Abstract

Present study were carried out on twenty adult local sheep. The results were showed that the uterus of adult sheep are bicornate, it consist of equivalent and convex uterine horns attached with relatively long uterine body, horns coiled ventrally on themselves. the statistical analysis results revealed a significant differences at (P≤0.05) between each of the length and diameter of the left and right horns and body, the right horn was significantly (p< 0.05) longer (5.7±0.6) than the left horn (5.03±0.85). Respectively the diameter of the right uterine horn (0.71±0.180) was wider(P>0.05) than the diameter of the left uterine horn (.61±0.075). The length of the uterine body was (2.62 ±0.3) with a diameter of 1.41±0.25. The uterine wall of body and horns of an adult sheep is formed by three layers: the inner endometrium (mucosa), middle myometrium, and the outer layer is perimetrium (serosa). The epithelium of the endometrium may stratified or pseudostratified. Simple, branched uterine (endometrial) glands extend into the lamina propria , interglandular lamina propria and basal lamina. The myometrium is divisible into a thick, inner circular layer and a thin, outer longitudinal layer. A richly vascularized (inter vascular connective tissue) and coiled artery usually separates the muscle layers. The histochemical stains (PAS &Masson) gave negative results to uterus tissue.

Keywords: Histology, Sheep, Uterus.

Introduction

Domestic sheep *Ovis aries* is a quadrupedal, ruminant mammal typically kept as livestock. Like all ruminants, sheep are members of the order Artiodactyla, the even-toed ungulates. Although the name "sheep" applies to many species in the genus *Ovis*, in everyday usage it almost always refers to *Ovis aries* , also domestic sheep are the most numerous species of sheep, an adult female sheep is referred to as a *ewe* , an intact male as a *ram* or occasionally a *tup*, a castrated male as a *wether*, and a younger sheep as a *lamb*, Sheep is widespread across the world, having adapted to many different climatic conditions (1). sheep have also been the subject of considerable research from the viewpoint of physiological function and animal production, are now regarded as one of the most studied non-human, non-rodent species, In addition to its importance as a source of milk, meat and wool (2, 3). The uterus of sheep is bicornuate. The body of the uterus is short, which formed by incomplete fusion of the caudal parts of the horns that lie side by side, enclosed within a common serosa and muscular coat. Cranially, the two uterine horns, or cornua, have an inverted comma shape, held within the abdomen by the broad ligament, so that the ovaries come to lie adjacent to the bifurcation of the two cornua near the body of the uterus (4). The body of the uterus is relatively short and poorly developed, while the uterine horns are longer and well developed. The embryo develops in the uterine horns (5).Functionally ,the uterine wall can divided into: the endometrium and myometrium. The adult endometrium of sheep consists of two epithelial cell types, luminal epithelium,

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glandular epithelium ,stratified stromal compartments that include a densely organized ad luminal zone of fibroblasts extending into a more loosely organized zone in the deeper or basal endometrium blood vessels (6). The uterine artery arises from the internal iliac and enters the pelvic cavity within the broad ligament. It is a branch of the umbilical and the largest of the arteries to the female tract, before reaching the uterus, it divides into cranial and caudal parts, each the source of about half a dozen stem vessels that reach the mesometrial border of the uterus(7). The epithelium of the endometrium may be stratified or pseudostratified in sheep. Simple ,branched uterine (endometrial) glands extend into the lamina propria. These may be considerably coiled in the sheep. Nonglandular regions of the endometrium called caruncles (8).

Materials and Methods:

Twenty adult local sheep(ewes)were collected from slaughter house of Basra city used for this study after being examined the animal to detect any clinical diseases ,ten specimens for anatomical study and ten specimens for histological study. The laparotomy was done and the uterus was exposed from female reproductive system. Specimens of uterus were immediately measured the length, width and thickness of the two ovaries(left& right) by digital veirnier calipers. For histological study, the specimens of uterus were immediately fixed for 24 hours in formalin solution then dehydrated with series of crescent concentration of ethyl alcohol and imbedded in paraffin wax then cutting by rotary microtome to 4-6 microne, later histological sections were stained with hematoxylin and eosin (9) and special stains.

Statistical Analysis:

The results were analyzed statistically using minitabe program testing values using the significant difference (P≤0.05) .Test rate of SPSS.

Results

The uterus appears bicornuate uterus to consist of equivalent and convex uterine horns uterine horns attached with the relatively long uterine body. A distinguished septum was separate the cranial portion of the uterine body, horns coiled ventrally on themselves, Caruncles were arranged in two antimesometrial rows and two mesometrial in most parts of the uterine horns appeared as irregular round projection of the luminal surface Figure (1). The right horn was significantly (P≤0.05) longer (5.7±0.6 micron) than the left horn (5.03±0.85). The diameter of the right uterine horn (0.71±0.180 micron) was wider (P≤0.05) than the diameter of the left uterine horn (6.1±0.075 micron). The length of the uterine body was (2.62 ±0.3 micron) with a diameter of (1.41±0.250 micron) Table (1).

Table (1). Measurements of Left , Right and body of uterus.

parameters	Right horn	Left horn	body
diameter	0.71±0.18 b a	0.61±0.075 a	1.41±0.25 c
Length	5.7±0.6 a	5.03±0.85 a	2.62 ±0.3 c

P≤0.05 (The different litter represent the significant differences)

The uterine wall of body and uterine horns of an adult sheep was composed of the three layers: the outer perimetrium (serosa), middle layer myometrium, and inner endometrium (mucosa). The myometrium was divisible into a thick, inner circular layer and a thin, outer longitudinal layer. (Figure 2,3,6,7,9,10,12,17). A richly vascularizedand well- innervated stratum vascular (inter vascular connective tissue) and coiled artery usually separates the muscle layers (Figure 4,5,10,12,13,15,16,17). The epithelium of the endometrium may be stratified or pseudostratified in sheep. Simple, branched

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uterine (endometrial) glands extend into the lamina propria and interglandular lamina propria and basal lamina (Figure 2,3,4,8,9,11,13,14,15,16), these glands may be considerably coiled in the sheep.

Figure(1): Show the uterus of female reproductive tract in the sheep (A)Horns (B)Body

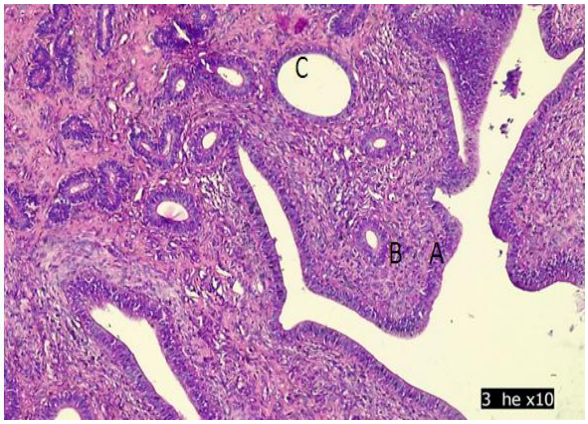


Figure (2): Photograph of uterus in the sheep show the: (A) epithelium (B) Superficial lamina propria. (C) uterine gland

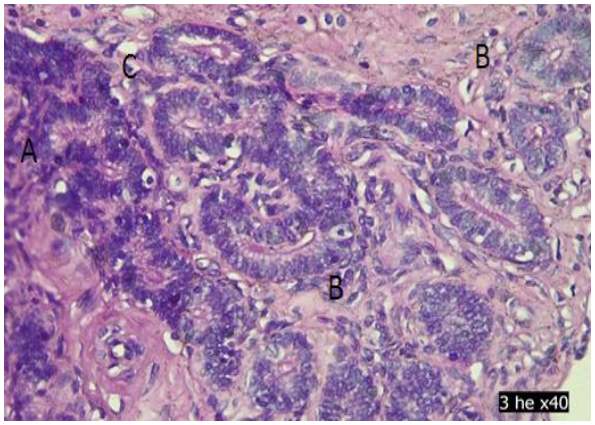


Figure (3): Photograph of uterusy in the sheep show the: (A) endometrium (B).inter glandular lamina propria C) Basal lamina

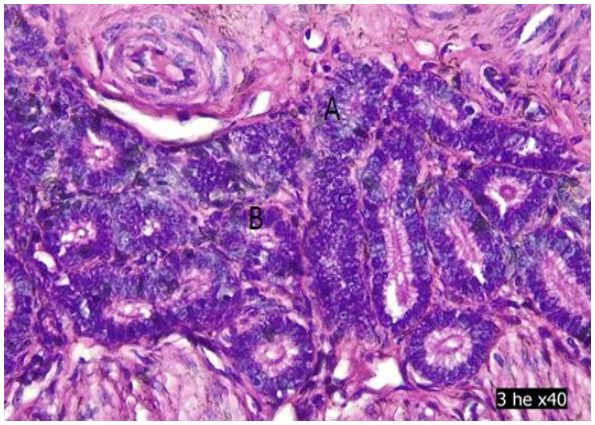


Figure (4): Photograph of uterus in the sheep show the: (A)Uterine gland (B)coiled artery

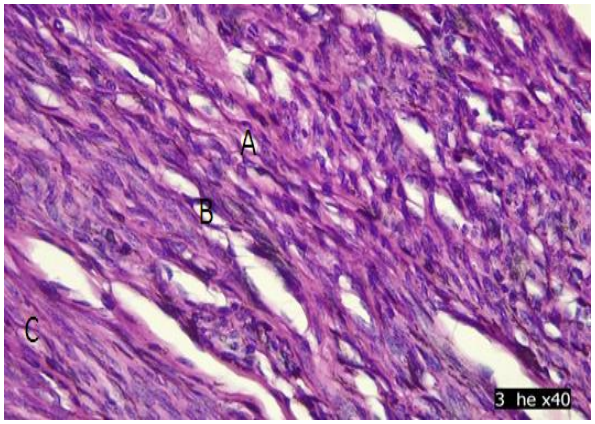
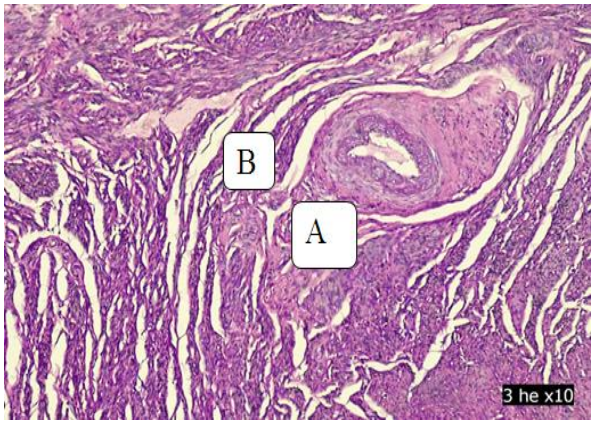


Figure (5): Photograph of uterus in the sheep show the: (A) Arteries (B) inter vascular connective tissue (C) Smooth muscle



Figure(6): Photograph of uterus in the sheep show the: (A) Arteries (B) smooth muscle

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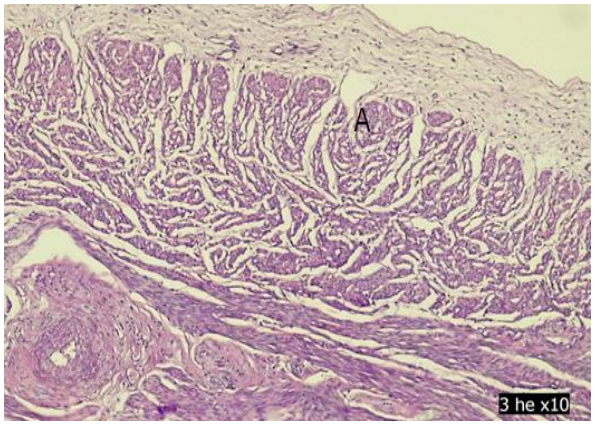
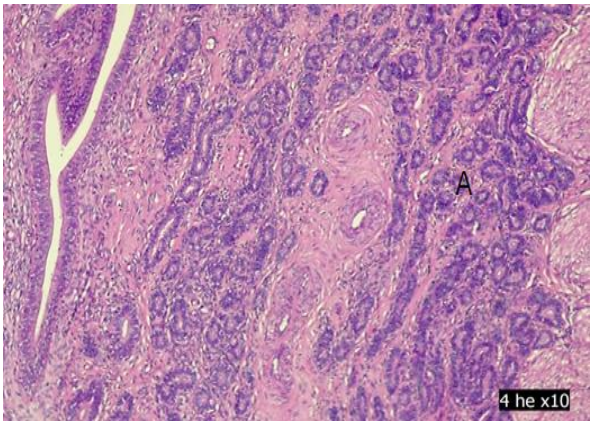


Figure(7): Photograph of uterus in the sheep show the: (A) Muscular coat



Figure(8): Photograph of uterus in the sheep show the: (A) Uterine gland

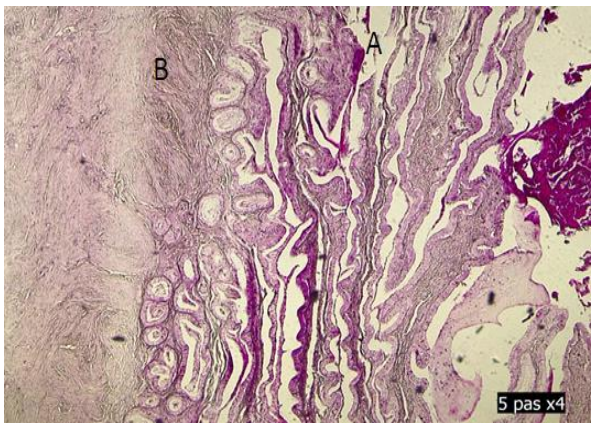
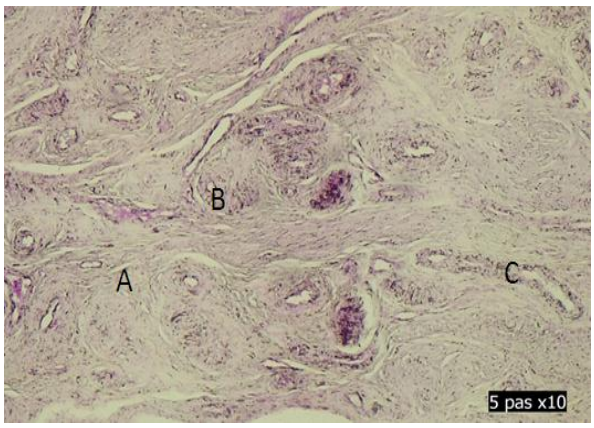


Figure (9): Photograph of uterus in the sheep show the: (A)endometrium (B)smooth muscle fiber



Figure(10): Photograph of uterus in the sheep show the: (A) smooth muscle fiber (B)arteries C) inter vascular connective tissue

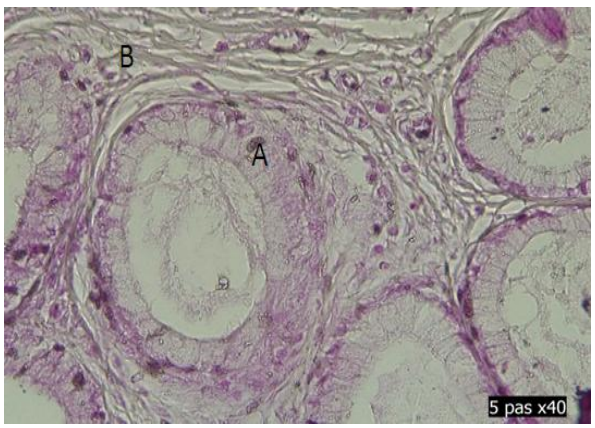


Figure (11): Photograph of uterus in the sheep show the: (A) uterine gland (B)inter glandular lamina propria

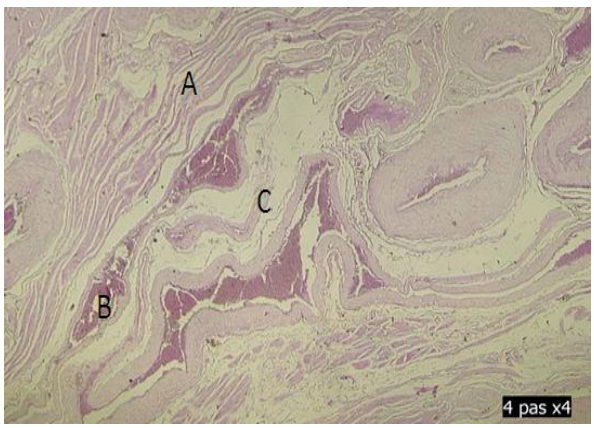


Figure (12): Photograph of uterus in the sheep show the: (A) Smooth muscle (B) arteriesC) inter vascular tissues.

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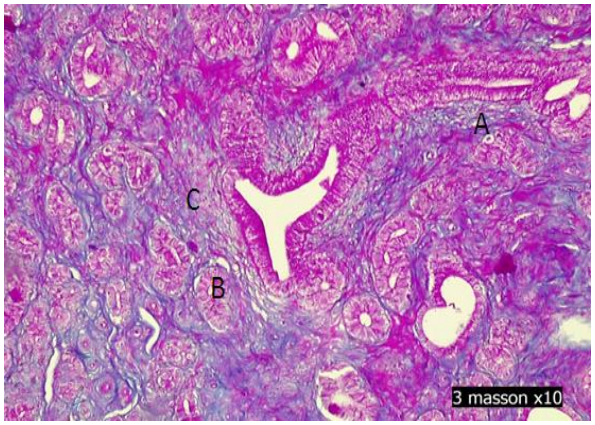
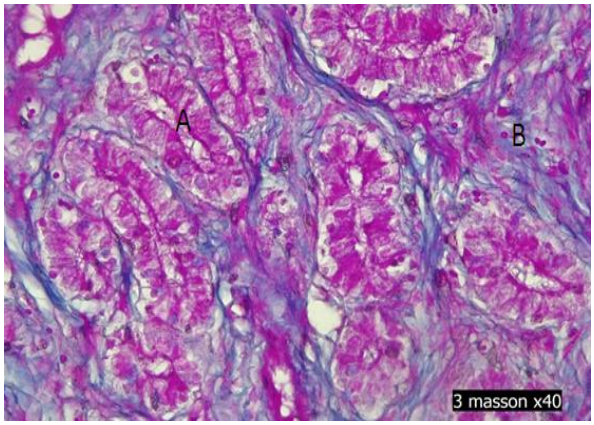
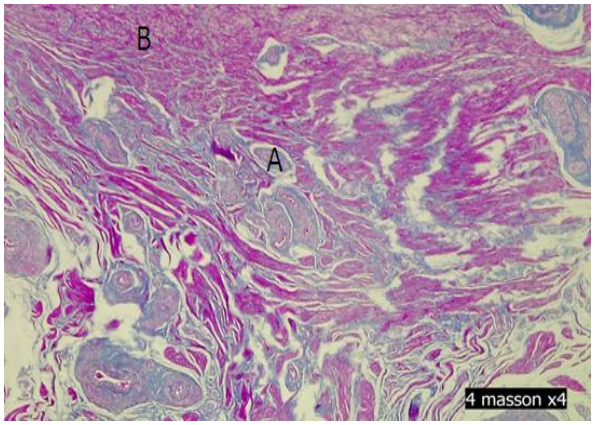


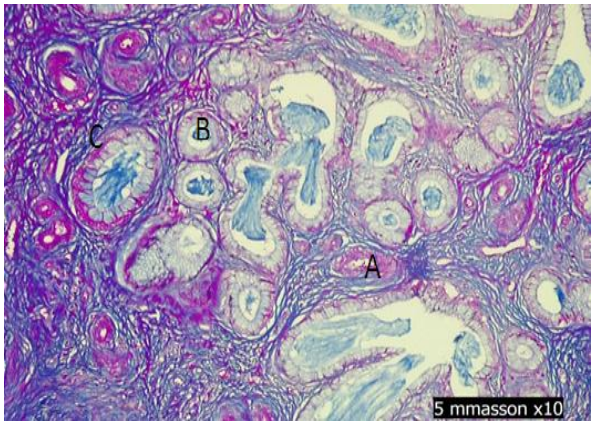
Figure(13): Photograph of uterus in the sheep show the: (A) coiled artery (B) uterine gland (C) inter glandular lamina propria



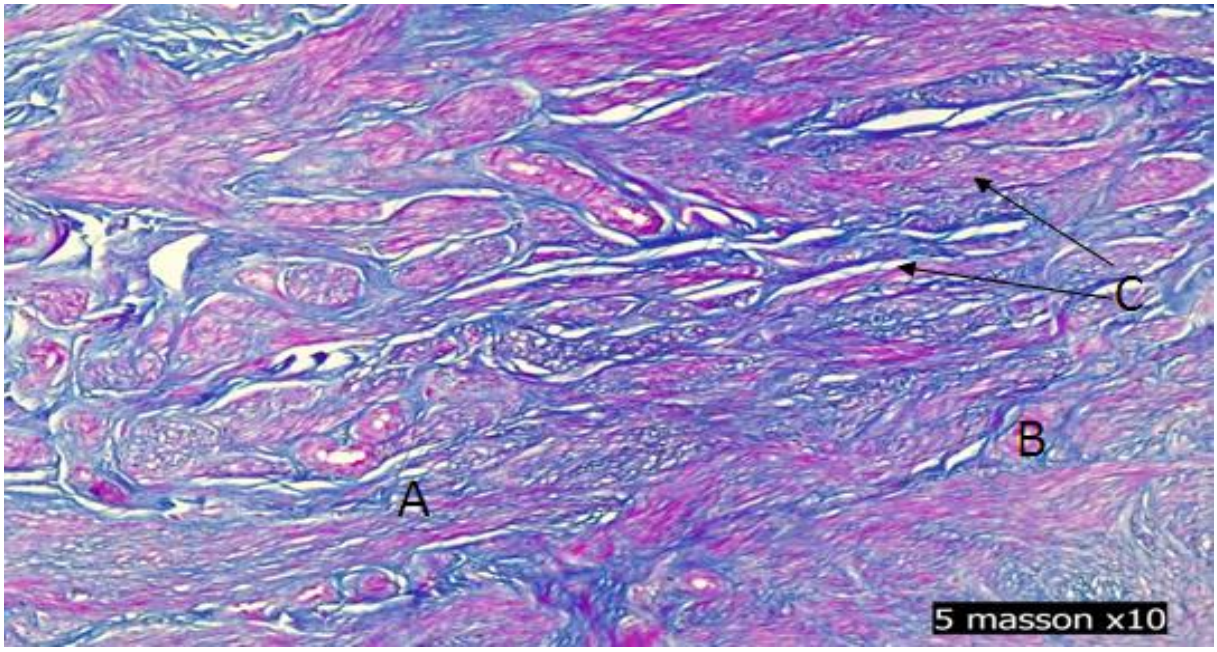
Figure(14): Photograph of uterus in the sheep show the: (A) Uterine gland (B)inter glandular connective tissue



Figure(15): Photograph of uterus in the sheep show the: (A) Uterine gland (B) inter vascular connective tissue.



Figure(16): Photograph of uterus in the sheep show the: (A) Arteries (B) uterine gland C) Inter glandular lamina propria



Figure(17): Photograph of uterus in the sheep show the: (A) smooth muscle (B) arteries (C) Inter vascular connective tissue.

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Discussion:

The uterus appears bicornuate uterus to consist of equivalent and convex uterine horns attached with relatively long uterine body, A distinguished septum was separate the cranial portion of the uterine body , horns coiled ventrally on themselves, are similar to those reported in water buffalo and cattle (10, 11). The right horn was significantly (P≤0.05) longer (5.7±0.6) than the left horn (5.03±0.85). The diameter of the right uterine horn (0.71±0.180) was wider (P>0.05) than the diameter of the left uterine horn (.61±0.075). The length of the uterine body was 2.62 ±0.3 with a diameter of 1.41±0.25. These results are disagree with (12) reported that the left uterine horn of the camel is distinctly larger than the right. The uterine wall of body and uterine horns of an adult sheep is formed by three layers: the inner endometrium (mucosa), middle myometrium, and the outer layer is perimetrium (serosa), the myometrium is divisible into a thick, inner circular layer and a thin, outer longitudinal layer ,well -innervated stratum vascular (inter vascular connective tissue) and coiled artery usually separates the muscle layers .These results agree with (7). The epithelium of the endometrium may be stratified or pseudostratified. With simple, branched uterine (endometrial) glands extend into the lamina propria and interglandular lamina propria and basal lamina ,these glands may be considerably coiled in the sheep. These results agree with(8) in ruminants and sows. The histochemical stains (PAS &Masson) gave negative results to uterus tissue.

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