



Gestational accident and specific diseases affecting gravid uterus in bovine

*A. Thangamani¹, A. Reshma¹, R. Rajkumar², S. Manokaran³, T. Sarath⁴ and A. Elango⁵

¹Assistant Professor, ³Associate Professor and Head
Department of Veterinary Gynaecology and Obstetrics

²Assistant Professor, Veterinary Clinical Complex

⁴Associate Professor and Head, Veterinary Clinical Complex

⁵Dean, Veterinary College and Research Institute

Veterinary College and Research Institute, Salem-636 112, India

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The reproductive system is the most important system in terms of survival of species. The overall function of the female reproductive system is to provide a location for the conception, development and eventual release of a viable offspring. The uterus provides a sterile and inert environment for the development of conceptus. However, a number of gestational accidents interfere with normal pregnancy period.

For the purpose of description, common uterine disorders are listed below under diseases affecting gravid uterus and specific disease which affecting the uterus.

I. Diseases of gravid uterus:

1. **Abortion, still birth:** Abortion refers to expulsion of dead fetus of recognizable size before completion of gestation. Still birth refers to expulsion of dead fetus at term.
2. **Mummification and maceration:** Mummification occurs in the absence of infection and results from prolonged retention of a dead fetus in which all the fluids are absorbed. The fetal membranes collapse around a brown black leathery mass of dried fetal bones and skin. Maceration results from fetal death followed by intra-uterine infection.
3. **Adventitious placentation:** Refers to the development of additional sites of placentation between adjacent placentomes. Cows normally have 75 to 120 caruncles in the endometrium. This condition results from either insufficient number of caruncles from a congenital disorder or from loss of caruncles due to prior episodes of endometritis. When adventitial placentation becomes diffuse, pregnancy may not proceed beyond midterm and hydrallantois is a frequent complication.
4. **Hydroamnios and hydroallantois:** These are characterized by excess fluid in the amnion and



allantoic sacs respectively. Hydroamnios is usually associated with malformed fetuses, whereas hydroallantois is associated generally with adventitial placentation (endometrial defect) or twinning. Common sequelae are dystocia, uterine atony with retained fetal membranes and metritis if the fetus is not delivered or aborted early.

5. **Prolonged gestation:** In cattle, conditions that interfere with the synthesis and release of ACTH by the fetal pituitary and cortisol by the fetal adrenal cortex resulting in prolonged gestation. It exists in various hereditary disorders like adrenal hypoplasia and pituitary malformations of fetus.
6. **Torsion of uterus:** In cows, torsion of uterus usually occurs at late gestation and last first stage or early second stage of parturition process.
7. **Uterine prolapse:** Usually occurs due to prolonged dystocia, hypocalcemia and ingestion of estrogenic plants. As the structures prolapsed, vascular compromise leading to congestion and edema occur. Haemorrhage and shock may lead to death. Even if the uterus is returned to its normal position, the intervening drying, trauma and infection that occur will prevent future fertility.
8. **Hysterocele:** Herniation of gravid uterus into the deep abdominal area due to rupture of prepubic tendon or tear in the abdominal muscle.

II. Specific diseases that affect the uterus:

1. **Brucellosis:** In ruminants, *Brucella abortus* causes vasculitis in both maternal and foetal tissues and the lesion could be a response to endotoxin released from the organism. Most fetuses have bronchopneumonia. Microscopic granulomas that include multinucleated giant cells occur in various organs like lung, liver, spleen and lymph nodes.
2. **Campylobacteriosis:** This is a sporadic disease in most species, but is particularly seen in ruminants. *Campylobacter fetus* var. *venerealis* can be a long term inhabitant of the preputial cavity of bulls. Early embryonic death is the most likely manifestation of campylobacteriosis and the clinical abnormalities are irregular estrous cycles. Cows become resistant to subsequent infections. Gross and microscopic lesions in the placenta are similar to brucellosis but are less severe.
3. **Leptospirosis:** This is another possible cause for abortion. Several different serovars are associated with abortion especially *Leptospira interrogans* serovar *hardjo* in cattle. In adult animals the organisms localize in the kidneys after the septicaemic phase and cows abort weeks after the septicaemic phase usually in the last trimester. Placental lesions are limited to edema. Fetal lesions are mild and show autolysis. Microscopic lesions in fetus include subacute interstitial nephritis and sub-acute necrotizing hepatitis.



4. **Listeriosis:** Is a cause of sporadic abortions in cattle that occur during the last trimester of pregnancy. The placental lesions are severe diffuse necrotizing and suppurative inflammation of cotyledons and the inter-cotyledonary areas. Fetus shows enlarged liver with yellow foci that contain gram positive organisms.
5. **Fungal diseases:** Aspergillus and Zygomycetes cause sporadic abortion in cows. The amnion shows thick, leathery areas and small, white raised plaques are seen on the skin of bovine fetus. Microscopically, fungal hyphae are abundant in the lesions of placenta and skin of fetus.
6. **Viruses:** BHV-1 is a sporadic cause of bovine abortion. In addition, IBR produces an acute, necrotizing endometritis in cows particularly post-partum. BVD caused by Pestivirus can cause fetal death or malformation.
7. **Protozoal diseases:** Trichomonas fetus causes early embryonic mortality and abortion in cattle. Mild placentitis with no fetal lesion is seen.