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Clinical Article

SURGICAL MANAGEMENT OF UMBILICAL CORD TORSION INDUCEDFETAL MUMMIFICATION AND SINGLE PUPSYNDROME IN A CHIPPIPARAI BITCH

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SUMMARY

Canine foetal mummification is uncommon and sporadic condition in nature. This study reported the successful diagnosis and surgical management of co-occurrence of foetal mummification and a single fully developed dead foetus by B-mode ultrasonography, radiographic examination and serum progesterone estimation in a 4 year old Chippiparai bitch.

Keywords: Mummification, Prolonged gestation, Single pup syndrome, Bitch

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Fetalmummication is characterized by death of fetus and absorption of fetal fluid leading to contraction of uterus and fetal membranes adhered to the fetus (Singh *et al.*, 2019). Foetal death after ossification of the bones leads to resorption of the foetal fluid and foetal membranes become shrivelled and dried so that they resemble parchment paper. Canine herpes virus (CHV) infection as the cause of foetal mummification (Noakes *et al.*, 2019). Torsion of umbilical cord (Roberts, 1982) and uterine torsion (Niwas *et al.*, 2023) has been associated to be the cause of fetal mummification. This case study documents the umbilical cord torsion induced foetal death and mummification at different stages of gestation in dogs.

A four-year-old female Chippiparai with a history of mating before 70 days with no signs of whelping and normal feeding and voiding habits was presented to the SAC-OP-OG unit of Veterinary Clinical Complex, Veterinary College and Research Institute, Tirunelveli, Tamil Nadu. Clinical examination revealed pyrexia (39.9ºC) and congested conjunctival mucus membrane. Gynaeco-clinical examination revealed oedematous vulva with congested vulval mucus membrane, serosanguinous vaginal discharge and engorgement of mammary glands with milk.

Diagnostic B-mode ultrasonography was performed and it revealed the presence of one large viable foetus (Head diameter = 3.3 cm, suggestive of approximate gestational age as 69 days and Heart rate 107 bpm) and multiple non-viable foetuses without foetal fluids and shrunken foetal contours. The estimation of serum progesterone revealed higher progesterone level (10.78 ng/ml). Radiographic examination of right lateral view of the abdomen revealed the presence of not less than 8 foetal skeletons of different size, suggestive of mummification occurred at different stages of gestation (Fig. 1).

Emergency caesarean section was performed by ventral midline abdominal approach under general anaesthesia, i.e. premedication with Atropine sulphate @ 0.04 mg/kg body weight subcutaneously and induction by Propofol @ 4 mg/kg intravenous route. After extraction of foetuses maintenance was done by Ketamine @ 5 mg/kg and Diazepam @ 0.5 mg/kg was used intravenously. Eight mummified foetuses (Fig. 3A) and one large dead foetus (Fig. 3B) were milked out along with their placenta. Further, uterus sutured by Cushing followed by Lembert pattern, suturing of muscle layers by Ford's interlocking pattern and subcuticular suturing along with skin suturing by cross mattress pattern. Animal was treated with antibiotics (Cefpodoxime Proxetil @ 10mg/kg PO q24 hr), Analgesics (Tramadol @ 2 mg/kg PO q8 hr) and Dopamine agonist (Cabergoline @ 5 µg/kg PO q12 hr) were given for 7 days as postoperative medications. Sutures were removed on the 7th postoperative day and the bitch had uneventful recovery.

Examination of the mummified foetuses revealed torsion of the umbilical cord with dark foetal membranes adhered (Fig. 3C) to the dehydrated foetuses without odour. Necropsy of the fully developed dead foetus revealed hydrothorax (Fig. 4), pulmonary congestion with multiple necrotic foci on both the lungs, enlarged left kidney with severe congestion and necrotic lesions. Histopathology of the foetal lungs shows pulmonary vascular congestion (Fig. 5B), bronchiolar oedema with eosinophilic mass in the bronchiolar lumen (Fig. 5A) and the histopathology of

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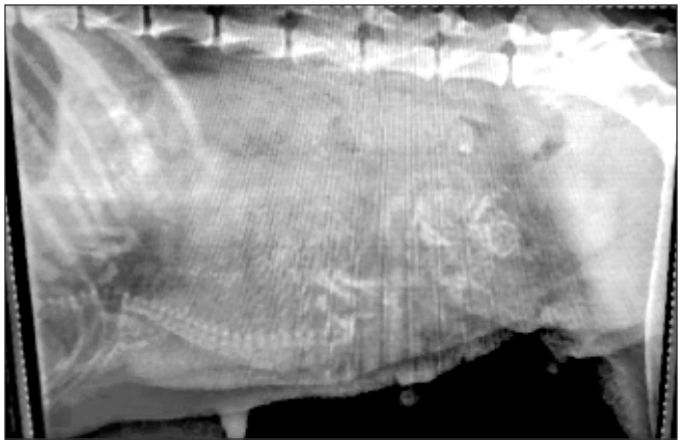

Fig. 1. X-ray of the abdomen (lateral view) Foetal skulls and skeletons of different size.

Fig. 2. Caesarean section by ventral midline abdominal approach. Incision on the dorsal aspect of uterine body.

Fig. 3. (A) Canine foetal death and mummification at different times in gestation.

Fig. 3. (B) Single large fully developed dead foetus.

Fig. 3. (C) Umbilical cord torsion of the mummified foetuses

Fig. 4. Necropsy of the dead foetus revealed hydrothorax.

kidney revealed capsular thickening, cortical infiltration with mononuclear cells (Fig. 6A) and medullary tubular necrosis (Fig. 6B).

In this case, totally 8 foetuses were mummified at different stages of gestation were recovered along with a fully developed foetus, similarly Vikram *et al.* (2015) reported 5 mummified foetuses along with two live foetuses. According to Siena and Millani (2021) Crown Rump Length (CRL) of the 8 mummified foetuses were measured which indicated that mummification occurred at different stages of the gestation. Sobanaasree *et al.* (2017) reported that higher degree of torsion in umbilical cord restricts the blood flow in umbilical blood vessels and adversely affects the viability of the foetus which leads to the foetal death. These findings are in agreement with our case. Prolongation of gestation might be due to insufficient ACTH and cortisol

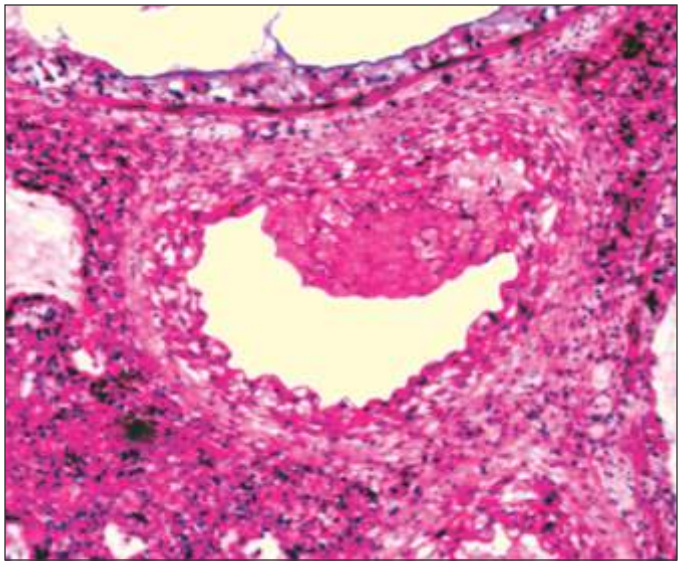

Fig. 5. (A) Histopathology of the foetal lungs- Eosinophilic mass in the bronchiolar lumen.

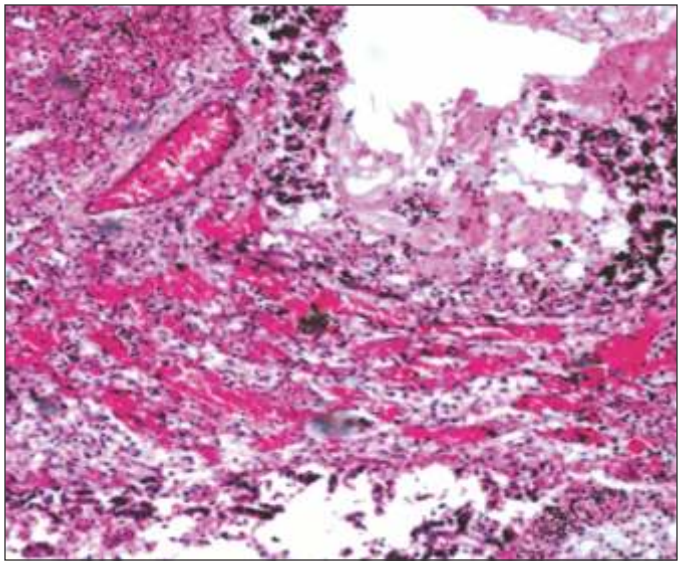

Fig. 5. (B) Histopathology of the foetal lungs- Pulmonary vascular congestion.

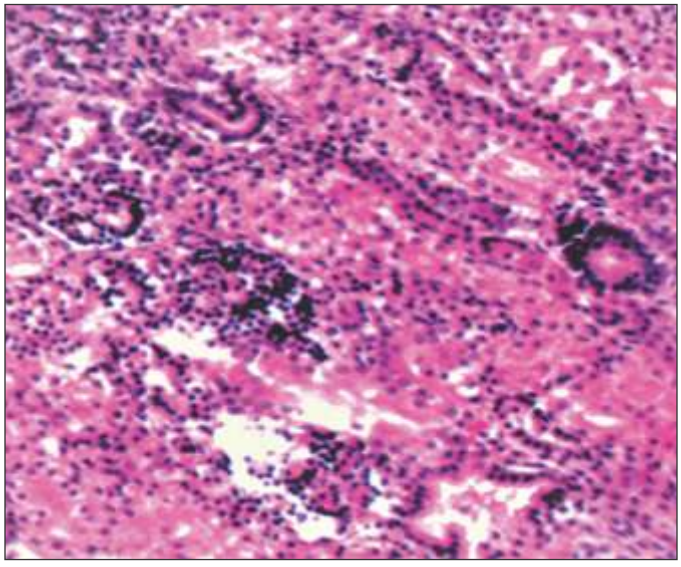

Fig. 6. (A) Histopathology of the foetal kidneys- Cortical infiltration with Mononuclear cells.

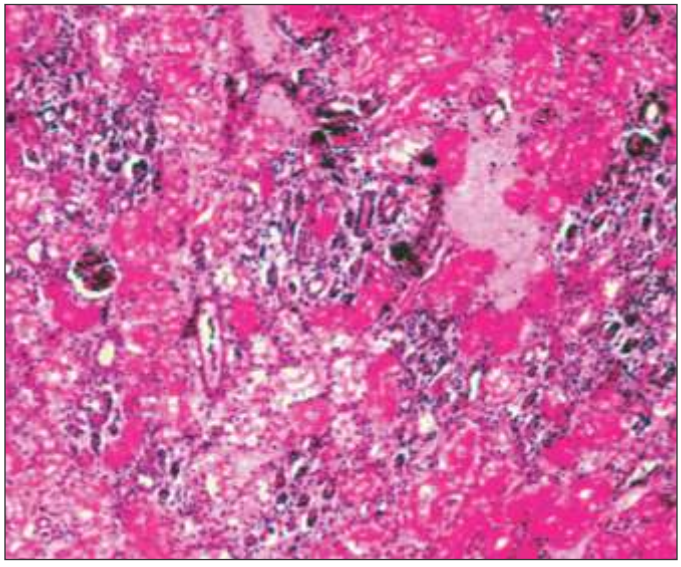

Fig. 6. (B) Histopathology of the foetal kidneys- Medullary tubular necrosis.

produced by the single pup which act as the first signal to the dam for initiation of whelping which might be the cause of prolonged gestation in that case (Ahuja *et al.*, 2017; Dutt *et al.*, 2025). Conclusively, this case records umbilical cord torsion induced foetal mummification along with single pup in a Chippiparai bitch.

REFERENCES

Ahuja, A.K., Singh, A.K., Narinder, K. and Muddrangiah (2017). Mummified fetus and two live fetuses in labrador bitch: A Special Case. *Int. J. Curr. Microbiol. App. Sci.* **6(7)**: 1642-1644.

Dutt, R., Singh, G., Anil, Garbhit, Bulbul and Kumar, V. (2025). A rare case of foetal mummification in a pomeranian bitch. *Haryana Vet.* **64(1)**: 131-132.

Niwas, R., Jinagal, S., Amandeep, Anil and Dutt, R. (2023). Uterine rupture associated with uterine torsion in a pregnant bitch. *Indian J. Anim. Reprod.* **44(2)**: 93-95.

Noakes, D.E., Parkinson, T.J. and England, G.C.W. (2019). Veterinary Reproduction and Obstetrics. (10th Edn.), Elsevier, Edinburgh, Scotland. pp. 168-193.

Roberts, S.J. (1982). Veterinary Obstetrics and Genital Diseases. (2nd Edn.), CBS Publishers and Distributors, India. pp. 170-173.

Siena, G. and Millani, C. (2021). Usefulness of maternal and fetal parameters for the prediction of parturition date in dogs. *Animals.* **11**: 878.

Singh, G., Dutt, R., Kumar, S., Kumari, S. and Singh, G. (2019). Gynaecological problems in she dogs. *Haryana Vet.* **58(SI)**: 8-15.

Sobanaasree, R., Raja, S., Vijaya Rajan, A., Babu Prasath, N., Sathesh Kumar, S. and Prabaharan, V. (2017). Fetal abortion and mummification due to umbilical cord torsion in a non-descriptive Goat. *Indian J. Anim. Hlth.* **56(2)**: 295-298.

Vikram, R., Chaudhary, G.R., Sivanarayanan, T.B., Amit, Sushobhit, S. and Narayanan, K. (2015). Successful treatment of fetal mummification in a bitch by caesarean section: a case report. *Theriogenol. Insight.* **5(2)**: 147-151.