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## Successful management of foetal maceration in a bitch

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### Abstract

A three years old mongrel bitch was presented to the Teaching Veterinary Clinical Complex, College of Veterinary Sciences and Animal Husbandry, Selesih with a history of the dog was naturally mated 70 days before and the bitch was not showing any sign of whelping nor uterine discharge. The body temperature and pulsation were normal with no signs of septicemia or toxemia. Animal having decrease appetite, the mucous membrane having normal color, and haematology revealed mark increase of lymphocytes and monocytes. The USG examination revealed distended uterus with hypoechoic structure but no viable fetus. Radiographic examination revealed four numbers of distorted foetal skeletons in the uterus. The case was successfully managed through surgical intervention.

**Keywords:** Foetal maceration, management, bitch

### Introduction

Embryonic or fetal death may result in resorption, mummification, maceration or abortion depending on the period of the gestation [1]. Fetal maceration is characterized by fetal death and incomplete abortion to occur as a result of uterine inertia and intrauterine infections [2]. The most common cause is infection when, bacteria enter the uterus via the cervix after the foetus' death, causes putrefaction and autolysis the soft tissues, leaving foetal bones within the uterus [3]. After bacterial contamination, fetal emphysema begins within 24-48 hours and, maceration occurs within 3-4 days [4]. The fetus or fetuses are putrefied and autolyzed with different degrees according to the pathogenicity of the bacteria. If maceration occurs after bone formation, autolysis could continue until all fetal soft tissues become autolyzed thus only bones remains [5]. Bone fragments remaining in the uterus could be embedded into the uterine wall [6], which causes chronic endometritis or severe damage of endometrium. The maceration of the fetus has been described in cattle [5], sheep [7], goat [8], dogs [9], mare [10], etc. But as per the previous report, the incidence is quite low in bitches [11]. Moreover, in the majority of cases, the absence of general symptoms in the mother leads to misinterpretation of the diagnosis [12]. This case report describes an isolated and rare case of canine foetal maceration with retained bones and its successful surgical management.

### Case history

A three-years-old non-descript bitch weighing about 24.4 kg was presented to Teaching Veterinary Clinical Complex, College of Veterinary Sciences and Animal Husbandry, Central Agricultural University, Selesih, Aizawl, Mizoram with suspicion of gestation even after completion of 70 days from the date of its mating. The bitch was alert with no signs of whelping or systemic illness, although the bitch was anorectic as reported by the owner. A detailed clinical and hematological examination of the patients was carried out.

### Clinico- gynaecological and haematological Examination

In clinico-gynaecological examination, the body temperature (101.2° F), pulse rate (76/min.) and respiratory rate (26/min) were within the normal range. A detailed anamnesis was taken and physical examinations were done (Table 1). The most obvious symptoms were enlargement of the abdominal region and the presence of mild pain. There was no uterine discharge. According to their anamnesis, the bitch was mated 70days before. On abdominal palpation of the bitch, foetal mass was detected.

**Table 1:** Anamnesis and physical examination findings in the bitch

Clinical observation	Patient
General Condition	Good
Appetite	inappetence
defecation	normal
Abdominal palpation	Mild pain
Abdominal strain	Enlargement
Vomition	No
Vaginal discharge	No

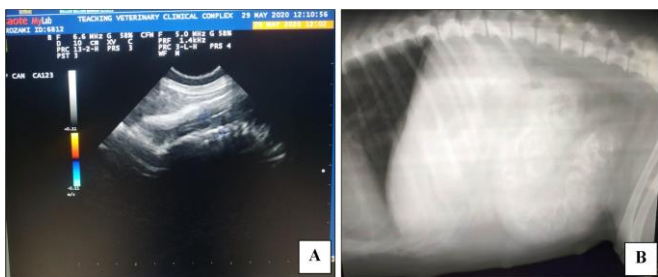
Blood sample (2ml) was collected from cephalic vein with EDTA vial and a complete blood cell count of the sample was done using an automated blood cell counter (Ms4e, Netherland) at the Veterinary Diagnostic Laboratory of TVCC (Table 2). Haematology evaluation revealed an elevated lymphocyte and monocytes count in comparison with the reference values, which indicated that the case was chronic.

**Table 2:** Hematological analysis result of the bitch

Haematology parameters	Result	Reference value
Haemoglobin (g/dl)	13.6	12-18
Packed cell volume (%)	45.3	37-55
Red blood cell count (M/mm <sup>3</sup> )	6.59	5.5-8.5
White blood cell count (m/mm <sup>3</sup> )	11.91	6-17
Platelet count (m/mm <sup>3</sup> )	408	200-500
Lymphocyte (%)	42.2	8-38
Monocyte (%)	13.5	1-9
Granulocyte (%)	44.3	51-84

**Diagnosis by Ultrasonographic and radiographic examination**

Trans-abdominal ultrasonography with 5 MHz transducer revealed hyperechoic foetal bones and vertebrae, without any soft tissue structures around them, absence of foetal fluids and foetal heartbeat (Figure 1A). Abdominal radiography revealed four distinct radiopaque masses consisting of the foetal skeleton (Figure 1B).



**Fig 1:** Imaging techniques for diagnosis (A). USG examination showed distended uterus with hypoechoic areas within the uterus (B). Radiographic examination revealed radiopaque masses consistent with fetal bones

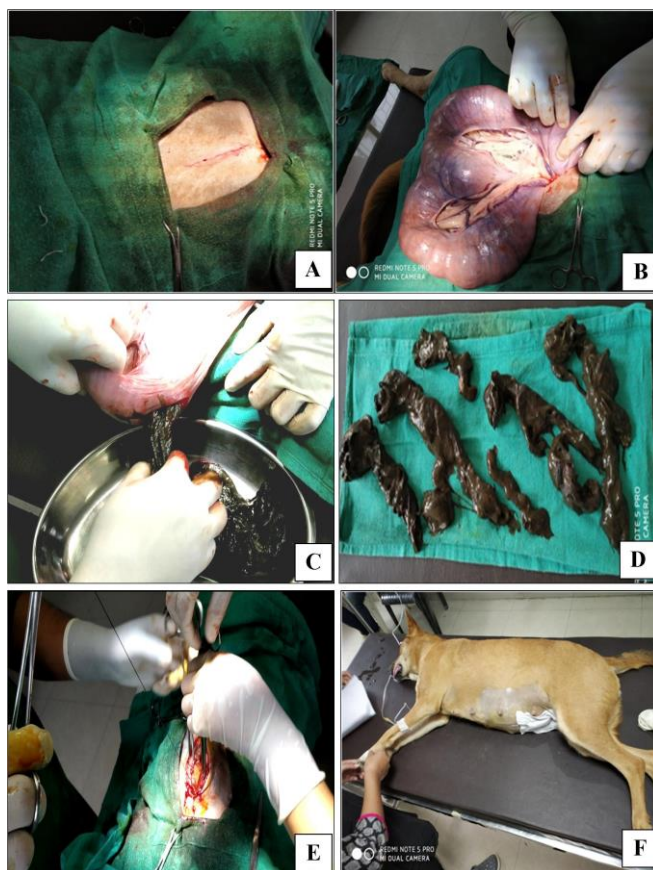
From the physical examinations and the imaging techniques, it was concluded that the animal was pregnant although the foetuses were autolyzed within the uterus without being aborted and the case was diagnosed as foetal maceration. It was decided to do hysterectomy.

**Treatment and Discussion**

**Operative interventions**

Standard pre-operative preparation for C section was followed. Pre-anesthetic medication consisted of atropine sulfate (0.04 mg/kg, SC). Anesthesia was induced by intravenous administration of diazepam (@1mg/kg), followed

by ketamine HCl (@10.0mg/kg). The caudal mid line was aseptically prepared for the laparotomy (Fig.2A). Following laparotomy, enlarged uterus was exteriorized (Fig. 2B) and hysterectomy was performed with a stab incision on the body of the uterus and removed the dark brown uterine fluids (Figure 2 C) with four numbers of the macerated foetus from the uterus by milking method with the help of hand (Fig. 2D). The uterus was closed with absorbable suture material (Chromic Cat-gut, 1-0) by using inversion suture, peritoneum and muscle layers were sutured with standard procedure by using absorbable suture material (Vicryl 1-0) and the skin was closed by sub-cuticle sutures (Fig.2E) and protective bandages were applied (Fig. 2F).



**Fig 2:** Surgical Procedure (a). The median line for the operative approach (B). Uterus larger in size (C) dark brown uterine fluid (D) Macerated fetus (E) closed with simple and horizontal mattress sutures (F) Applied Protective bandages

**Post-operative care**

After surgery, the bitch was kept in a cage to restrict the movement and treated with Ceftriaxone and tazobactam @ 25mg /kg body weight intravenously for 5 days, isotonic 0.9% NaCl (30 ml/kg, BW ,IV) for 2 days, Metronidazole(100ml, IV for 2 days) and Meloxicam (0.5 mg/kg, IM for two days). The skin bandage was removed on the 2<sup>nd</sup> post-operative day and daily dressing was done for 7 consecutive days with Wokadine® solution and the bitch made uneventful recovery. Fetal maceration is one of the accidents of pregnancy where fetal death occurs at any stage of the gestation; commonly from mid to late gestation [2]. Commonly foetal maceration follows abortion in the late stage of gestation in which the cervix is dilated but the foetus is not expelled due to failure of the genital tract to dilate sufficiently or contract normally, or because of an abnormal presentation, position and/or posture of the dead foetus [13]. The cause of maceration of the present

case was probably due to a presentation, position, or postural disturbance of the fetus because; intensely of the bone and hair, masses were in the corpus uterine region. In foetal maceration and retention cases, bitches exhibit a foul and fetid uterine discharge and may become systemically ill, showing signs of septicemia or toxemia<sup>[13]</sup>. Bodh *et al.* (1999)<sup>[14]</sup> observed foul and fetid discharges from the vulva of animals with fetal maceration. Unlike those typical symptoms in literature, the vaginal discharge was not seen in this case due to a closed cervical canal and no systemic symptoms were observed in the bitch. This situation was also supported by hematology analysis. In the present case, there were hair and bone fragments observed in the uteruses and, there was odorless dark brown fluid. These findings suggest that autolysis and resorption activities have been continued. Uterine distention and monocytosis related to chronic infection revealed the fetal maceration which was confirmed by ultrasonographic and radiographic examination<sup>[15]</sup>. Generally, therapy of maceration cases involves the removal of fetuses by ovariohysterectomy or hysterectomy. Reports indicated that medicinal therapy may be successful in fresh cases where foetal skeletal material is not embedded within the uterus<sup>[16]</sup>. The maceration in the present case was chronic, so it was decided to surgical intervention and successfully managed the case.

### Conclusion

As a conclusion, veterinarians should perform regular examinations on pregnant bitches regarding various disorders affecting mothers' general health and future fertility, even if they do not show any pathological signs. By using ultrasonography and other necessary interventions during feto-maternal monitoring, early and accurate treatment can be performed in related cases.

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