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Chronic Uterine Infection Caused by Fetal Retention and Treatment by Unilateral Ovariohysterectomy in a Dog

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Abstract: A four-year-old Anatolian Shepherd bitch was brought to our clinic with an intermittent purulent-hemorrhagic vaginal discharge complaint with no general symptoms for six months following the last parturition. There were no signs of mass or lesion on the vaginal wall during physical examination. Anechogenic uterine content, hyperechoic structures freely floating in the lumen, and suspicious fetal tissue remnants were detected by ultrasonography in only the left uterine horn. Hematological parameters revealed the chronic uterine infection. The unilateral ovariohysterectomy operation was performed for the more affected left horn to maintain the patient's fertility. Two fetal bone remnants were detected in the reddish infectious uterine content at the postsurgical uterine incision. Throughout the postoperative five months, vaginal discharge or any general signs of complication were not observed. We thought that the last fetus might have undergone uterine retention and autolysis in the following weeks, which caused the chronic uterine infection. Obstetrical controls are well-advised in all parturitions to reveal any fetal remnant cases/complications and to have a normal postpartum process.
Key words: *Bitch, debris, fetal death, uterine infection.*

Bir Köpekte Fetal Retensiyonun Neden Olduğu Kronik Uterus Enfeksiyonu ve Tek Taraflı Ovaryohisterektomi ile Tedavisi

Özet: Dört yaşında Anadolu Çoban köpeği, son doğumdan itibaren altı aydır genel hastalık semptomlarının bulunmadığı aralıklı purulent hemorajik vajinal akıntı şikayeti ile kliniğimize getirildi. Fiziki muayenede vajina duvarında herhangi bir kitle veya lezyona rastlanmadı. Ultrasonografi aracılığıyla sadece sol kornu uteride anekojenik uterus içeriği ile fetal doku kalıntılarını şüphelendiren ve lumen içerisinde serbestçe yüzen hiperekoik yapılar tespit edildi. Hematolojik parametreler kronik uterus enfeksiyonunu göstermekteydi. Hastanın fertilitesini devam ettirmek için daha şiddetli enfeksiyonun görüldüğü sol kornu uteriye unilateral ovaryohisterektomi operasyonu uygulandı. Postoperatif uterus ensizyonunda kırmızımsı enfeksiyöz uterus içeriğinde iki fetal kemik kalıntısı tespit edildi. Postoperatif 5 ay boyunca herhangi bir vaginal akıntı ya da genel komplikasyon belirtisi gözlenmedi. Son fetusun uterusta retensiyona ve sonraki haftalarda otolize uğramış olabileceğini ve bunun da kronik uterus enfeksiyonuna neden olduğunu düşündük. Fetal retensiyon vakaları/komplikasyonlarını ortaya çıkarmak ve olağan bir postpartum süreç için tüm doğumlardan sonra obstetrik kontroller tavsiye edilmektedir.
Anahtar Kelimeler: *Dişi köpek, fetal ölüm, kalıntı, uterus enfeksiyonu.*

Introduction

Fetal retention cases at parturition have been described in the dogs having average parturition history, but the actual incidence is presumed to be low (Feldman and Nelson, 2004). Clinical findings of canine fetal retention/maceration cases are obtained from the sporadic clinical reports (Erdoğan et al., 2019; Fasulkov et al., 2014; Günzel-Apel et al., 2008; Rigau et al., 2011; Serin and Parın, 2009). The condition leads progressively (within hours or days) to uterine infection with severe postpartum metritis accompanied by fetal emphysema (Orfanau et al., 2010). Female dogs exhibit foul and fetid uterine discharge and may become systemically ill, showing the signs of toxemia or septicemia (Feldman and Nelson, 2004; Ritt and Fossum, 1997). Rare cases were detected with no systemic infection signs in some reports (Fasulkov et al., 2014; Gonzalez Dominguez et al., 2006; Günzel-Apel et al., 2008; Serin and Parın, 2009). In diagnosis, ultrasonographic examinations reveal the hyperechoic fetal debris in the uterine cavity (Erdoğan et al., 2019; Fasulkov et al., 2014; Pharr and Post, 1992; Serin and Parın, 2009). According to fetal debris character and location, prostaglandin injections or different surgical approaches are recommended (Feldman and Nelson, 2004; Günzel-Apel et al., 2008; Serin and Parın, 2009).

This report presented the perioperative clinical findings of a chronic uterine infection caused by fetal debris detected in the sixth month after parturition in a bitch.

Case Description

A four-year-old and 35 kg weighted Anatolian Shepherd bitch was referred to Animal Hospital of Aydın Adnan Menderes University with an intermittent purulent-hemorrhagic vaginal discharge complaint. Ten live puppies were delivered vaginally six months ago in history, but they died in the postparturient ten days. An intermittent purulent-hemorrhagic vaginal discharge was seen since the current parturition, and several palliative antibacterial medical treatments were performed during this period in a private veterinary clinic. Also, no proestrus bleeding and estrus behavior were observed following the current parturition. Clinical examination revealed that the dog was in good condition, and body temperature and pulsation were normal. However, chronic infection signs were seen in hematology (WBC: $20.63x10^3$/µl; LYMP: $0.82x10^3$/µl; MONO: $1.67x10^3$/µl; NEUT: $17.59x10^3$/µl). At the ultrasonography, the left uterine horn diameter was 34 mm, and it was filled with anechogenic uterine content (Fig. 1), including freely floating hyperechoic structures, suspicious fetal tissue remnants. Nevertheless, the right uterine horn had milder infection signs (less content and uterine dimension) and a smaller diameter (14 mm) (Fig. 2).

Following clinical and ultrasonographic examinations, the patient was diagnosed as chronic endometrial hyperplasia-pyometra complex at first. Instead of the prostaglandin/oxytocin injections, it was decided that the surgical treatment procedure because of the left horn's higher dimension. Unilateral ovariohysterectomy was preferred to protect fertility in subsequent cycles of the bitch. Ventral midline ovariohysterectomy was performed to the bitch under the general anesthesia by using the xylazine [2 mg/kg of Xylazine HCL (Rompun %2, Bayer, Germany)] and ketamine [10 mg/kg of Ketamine HCL (Alfamine %10, Alfasan, Holland)] combination. The left uterine horn and left ovary were removed, peritoneal lavage was performed, respectively. Finally, genital organs, peritoneum, abdominal muscles, and skin were closed separately by absorbable sutures. Postoperatively, two fetal bone fragments belonging to the calvarium and the pelvic arch were detected in the removed horn's purulent uterine content. Besides, the appearance of left ovarium was having the persistence of corpora lutea (Fig. 3).

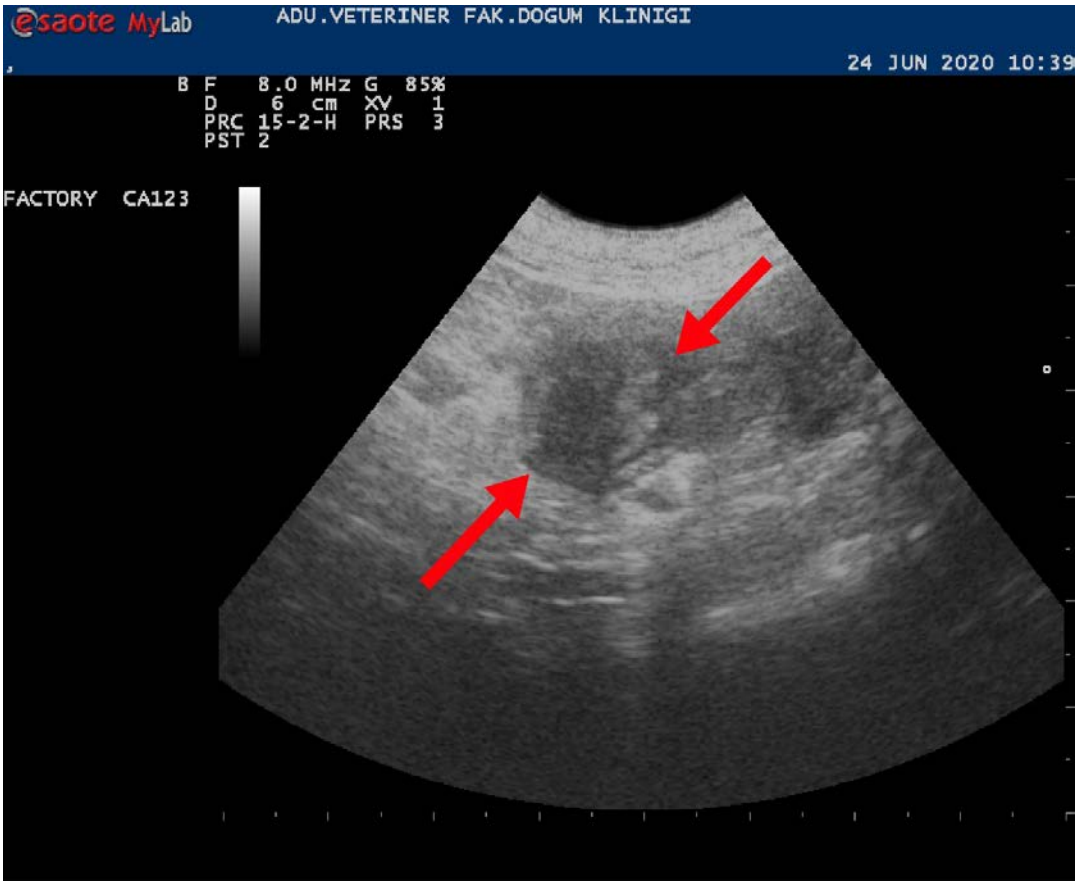

Figure 1. Ultrasonographic appearance of left uterine horn and hyperechoic fetal debris (red arrows)

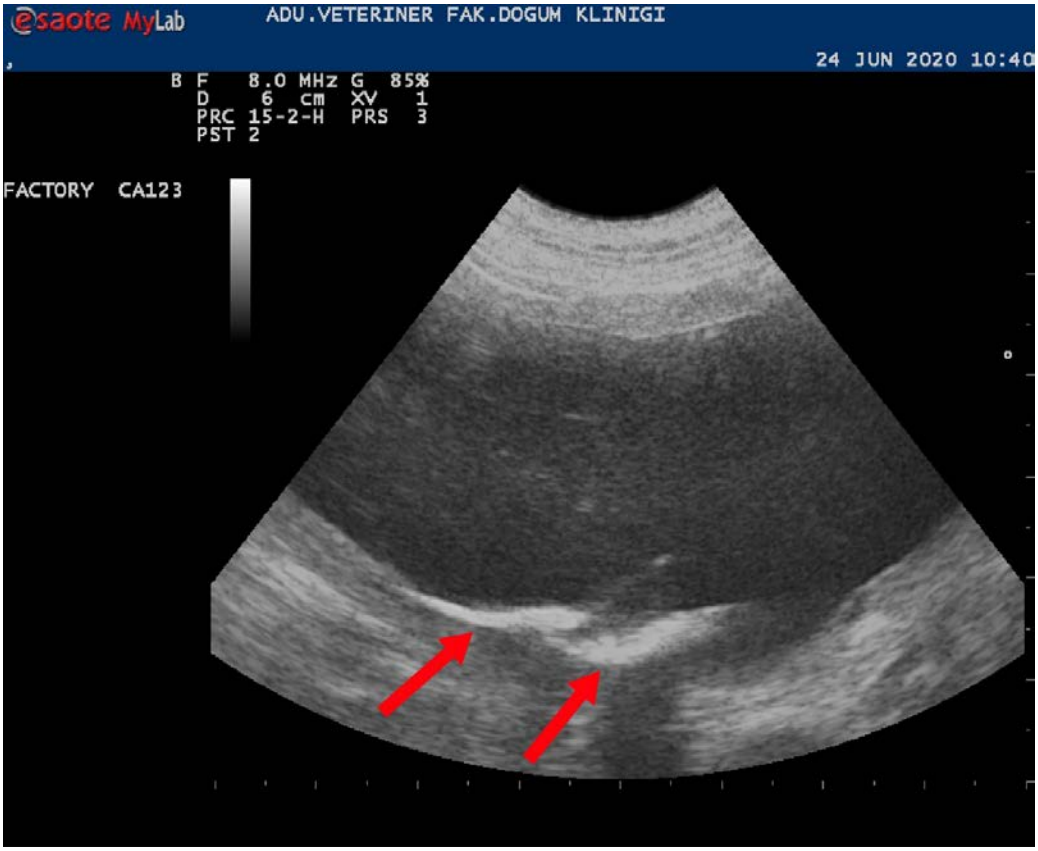

Figure 2. Ultrasonographic appearance of right uterine horn (red arrows)

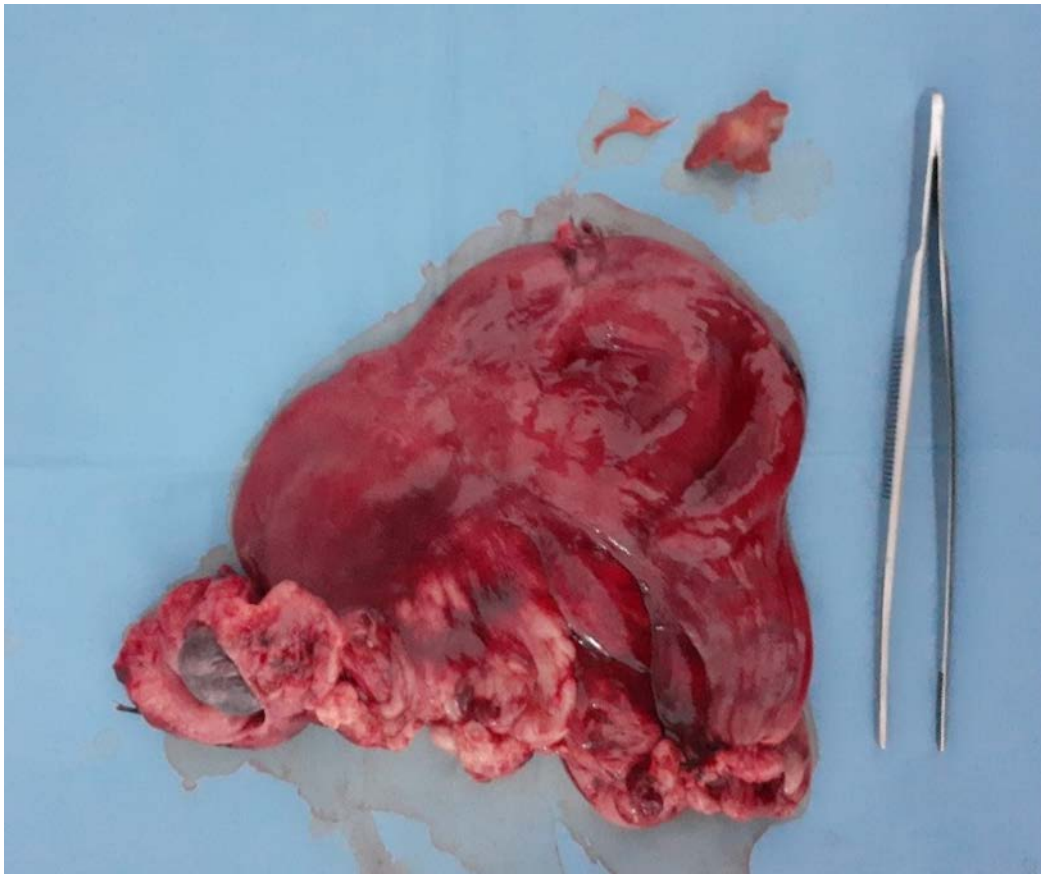

Figure 3. Appearance of removed left uterine horn, left ovary and two fetal bones

Parenteral antibiotic (10 mg/kg, Amoxicillin+Clavulanic acid, Synulox, Zoetis, Italy) was administered subcutaneously for seven consecutive days. One dose of postoperative analgesic (0.2 mg/kg, Meloxicam, Maxicam, Sanovel, Turkey) was also administered. The patient well tolerated the unilateral ovariohysterectomy and recovered uneventfully at the end of the postsurgical first week. No vaginal discharge or complication sign was observed in the bitch throughout the postoperative five months. Although postoperative gynecological scans and hematological analysis were recommended, they could not be performed due not to the owner's demand.

Discussion and Conclusion

In bitch, the incomplete labor is emerged by the lack of uterine contractions, uterine rupture, torsion of the gravid horn, or myometrial suppressing by long-acting progestagen injections in the late proestrus or estrus (Fasulkov et al., 2014; Günzel-Apel et al., 2008; Orfanau et al., 2010; Rigau et al., 2011). The present case's actual reason remained unknown, because there was no external trauma or hormonal approaches in the patient's history. Any systemic signs of a disease could be linked with the last parturition. Besides, both uterine horns were intact at the surgery. The retention of the last fetus could have been resulted in mild uterine inertia in the last stage of the vaginal delivery despite the secretion of maternal oxytocin triggered by other live puppies' suckling behavior.

Fetal retention cases can potentially result in a life-threatening emergency (Günzel-Apel et al., 2008; Ritt ve Fossum, 1997). Also, long-standing retention subsists subclinically and does not give rise to the significant major complications in some rare cases (Erdoğan et al., 2019; Orfanau et al., 2010; Serin and Parın, 2009). Hematological and radiological changes caused by chronic uterine inflammation would be detected after the unusual clinical appearance (loss of appetite, lethargy, etc.), so the diagnosis of these cases may take several months. If detailed pelvic ultrasonography had been performed on the first day of the complaint, the fetal retention the diagnosis of fetal retention would be made earlier in this patient.

Infectious vaginal discharge can reflect various conditions, from simple vaginal flora impairments to complicated uterine infections (Feldman and Nelson, 2004; Golinska et al., 2021; Kustritz, 2006; Kustritz, 2008; Pretzer, 2008). Therefore, it would be said that the proper treatment of genital disorders is not possible without pelvic ultrasonography. Immediate gynecological ultrasonography is required to evaluate the partial or complete fetal debris in dogs suffering from long-standing vaginal discharge, especially in the first week after birth.

According to the various outcomes of fetal death and cervical dilatation, fetal tissue debris varies in size. Dilated cervix allows the vaginal drainage of the macerated fetus(es) and uterine content and helps the prevention of maternal sepsis (Gonzalez Dominguez et al., 2006; Serin and Parın, 2009). In our case, only two bone remnants were detected in the left uterine horn because vaginal drainage and intermittent antibacterial treatments for six months minimized fetal bone debris. The long anestrus period that lasted for postpartum six months can be explained by developing chronic uterine infection resulting in the persistence of corpora lutea and ovarian suppression. Treatment of canine fetal retention has two main approaches: using uterine ecbolic and the partial or complete ovariohysterectomy (Erdoğan et al., 2019; Fasulkov et al., 2014; Feldman and Nelson, 2004; Günzel-Apel et al., 2008). Uterine wall integrity, maternal health condition, sepsis/toxemia, cervical opening, and the degree of embedding the fetal debris to the myometrium are the main factors for choosing the correct treatment protocol. In this case, the uterine infection had disseminated asymmetrically and intensely on the left horn where the dead fetus was located. However, the size and fluid content of the right horn were relatively smaller and in better condition. Therefore, unilateral surgery is recommended as an alternative technique for removing long-standing fetal retention and subsequent fertility recovery (Günzel-Apel et al., 2008). Similar to the previous report, a successful unilateral ovariohysterectomy was performed in the present case to remove the horn that was more affected by fetal bone debris. Therefore, it may be possible for the dog to conceive again and give birth to healthy puppies with this alternative surgery. In addition to this, Seyrek-Intas et al. (2004) reported that the emergence of the subsequent estrus behaviors could be in a wide range of periods (from 1 day to 11 months) following unilateral ovariohysterectomy operation. Therefore, the absence of heat throughout the postoperative five months can be considered normal in our case.

In case of prolonged postpartum vaginal discharge, veterinary clinicians should search for possible obstetric sequelae that can negatively affect maternal fertility and threaten life. Detailed uterine scans are superior in the early diagnosis of obstetric complications in patients without systemic symptoms and may allow individual surgical treatment of the uterine horn separately.

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