

CASE REPORT

OLGU SUNUMU

Ultrasonography of Postpartum Uterine Involution in a Bitch

Oktay YILMAZ*, Mehmet UÇAR

Kocatepe Vet J (2012) 5 (2): 55-58

Key Words

Bitch
Postpartum Period
Ultrasonography
Uterine Involution

Anahtar Kelimeler

Köpek
Postpartum Period
Ultrasonografi
Uterus İnvölüsyonu

Department of Obstetrics and
Gynecology
Faculty of Veterinary Medicine
Afyon Kocatepe University
Afyonkarahisar / TURKEY

* Corresponding author

Email: oktayyilmaz@aku.edu.tr

Phone: +(90) 507 769 49 89

S U M M A R Y

A primiparous, 4-year-old, small sized terrier bitch, which had normally whelped one litter, was monitored for up to 2 months after parturition. Ultrasonography of the uterus was carried out to measure the diameter at placental site on the day of whelping (D0) and at each of the following days (D) after whelping: D1, D7, D21, D28, D35, D42, D49, D56 and D63. In conclusion, it is suggested that postpartum uterine involution may be easily interpreted by ultrasonography in bitches and imaging of uterine involution may be detected approximately till the 7th week of the postpartum period.

•••

Bir Köpekte Postpartum Uterus İnvölüsyonu Ultrasonografisi

ÖZET

Bir yavru doğuran primipar, 4 yaşlı, küçük boy teriyer ırkı bir köpek doğumundan sonraki 2 ay boyunca izlendi. Plasental bölge çapının ölçülebilmesi için uterusun ultrasonografisi, doğumun gerçekleştiği gün (D0) ve doğumu takip eden günlerde D1, D7, D21, D28, D35, D42, D49, D56 ve D63 olacak şekilde gerçekleştirildi. Sonuç olarak, köpeklerde postpartum uterus involüsyonunun ultrasonografik olarak kolaylıkla yorumlanabileceği ve uterus involüsyonunun görüntülenmesinin postpartum yaklaşık 7. haftaya kadar tespit edilebileceği gözlemlendi.

INTRODUCTION

The ultrasonography has an important clinical implication in obstetrics and gynaecology. The use of B-mode ultrasonography for imaging the reproductive tract provides real time, functional and clinical information such gravid-uterus (England et al 2003), pathological uterus (Yilmaz et al 2008) and ovary (Yilmaz et al 2006) in bitches. More recently, ultrasound imaging in dogs has been specified in monitoring fetal development, in timing gestation and predicting parturition, in diagnosis and management of reproductive tract disease (England et al 2003).

The puerperium is the period during which the genital system prepares to return to cyclicity. During postpartum 1-6 weeks, bitches present viscous, dark-brownish, dark green or grey colour vaginal discharge and this is the characteristics of the normal postpartum uterus. Ultrasonography plays a key role to differentiate the normal or abnormal postpartum uterus and in early diagnosis of any abnormal condition related to uterus (Feldman and Nelson 1996). In contrast to other domestic mammalian species, literature on the normal puerperium of the bitch is very limited. This study was carried out to describe ultrasonographic appearance of postpartum changes in uterine shape, echogenicity and diameter of placental sites in a bitch, after normal whelping.

CASE HISTORY

A primiparous, 4-year-old, small sized terrier bitch, which had whelped normally, was monitored for up to 2 months after parturition. Regular clinical examination of the animal was carried out during the study.

Ultrasonography of the uterus was carried out on the day of whelping (D0) and at each of the following days after whelping: D1, D7, D21, D28, D35, D42, D49, D56 and D63. The owner of the bitch visited the clinic on those scheduled days. When it was decided that the whelping of only one litter at 10.00 a.m. was ended, the ultrasonography was performed at 14.30 p.m. and all following examinations were carried out every afternoon of scheduled days. Before examinations, abdominal skin was shaved and the bitch was positioned in dorsal recumbency. The uterus was longitudinally visualized by B-mode linear array real-time ultrasonography (6.0-8.0 MHz, Falco Vet 100, Maastrich, The Netherlands). The urinary bladder was chosen as a reference organ throughout the examination. The placental site were measured transversally and the data were recorded.

The bitch delivered only one litter at 10.00 a.m. Therefore, the data obtained from one enlarged uterine horn. The bitch remained clinically healthy throughout the examination period. On D0, it was observed that central luminal fluid was not invariably anechoic and had echogenic regions within it (Fig. 1A).

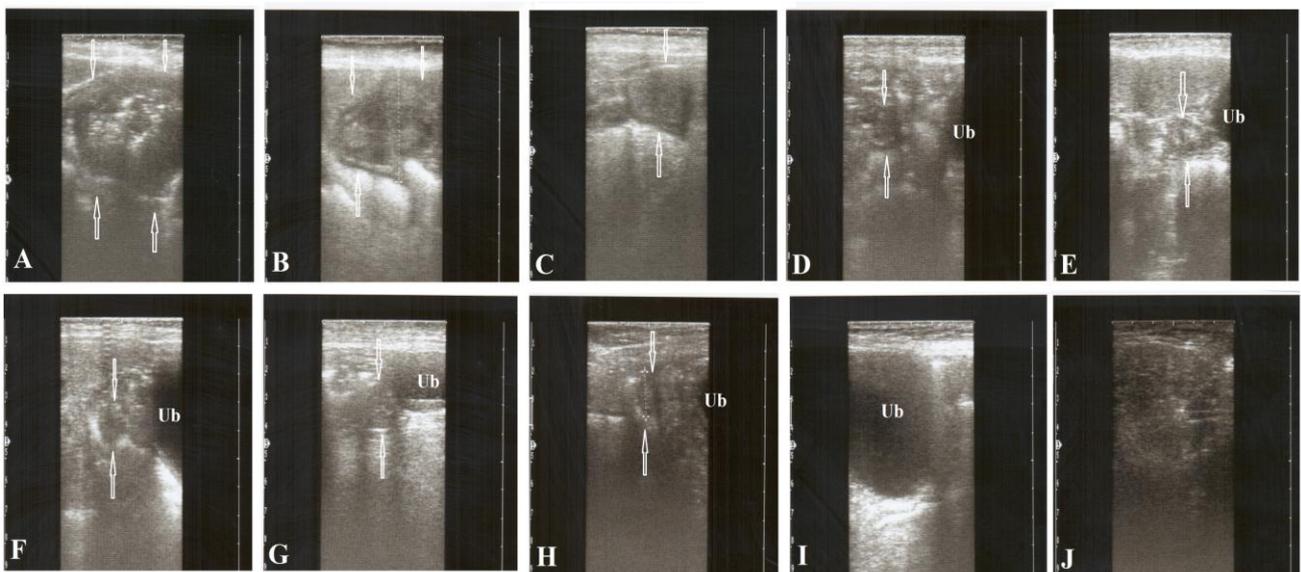


Fig 1. Ultrasonographic appearance of postpartum uterus in different days (D). A: D0, B: D1, C: D7, D: D21, E: D28, F: D35, G: D42, H: D49, I: D56, J: D63. White arrows show the external margin of the uterus. Ub: Urinary bladder.

It was also determined that placental site had usually mixed echogenicity. The next day of the ultrasonography showed that the mix echogenicity immediately decreased but still presented the echogenic regions (Fig. 1B). The diameter of placental site was measured as 5.02 cm and 4.01 on D0 and D1, respectively. The placental site on D7 were measured as 2.55 cm in diameter (Fig. 1C). It was obviously seen that the echogenicity of uterus was more homogenous and this finding was clearly observed on following examinations as well. On D21, the uterine diameter at the placental site was measured as 2.06 cm, whereas the diameter reduced on D28, as to 1.48 cm (Fig. 1D-E). On D35, it was found that the uterine diameter at the placental site was 1.27 cm (Fig. 1F). Moreover, it was seen that the diameter at placental site continued to decrease. The ultrasonography of following examinations of uterus on D42 (Fig. 1G) and D49 (Fig. 1H) revealed that the uterine diameter at the placental sites was 0.91cm and 0.78 cm, respectively. On D56 (Fig. 1I) and D63 (Fig. 1J), it was not possible to monitor uterus due to intestinal gas however, it was clearly determined that the uterine diameter at placental site decreased (Fig. 2).

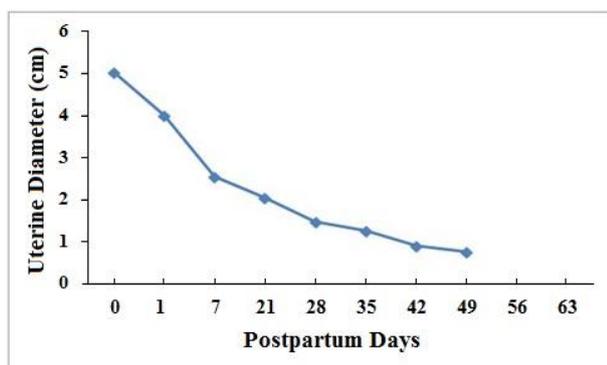


Fig.2. The clinical course of postpartum uterine diameter throughout examination period.

DISCUSSION

The postpartum uterus in the bitch is larger in diameter than the normal non-pregnant tract, resulting in uterine horns which can easily be followed beyond the cranial margin of the bladder. It has been reported that uterine lumen contains varying amounts of anechoic or echogenic fluid depending on the amount of blood or placental debris remaining. Therefore, the endometrium appears as a distinct but irregular hyperechoic layer. Moreover, it has been indicated that the internal margin of endometrium may not be clearly visualised if the luminal material is of a similar echogenicity or the adjacent lumen is empty (Dickie 2006). In the

present study, it was seen that the uterine horns remained enlarged and fluid-filled for a variable time after parturition. On D0 and D1, it was observed that immediately after parturition the uterine body and horns were easily imaged. Moreover, the uterine lumen had mixed echogenicity on those days. It has been reported that uterine diameter decreases during the first two days after parturition and postulates a characteristic ultrasonographic appearance (Yeager 1991; England et al 2003). The diameter of placental sites was measured as 5.02 cm and 4.01 cm on D0 and D1, respectively. These findings were consistent with above mentioned reports (Yeager and Concannon 1990; England et al 2003; Dickie 2006).

During postpartum first week, it has been stated that the uterine horns were tubular structures composed of various echogenicity and had multiple, discrete enlargements with hypoechoic centres at placental sites and placental sites had diameters ranged from 1.1 to 3.8 cm (Yeager and Concannon 1990), approximately 2.5 cm on day 7 (England and Allen 1989). In the presented case, the placental site on D7 were measured as 2.55 cm in diameter which was in accordance with previous reports (England and Allen 1989; Yeager and Concannon 1990). Moreover, it was hard to differentiate the endometrium from uterine luminal fluid during first week of postpartum period. Pharr and Post (1992) have reported that endometrium might not be clearly visualized due to the expulsion of the uterine fluid that leaving cellular material and debris.

It has been reported that on day 24 the diameter of placental sites varies between 1.0-1.4 cm and the diameter was below 1 cm end of the four weeks (Pharr and Post 1992). England et al (2003) reported the placental site 1.2 cm in diameter on day 21 and 0.7 cm on day 35. On D21, the uterine diameter at the placental site was measured as 2.06 cm, whereas the diameter was 1.48 cm on D28 and 1.27 cm on D35. The uterine diameters at the placental site presented in this case were different than those above mentioned reports. It is suggested that the greater measurements obtained in this report may be due to greater size of the litter, since the bitch whelped only one litter.

The ultrasonography of following examinations of uterus on D42 and D49 revealed that the uterine diameter at the placental sites was 0.91cm and 0.78 cm, respectively. It has been postulated that the uterus may return to the size noted during anestrous within 4 to 6 weeks; however, uterine involution is not complete ultrasonographically until 15 weeks postpartum (Yeager 1991; England et al 2003). In this study, it was found the same observation that uterine

involution was not fully complete and the uterus was still visible to monitor. Moreover, Yeager and Concannon (1990) reported that uterus had hypoechoic appearance, tubular structures without enlargements and had a reduced diameter of 0.3 to 0.6 cm end of 15th week. However, it has been indicated that as the diameter decreases, it may become difficult to image the entire uterus due to interference from intestinal gas, after postpartum 6th week (Pharr and Post 1992). In the presented case, On D56 and D63, it was not possible to monitor uterus due to intestinal gas. Therefore, it is suggested that this issue may be solved by more repeated examinations.

In conclusion, it is suggested that postpartum uterine involution may be easily interpreted by ultrasonography in bitches; therefore, uterine enlargement disappears approximately till the 7th week of the postpartum period.

REFERENCES

- Dickie A. 2006.** Imaging of the reproductive tract, In: Diagnostic Ultrasound in Small Animal Practice, Ed; Mannion P, Blackwell, Iowa, USA, pp; 154-155.
- England GCW, Allen WE. 1989.** Real-time ultrasonic imaging of the ovary and uterus of the dog. J Reprod Fertil Suppl, 39: 91-100.
- England G, Yeager A, Concannon PW. 2003.** Ultrasound imaging of the reproductive Tract of the bitch, In: Recent Advances in Small Animal Reproduction. Ed; Concannon PW, England G, Verstegen J, Linde-Forsberg C, International Veterinary Information Service (www.ivis.org), Ithaca, New York, USA
- Feldman EC, Nelson RW. 1996.** Canine female reproduction, In: Canine and Feline Endocrinology and Reproduction, Ed; Pedersen D, WB Saunders, Philadelphia, USA, pp; 572-591.
- Pharr JW, Post K. 1992.** Ultrasonography and radiography of the canine postpartum uterus. Vet Radiol Ultrasound, 33: 35-40.
- Yeager AE, Concannon PW. 1990.** Serial ultrasonographic appearance of postpartum uterine involution in beagle dogs. Theriogenology, 34: 523-535.
- Yeager A. 1991.** Ultrasound examination of the female canine reproductive tract from anestrous through pregnancy to postpartum uterine involution. Soc Theriogenology Proc Ann Meeting San Diego, California, 212-214.
- Yılmaz O, Uçar M, Çelik HA. 2006.** Köpeklerde ovaryumların ultrasonografik ve postoperativ muayeneleri. Uludag Uni J Fac Vet Med. 25: 1-6.
- Yılmaz O, Ucar M, Sahin O, Sevimli A, Demirkan I. 2008.** A diffuse uterine macroabscess formation with unilateral pyometra in a pointer bitch. Indian Vet J. 85:309-311.