



Case Report

Clinical Features and Surgical Outcomes of Suture Granulomas Following Ovariohysterectomy in Two Dogs

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ABSTRACT

Granuloma formation following ovariohysterectomy (OVH) can be caused by ligatures of nonabsorbable suture material and poor aseptic technique. To describe the clinical characterization of granulomas following OVH utilizing silk suture, two spayed bitches were reported. The variable clinical findings, ultrasonographic diagnosis and effectiveness of surgical therapy for treatment are discussed. Foreign body granulomas are important clinically cause of misdiagnosis tumours and stimulating new tumours. Practitioners should always consider elective OVH with ligation by nonabsorbable suture, however, often require surgical correction. *Keywords: Ovariohysterectomy, granuloma, bitch.*

İki Köpekte Ovaryohistektomi Sonrası Oluşan Dikiş Granulomalarının Klinik Özellikleri Ve Cerrahi Sağıtım Sonuçları

ÖZET

Ovaryohistektomi (OVH) sonrası şekillenen granulomalar emilmeyen dikiş materyali içeren ligatürler ve yetersiz aseptik koşullar nedeniyle oluşmaktadır. Bu sunumda, iki köpekte OVH sırasında ligasyon için ipek iplik kullanımı sonrası gelişen yabancı cisim granulomalarının klinik, ultrasonografik ve postoperatif bulguları sunuldu. Farklı klinik bulguları, ultrasonografik tanısı ve cerrahi yaklaşımın tedavideki etkinliği verildi. Yabancı cisim granulomaları hatalı tümör tanısı ve olası yeni tümörlerin tetiklenmesi açısından klinik öneme sahiptir. Klinisyenler emilmeyen dikişlerle ligasyon uygulanan OVH operasyonlarında bazı olguların ilerleyen süreçte yaşamsal önem taşıyan sorunlara yol açabileceğini ve yeni bir cerrahi yaklaşımın gerekebileceğini göz önünde tutulmalıdır. *Anahtar kelimeler: Ovaryohistektomi, granuloma, köpek.*

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Introduction

In canine practice, the most frequently method of pet population control is ovariectomy and ovariohysterectomy operations (Stockner, 1991; Goethem et al, 2006). Several short-term and long-term postoperative complications associated with reproductive organs were reported as stump pyometra, ovarian remnant syndrome, adhesions of genital tract to other intra-abdominal organs and granulomas (Spackman et al, 1984; Wallace et al, 1991; Stone, 2003; Goethem et al, 2006). Uterine and ovarian stump granulomas are usually classified as major and short-term complications. The most common cause of granulomas was a foreign body reaction to multifilament nonabsorbable suture material, surgical sponge, poor aseptic technique, or excessive residual devitalized tissue at a previous neutering procedure in female dogs (Spackman, 1984; Werner et al, 1992; Mai et al, 2001, Goethem et al, 2006; Boza et al 2010). If a retained surgical sponge or another foreign body is encapsulated by an aseptic granuloma, there may be no clinical signs other than a mass. This type of lesion is unlikely to be ever detected in veterinary patients (Merlo and Lamb, 2000). The dogs in the present study represent examples of the infected foreign-body granuloma develop after surgery, which is associated with variable clinical signs and surgical outcome.

Case Description

Case 1

A 4-year-old Terrier bitch underwent OVH for elective spaying before a year was referred to our clinic for a history of lethargy, poor appetite, and intermittent- slight haemorrhagic vaginal discharge for two months. In physical examination, her temperature and pulsation values were normally. Haematological analysis showed that her haematological parameters were normal except white blood cell (WBC) count was 22×10^9 g/dl. Transabdominal ultrasonography revealed that a mass surrounded by significant capsule and hypoechoic cavity (Figure 1A) caudal to right kidney. Besides, the remnant of right ovary was detected close to mass (Figure 1B).

Case 2

A 10-year-old mongrel spayed bitch underwent OVH for elective spaying before four months was referred to our clinic for a history of intermittent purulent vaginal discharge for three months. Her temperature, pulsation values and haematological analysis results were normally. In transabdominal ultrasonography, an irregular shape mass including cystic structure surrounded by hyperechogenic tissue was detected caudal to right kidney (Figure 2A). Besides, another spherical hyperechoic mass adjacent to bladder was detected (Figure 2B).

After the clinical and ultrasonographic examinations, it was decided to perform a ventral midline laparotomy as treatment in both cases. Dissociative anaesthesia was applied with 1.1 mg/kg xylazine hydrochloride (Alfazine[®], Alfasan) and 10 mg/kg ketamine hydrochloride (Alfamine[®], Alfasan) intramuscularly after premedication with 0.04 mg/kg atropine sulphate (Atropan[®], Vetas) subcutaneously. The patients were placed in dorsal recumbency, and the ventral abdomen was aseptically prepared in standard fashion.

In Case 1, a mass close to right kidney and with the right ovary remnant was found and removed surgically. The encapsulated mass was adjacent to the right ovary remnant. On cut section of the mass, there were serous-purulent fluid and knots with 1/0 black silk suture observed in cavity (Figure 3A). During laparotomy, no more pathological structures related to OVH complication (stump granuloma and pyometra) were detected. Postoperatively, antibacterial therapy was applied with 400 000 IU penicillin (Iecilline[®], IE Ulagay), daily for five days and an Elizabethan collar was used until removing skin sutures.

After removing skin sutures, her general condition, appetite and, WBC was normal. Her owners reported that no vaginal discharge during six months.

During operation of Case 2, abdominal inspection revealed two masses. First mass was solid, irregular shape, covered with the omentum and close to right kidney. After resection of mass, cut section was performed. Three separate knots by 2/0 black silk suture observed inside (Figure 3B). The second granuloma was complicated and adjacent to bladder severely. A spheroidal mass tightly adhere to bladder. Moreover, a thick omental tissue was closely connected to this combination (Figure 4A). The embedded silk suture residues were observed in the adhesion area (Figure 4B). Cause of this omental tissue was not separated adequately, and neither ureters was visible in this complicated mass, it was decided that only its drainage but not resection of this structure. A thick infectious haemorrhagic fluid was collected after an 18-gauge needle inserted into the granuloma. Following the irrigation of peritoneal cavity using saline solution, abdominal wall was closed. For antibacterial therapy, Amoxicillin, (Amoxyphen[®], EgeVet) 15mg/kg was administered intramuscularly daily for 7 days. In the first week postoperatively, vulvar oedema and vaginal discharge were decreased gradually and lasted.

Discussion

Foreign body granulomas following OVH are occurring ligation by using non-absorbable material (Werner et al, 1992; Kanazono et al 2009, Boza et al, 2010) or retained surgical sponge (Mai et al, 2001; Miller et al, 2006; Frank and Stanley, 2009; Putwain and Archer 2009; Rayner et al, 2010) in dogs. These lesions have clinical importance cause of several reversible or irreversible disorders. Kanazono et al (2009) reported that ovarian pedicle granulomas related to a reaction to the suture material can cause urethral obstruction and hydronephrosis. Frank and Stanley (2009), reported that an enterocutaneous fistula related to before surgery was detected. Moreover, it was well known the development and progression of foreign-body-induced tumours (Rayner et al, 2010) is likely accelerated by the foreign-body-associated inflammation itself and reactive oxygen species produced by the inflammatory cells (Okada, 2007; Kim et al, 2009). In this report, either the any masses in their histories or new masses progressed during six months after surgery was not detected.

The other problem of patients with granuloma is well-known that a suture or stitch granuloma can have a complex appearance and mimic a soft-tissue tumour at imaging (Carroll et al, 1996; Kise et al, 1999; Gan and Wastie, 2007). In some cases, they create imaging findings that may be confused with a malignant lesion, which can lead to unnecessary surgical treatment (Kim et al, 2009). It is important for radiologists and clinicians to be alert to this condition and to consider a history of previous surgery when evaluating images of a patient presenting with an abdominal or pelvic mass (Deschamps and Roux 2009; Gan and Wastie 2007). There are few reports of ultrasonographic appearance of foreign body granuloma in dogs (Boza et al 2010, Mai et al 2001; Merlo and Lamb 2000). In human medicine, suture granulomas are often seen as irregular masses with central necrosis (Carroll et al 1996; Kise et al 1999). But the findings in the present cases that had ultrasonography had some difference from these reports. In our cases, the lesions were likely an abscess with fluid-filled cavities surrounded by hyper echoic area but not a retained sponge including high amplitude echoes cause of calcification, gas pockets or interfaces due to the fibres of the sponge as reported earlier (Wan et al, 1992).

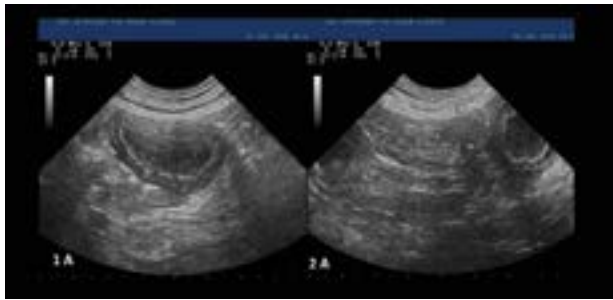


Figure 1: 1A Ultrasonographic image of abdominal mass in Case 1, 1B: Ultrasonographic image of remnant right ovarian tissue in Case 1

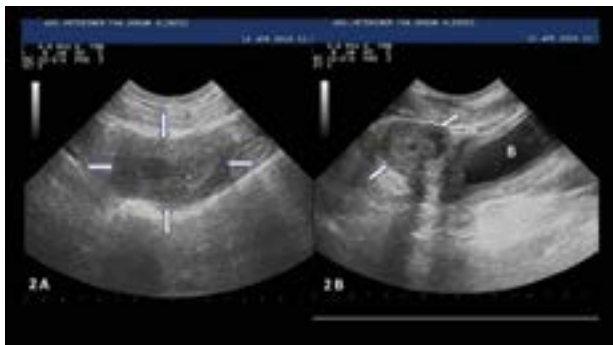


Figure 2: 2A Ultrasonographic image of abdominal mass in Case 2, 2B: Ultrasonographic image of pelvic mass adjacent to bladder in Case 2

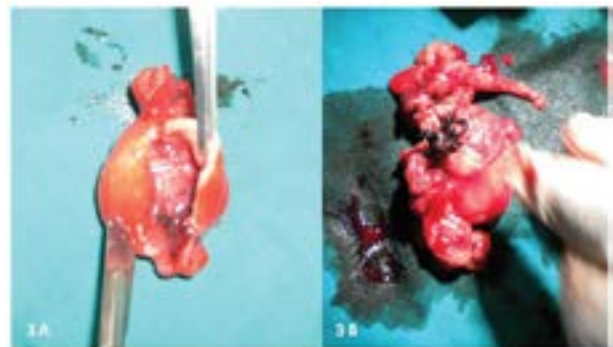


Figure 3: 3A Macroscopic appearance after cut of the abdominal mass and remnant ovarian tissue in Case 1, 3B: Macroscopic appearance the abdominal mass and remnant ovarian tissue after cut off in Case 2

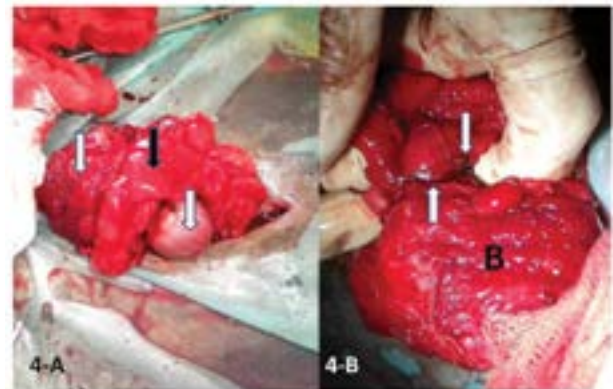


Figure 4: 4A Macroscopic appearance in operation in Case 2. Bladder (white arrow), omental tissue (black arrow) and pelvic mass (white arrow), 4B: Macroscopic appearance of the embedded silk suture (arrows), and bladder (B) in Case 2.

In this report, stitch granulomas were observed on the right ovarian pedicle in both of cases. Cause a more cranial and

deeper anatomic location of the right ovary, this ligation procedure can be more difficulty. Therefore, OVH which is performed by paralumbar area on the left side can be related to this complication. Regarding to patient's size, it should be prefer to perform on the median or right paramedian area for OVH than paralumbar area to decrease of this complication.

When comparing to these granulomas in their areas, it can be specified that the mass localized in cervical ligation has more risky and cause irreversible outcome. In both of cases, although the abdominal granulomas in ovarian pedicle were removed successfully, pelvic granuloma in case 2, which was adhered to bladder, was not excised with surgical application. In addition, it was detected that the thick silk materials (2/0) were used in previously operation especially in case 2. Regarding to adhesion of other pelvic organs (bladder, intestines, colon and ureters), clinicians should be aware of this complication and care to cervical ligation by using appropriate suture materials and technique.

Conflict of interest

The authors declare that they have no competing interests.

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