

Using of Polypropylene Mesh for Peritoneal Defect induced Gossypiboma in a Shih-Tzu Dog

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Abstract : A 10-year-old spayed female Shih-tzu dog with a left-sided caudal abdominal swelling of 2-month clinical duration was referred to the Konkuk University Teaching Hospital (KUVTH). We confirmed the presence of an abdominal mass by radiography and ultrasonography. A gossypiboma was identified between bladder and small intestines at surgery and removed. The resulting peritoneal adhesion was severe. But, the peritoneal defect did not allow easy repair of the abdominal wall. Therefore, polypropylene mesh (PPM) was used in repair. The patient was good condition after surgery with no caudal abdominal swelling. We followed the patient for the next 6 months with no complication.

Key words : Shih-tzu dog, gossypiboma, peritoneal defect, polypropylene mesh.

Introduction

Retained surgical sponges are usually discovered in the abdominal cavity. They are sometimes years after the surgical procedure, and the typically result in foreign-body granulomas, or gossypibomas (4). The term is derived from the Latin “gossypium” (cotton) and the Swahili “boma” (place of concealment) (4). Gossypibomas are frequently asymptomatic. An inflammatory local tissue response to the cellulose fibers in surgical sponges results in an aseptic granulomatous encapsulation that is clinically detectable as a palpable as a palpable abdominal mass (4,5). Retained surgical sponges can infrequently result in abscess formation (5).

Hernia repair surgery has changed considerably since polypropylene mesh (PPM) was introduced in 1962 (6). The mesh is created by the controlled polymerization of propylene (derived from propane gas). PPM is heat resistant up 168.3 °C and can therefore undergo sterilization without difficulty or compromise. It has high tensile strength, good flexibility, and excellent resistance to infection. It is the most commonly used basic prosthetic material in surgical hernia repair (1). The excellent results have classified meshes as the treatment methods of choice for the repair of abdominal wall defects (2). Such implants are known to significantly reduce tension on abdominal closure (3).

Case

A 10-year-old, spayed female Shih-tzu (6 kg of body weight) was referred to the KUVTH for the evaluation of a large mass and associated swelling on the left-sided caudal abdomen. The lesion was first noted 2 months prior to initial presentation as a small swelling and had gradually enlarged. The patient had a history of ovariohysterectomy (OHE) at a local animal hospital 6 months prior to presentation at our clinic.

The patient was bright, alert, and responsive on clinical observation with a large left-sided caudal abdominal mass. The mass was approximately 10 × 10 cm in size, was not painful on palpation.

Lateral and ventrodorsal radiographs revealed subtle changes in serosal detail likely due to focal peritonitis or effusion. The small intestine was cranially displaced and both ureters extended dorsal to the bladder as confirmed by excretory urography (Fig 1). The mass was large, solid, slightly heterogeneous, and irregularly marginated. The urinary bladder vertex was distorted, as documented by ultrasonography (Fig 2). Hematology and serum blood chemistry values were within normal limits.

Abdominal exploratory surgery was performed on the patient. A non-descript mass was present and was adherent to the walls of the urinary bladder, intestines, omentum, and peritoneum. It was difficult to separate from the vertex of urinary bladder, a portion of intestines, and adhesive the omentum. The mass measured at 7 × 7 × 5 after surgical excision. Portions of the urinary bladder and small intestine

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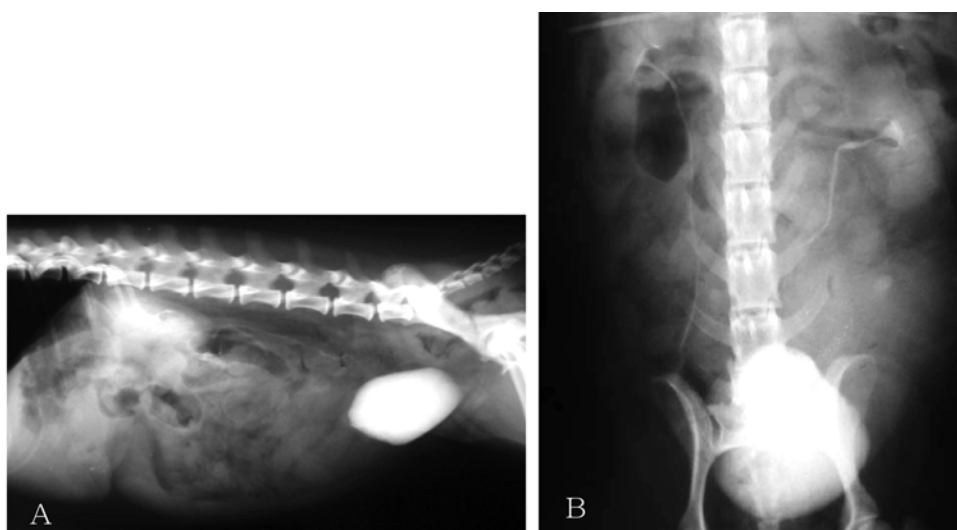


Fig 1. Lateral (A) and ventrodorsal (B) excretory urogram images. Much of the small intestine was cranially displaced and both ureters extended dorsally to the bladder.

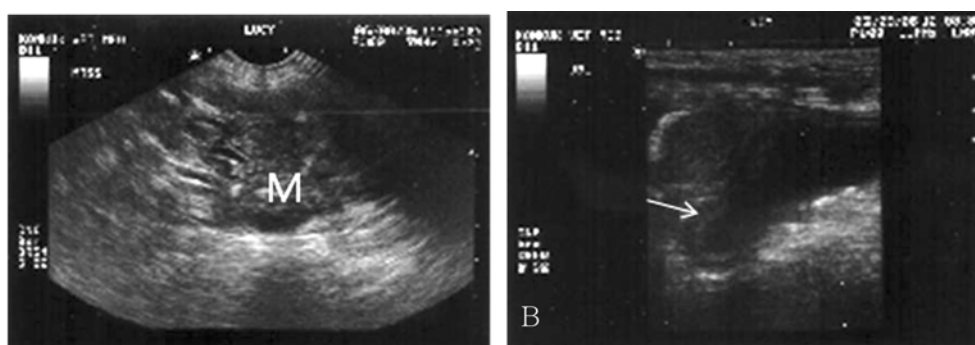


Fig 2. The mass was large, solid, slightly heterogeneous, and irregularly margined (A): Distortion of the urinary bladder vertex due to the mass (arrow) was identified by ultrasonography.

were excised due to adhesion and occlusion. The urinary bladder wall was repaired with a two-layer closure and the small intestinal resection was closed with anastomosis (Fig 3). Therefore, a two-layer PPM (Bard® Mesh, Monofilament knitted polypropylene, USA, 5 × 3 cm) was implanted and peritoneal integrity was restored. With the placement of PPM, peritoneal integrity was restored. A subcutaneous abscess was identified, and a penrose drain was placed to allow therapeutic drainage and resolution of the abscess.

Gross incision of the mass revealed a surgical gauze sponge (gossypiboma) deep within the granuloma. Extensive scar tissue encased the gauze foreign material and was infiltrated with small abscesses and necrotic foci. The patient was in good clinical condition post-operatively with no caudal swelling. We could find no complication for 6 months.

Discussion

Most retained surgical sponges are encapsulated by aseptic granulomas. A mass may be the only clinical signs, and

be delayed in appearance (5). Our patient had an infected foreign body granuloma which resulted in abdominal swelling and an easily palpable mass which appeared relatively rapidly (3 months) after sponge retention. The possibility of retained surgical sponge should be on clinical differential lists for animals with a history of prior surgery and clinical presentation of a sinus or an abdominal mass.

Gossypiboma are rare in veterinary medicine, and most occur after OHE procedures (5). The gossypiboma in this case presentation occurred after an OHE procedure as well. The clinical presentations of gossypiboma are usually non-specific and may appear months to years after surgery.

The most impressive imaging findings in human gossypibomas are the curved or banded radio-opaque lines on plain radiography. Ultrasonographic findings include well-defined masses with wavy internal echogenic foci with hypoechoic rims and a strong posterior shadow (7). A well-defined mass with a wavy internal echogenic focus and an irregular hyper-echoic center was identified in this case. A strong posterior shadow was not identified. The adhesion between the perito-

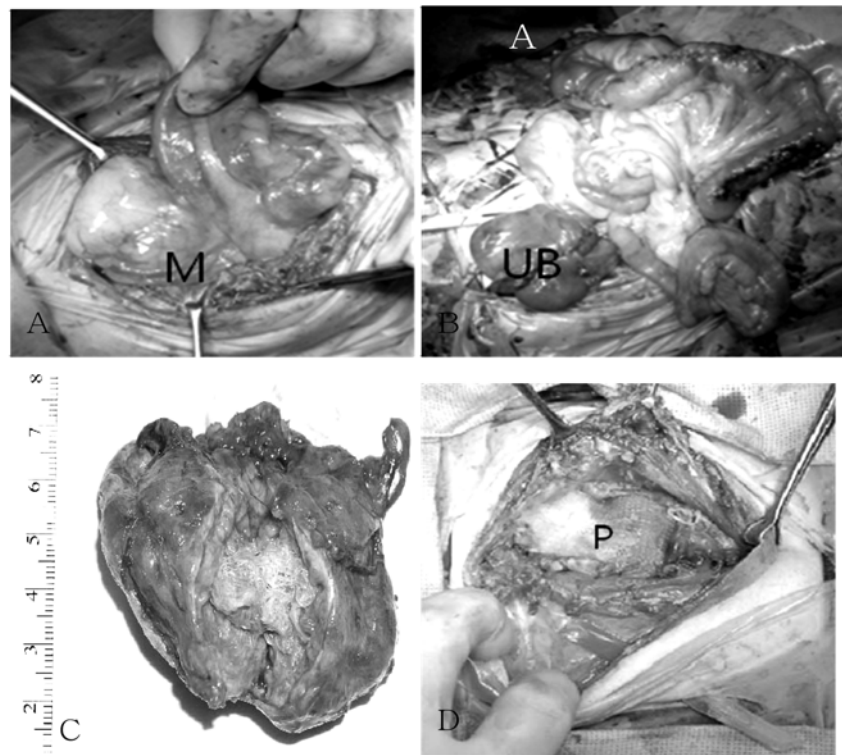


Fig 3. An indefinite mass was adhered to the wall of the urinary bladder and incorporating the omentum (A). After removal the mass, affected organs was recovered (B). The gossypiboma occurred secondary to a retained surgical gauze sponge (C) The implanted polypropylene mesh (P) on the peritoneal defect (D).

neum and the mass was difficult to separate. Therefore, the peritoneum was dissected. PPM was used to aid repair of the peritoneal defects. Numerous studies have revealed that recurrence rates in hernia or defect repair surgeries can be dramatically reduced with PPM use. However, other results suggest that PPM use should be limited in cases of infected abdominal defects. The peritoneum and abdominal organs were contaminated in this case, but PPM use was advantageous in this patient. PPM was used in a contaminated lesion with multiple bowel and bladder adhesions.

The ideal prosthesis should favor the development of dense native tissues, retention of elasticity and resistance features over time, and easy of use.

The patient exhibited good abdominal wound healing without infection, herniation, or mesh extraction over a 6-month follow-up.

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시츄견에서 Polypropylene mesh를 이용한 gossypiboma에 의한 복막 결손 수복 증례

강은희 · 장화석 · 정다정 · 이재훈 · 이영수 · 양우종 · 김대현 · 정욱헌 · 최치봉 · 김휘율¹

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요 약 : 10세령의 중성화된 암컷 시츄가 하부 복부의 왼쪽 부분의 종창으로 인해 건국대학교 수의과대학 부속동물병원에 내원하였다. 축주는 본원에 내원하기 두달전에 환축의 하부 복부의 종창과 촉진되는 덩어리를 확인하였다. 환축을 방사선과 초음파검사를 실시하고, 수술 중 방광과 소장 사이에 있는 복강내 gossypiboma로 인해 복강내 유착이 심한 것을 확인할 수 있었다. 그 gossypiboma를 복강내에서 제거되었지만, 복막을 수복하기에 결손이 커서 polypropylene mesh를 이용하였다. 수술 후 하부 복부의 종창 등은 확인할 수 없었으며, 6개월동안 아무런 합병증이 발견되지 않았다.

주요어 : 시츄견, gossypiboma, 복막결손, polypropylene mesh.