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Concurrent Inguinal Hernia, Rectal Prolapse and Fetal Death in a Pregnant Cat Managed Surgically via Ovariohysterectomy and Herniorrhaphy: A Case Report

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ABSTRACT

Inguinal hernia is a rare condition in cats, characterized by the protrusion of abdominal organs through the inguinal canal. A 5-year-old pregnant Persian cat (3.1kg) presented with right inguinal swelling and rectal prolapse for four days. Examination revealed tachypnea, tachycardia, and a palpable hernial ring. Hematology revealed leukocytosis and mild anemia. Ultrasonography and radiography confirmed intestinal entrapment and fetal death at approximately 45 days of gestation. The surgery included rectal repositioning, ovariohysterectomy, and herniorrhaphy. Postoperative care included systemic antibiotics (amoxicillin and metronidazole), meloxicam, immunomodulators, topical antimicrobials, and wound care. The purse-string suture was removed on day 5, and the skin sutures were removed on day 11. By day 15, the cat had entirely recovered with normal defecation. This case highlights the diagnosis and successful surgical management of a concurrent inguinal hernia, rectal prolapse, and fetal death in a pregnant cat.

Keywords: Inguinal hernia, Rectal prolapse, Ovariohysterectomy, Herniorrhaphy, Pregnant cat.

INTRODUCTION

Inguinal hernia in cats is an uncommon clinical condition characterized by the protrusion of abdominal organs through the inguinal canal, a natural passage in the caudal abdominal wall that transmits blood vessels and nerves, and—uniquely in females—the vaginal process enclosing the round ligament (MSD Veterinary Manual 2024). Although abdominal wall hernias are well documented across domestic species, feline inguinal hernias remain rare and are reported far less frequently compared to those in dogs (Amsellem 2011). In female cats, previously described cases often involve herniation of the gravid uterus or urinary bladder, underscoring the anatomical and physiological influences that make pregnancy a significant risk factor for hernias (Costa et al. 2017; De la Vega et al. 2018).

Pregnancy contributes to the development of inguinal hernia through several mechanisms, including progressive increases in intra-abdominal pressure from fetal growth and hormonally mediated connective tissue remodeling that reduces abdominal wall tensile strength (Haward et al. 2009). Changes in collagen elasticity and abdominal wall compliance during gestation have been demonstrated to weaken supportive structures, increasing susceptibility to herniation, particularly in late-term pregnancy when abdominal wall loading is maximal (Boissonneault et al. 2005). When reproductive structures such as the uterus become entrapped in the hernial sac, complications including dystocia, ischemia, or organ congestion may occur, making timely surgical intervention essential for preventing tissue damage and systemic compromise (Pratschke 2014).

Rectal prolapse is another condition associated with increased intra-abdominal pressure and severe tenesmus, which is defined by the protrusion of the rectal mucosa or full-thickness tissue through the anal opening. In small animals, prolapse is commonly associated with gastrointestinal disease, pelvic or abdominal abnormalities, urinary obstruction, or parturition-related straining (Defarges et al. 2019). Intestinal entrapment within an inguinal hernia can impair motility and cause constipation, leading to persistent straining and subsequent prolapse. The pathophysiological relationship between motility impairment, obstruction, and tenesmus has been well described in feline gastrointestinal disorders, further supporting this cascade of events (Zachary 2012; Rossi et al. 2020).

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Rectal prolapse is commonly treated with manual reduction, temporary purse-string suturing, and management of underlying causes. In recurrent or complicated cases, particularly those associated with anatomical abnormalities, surgical procedures such as colopexy may be required to prevent recurrence (Horňáková et al. 2021). When an inguinal hernia, pregnancy, and rectal prolapse occur concurrently, a staged therapeutic approach is warranted, often involving prolapse reduction, reproductive surgery once fetal viability is assessed, and definitive herniorrhaphy (Nyland and Mattoon 2015).

Optimal postoperative recovery depends on thorough perioperative management, particularly multimodal analgesia, infection control, and wound care management. Modern guidelines emphasize individualized pain management strategies, including combination analgesics, to minimize postoperative discomfort and enhance recovery (Steagall et al. 2022). Studies on feline abdominal surgery further highlight the importance of careful monitoring and supportive care to reduce complications and promote favorable surgical outcomes (Lam et al. 2015). Collectively, current evidence demonstrates that integrated surgical and medical management is essential for achieving optimal results in complex cases involving pregnancy-associated inguinal hernias, intestinal entrapment, and rectal prolapse in cats (Rianto et al. 2024).

Case description

Signalment and anamnesis

A 5-year-old pregnant Persian queen named Mici, weighing 3.1kg, presented to the Veterinary Teaching Hospital, Faculty of Medicine, Hasanuddin University, with a primary complaint of right inguinal swelling accompanied by rectal protrusion. According to the owner, inguinal swelling had been present for approximately one year, initially as a small lump that progressively enlarged over time. Rectal protrusion was first observed four days before presentation.

The owner also reported mild lethargy and reduced appetite over the previous month. The cat was kept on a commercial dry diet with ad libitum access to clean drinking water and was allowed free roaming within the household yard. Preventive care has been up-to-date, including regular deworming and routine vaccinations.

Clinical examination

Clinical examination of the right inguinal region revealed a soft, fluctuant mass that was partially reducible to the abdominal cavity through a distinct, palpable ring-like opening. In the perineal region, an approximately 5cm protrusion of pink rectal mucosa was noted without signs of ulceration or dark discoloration, indicating the absence of necrosis.

Physiological assessment revealed a rectal temperature of 39.0°C, which was within the reference range of 38.1–39.2°C. Both pulse and heart rates were recorded at 144 beats per minute, which is consistent with the normal feline range of 140–220 beats per minute. The capillary refill time was less than 2 seconds, and skin turgor returned within less than 3 seconds, suggesting an adequate hydration status.

Diagnostic assessment

Hematology

Complete blood count (CBC) was performed to assess the patient's clinical status and suitability for surgery. Hematology results (Table 1) indicated leukocytosis accompanied by a decrease in hemoglobin levels.

Table 1: Hematology results of the case cat

Parameter	Result	Reference range*
WBC	21.3×10^9/L ↑	5.5 – 19.5×10^9/L
Lymph#	4.6×10^9/L	0.8 – 7.0×10^9/L
Mid#	1.2×10^9/L	0.0 – 1.9×10^9/L
Gran#	15.5×10^9/L ↑	2.1 – 15.0×10^9/L
Lymph%	21.5%	12.0 – 45.0%
Mid%	5.5%	2.0 – 9.0%
Gran%	73.0%	35.0 – 85.0%
RBC	5.52×10^{12}/L	4.60 – 10.00×10^{12}/L
HGB	7.7g/dL ↓	9.3 – 15.3g/dL
HCT	28.3%	28.0 – 49.0%
MCV	51.4fL	39.0 – 52.0fL
MCH	13.9pg	13.0 – 21.0pg
MCHC	272g/dL ↓	300 – 380g/dL
RDW–CV	16.5%	14.0 – 18.0%
RDW–SD	26.9fL	20.0 – 80.0fL
PLT	172×10^9/L	100 – 514×10^9/L
MPV	9.5fL	5.0 – 11.8fL
PDW	10.1	5.0 – 20.0
PCT	0.163%	0.100 – 0.500%
P–LCC	104×10^9/L	—
P–LCR	60.5%	10.0 – 70.0%

*Reference ranges according to standard hematological values. ↑ above normal range; ↓ below normal range.

Ultrasonography

Ultrasonographic examination was performed to identify the hernial ring and the structures or organs contained within the hernial sac. The probe was positioned transversely over the lateral aspect of the hernial sac. Based on the ultrasonographic findings (Fig. 1), an anechoic structure consistent with the hernial ring was observed, along with convoluted hypoechoic–hyperechoic tubular structures, suggestive of intestinal loops. The fetal gestational age was estimated by measuring the biparietal diameter of the fetal head, yielding an age of approximately 45 days. No fetal cardiac activity was detected, confirming intrauterine fetal death (abortion).

Radiography

Abdominal radiography was performed in two projections (Fig. 2): lateral view (2A) and ventrodorsal view (2B). The radiographic findings corroborated the ultrasonographic diagnosis, revealing radiopaque fetal skeletal structures without evidence of thoracic or abdominal movement, which is indicative of fetal demise. Distinct radiopaque protrusions were observed in the right inguinal region, corresponding to the herniated abdominal segment. The affected inguinal area showed loss of continuity with the adjacent abdominal wall, and the hernial sac contained radiopaque structures consistent with gastrointestinal organs.

Diagnosis and prognosis

Based on anamnesis, physical examination, and further diagnostic evaluations, the cat was diagnosed with an inguinal hernia accompanied by rectal prolapse and fetal

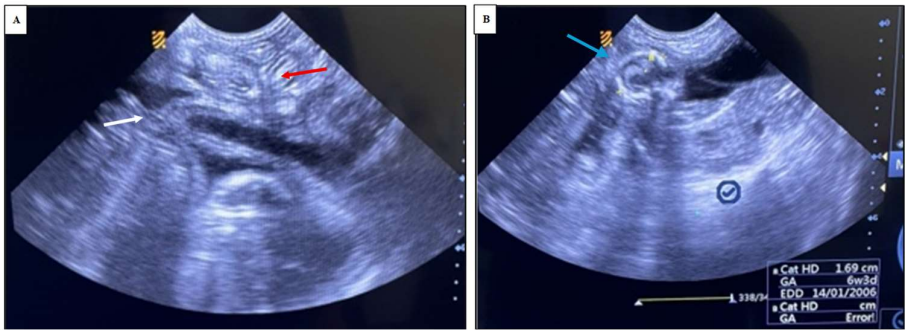

Fig. 1: Anechoic structure (white arrow) representing the hernial ring and convoluted hypoechoic–hyperechoic intestinal loops (red arrow) (A), and estimated gestational age of 45 days based on fetal head diameter measurement (blue arrow) (B).

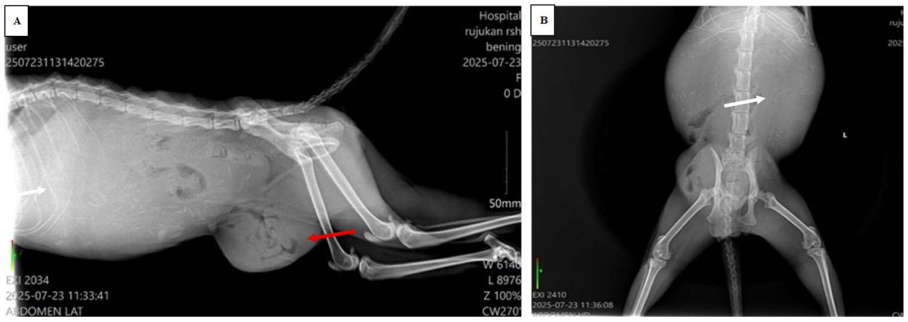

Fig. 2: 2A is a lateral view showing the presence of a hernia (red arrow), and 2B is a Ventrodorsal view depicting radiopaque structures representing the fetal bones (white arrow).

death during pregnancy. The prognosis for this case was considered dubius fausta (guarded to fair), taking into account the patient's condition in the late trimester of pregnancy, the chronicity of the hernial protrusion that had been present for approximately one year, raising the possibility of adhesions, and the decreased appetite observed prior to presentation.

Surgical procedure

This case was managed in three stages: rectal repositioning, ovariohysterectomy, and herniorrhaphy. The patient was premedicated with a combination of xylazine (1mg/kg BW, intramuscular) and ketamine (10mg/kg BW, intramuscular) to induce sedation and analgesia, respectively. Following adequate sedation, the cat was placed in dorsal recumbency, and the surgical site was aseptically prepared.

Rectal repositioning

The perianal area and base of the tail were clipped and aseptically prepared using sterile normal saline. Prolapsed rectal tissue was rinsed with saline to clean and hydrate the mucosa. Local anesthesia was induced by infiltration of lidocaine around the anus. The cat was then positioned in dorsal recumbency with the hindquarters elevated. A 1mL syringe was gently inserted into the rectal lumen to help maintain its tubular shape, and the prolapsed segment was carefully repositioned (Fig. 3A, 3B, and 3C). A purse-string suture with 3-0 non-absorbable silk was placed around the anus to prevent recurrence.

Ovariohysterectomy

The cat was placed in dorsal recumbency on the surgical table. The surgical site in the umbilical region and the intravenous catheter sites on both forelimbs were clipped. Intravenous infusion of Ringer's lactate was administered via the cephalic vein. The surgical site was aseptically prepared using 70% alcohol and povidone-iodine, and the area was draped.

A ventral midline incision was made through the skin, subcutaneous tissue, and linea alba, cranially extending from the umbilicus. The abdominal wall was retracted, and the uterine horns were exteriorized from the abdominal cavity. Each horn was traced to its ovaries. The suspensory ligament was broken down, and the ovarian pedicle vessels were clamped and double-ligated below the clamp using 4-0 polyglactin. The pedicle was transected above the clamp, checked for bleeding, and then returned to the abdomen. The same procedure was performed for the contralateral ovary.

The broad ligament is separated from the uterine horn. The uterine body was clamped 1–2cm below the bifurcation and double-ligated using a transfixation pattern (Fig. 4A and 4B) with 4-0 polyglactin. The uterine body was transected above the ligature and inspected for bleeding, and the remaining stump returned to the abdominal cavity.

The abdominal cavity was flushed with sterile saline and metronidazole solution. The closure was performed in three layers: the muscle and peritoneum were sutured with a simple interrupted pattern using 3-0 polyglactin, the subcutaneous tissue with a simple continuous pattern using 3-0 polyglactin, and the skin with a simple interrupted pattern using 3-0 silk.

Herniorrhaphy

After completing the ovariohysterectomy, the hernial sac was exposed through an incision over the inguinal swelling. The hernial sac was opened, and the herniated intestinal loops were examined for viability. The intestines were then carefully repositioned in the abdominal cavity (Fig. 5A and 5B).

The hernial ring was closed with interrupted sutures using 3-0 non-absorbable material to restore the integrity of the inguinal wall. The subcutaneous tissue was sutured using a simple continuous pattern with 3-0 polyglactin, and the skin was closed with a simple interrupted pattern using 3-0 silk.

Fig. 3: The prolapse was irrigated with physiological saline (3A), and a 1mL syringe was inserted into the rectal lumen to maintain its tubular shape (3B). The rectum was repositioned by gently pushing the prolapse back into the anus, and a purse-string suture was placed around the anal skin using 3-0 silk (3C).

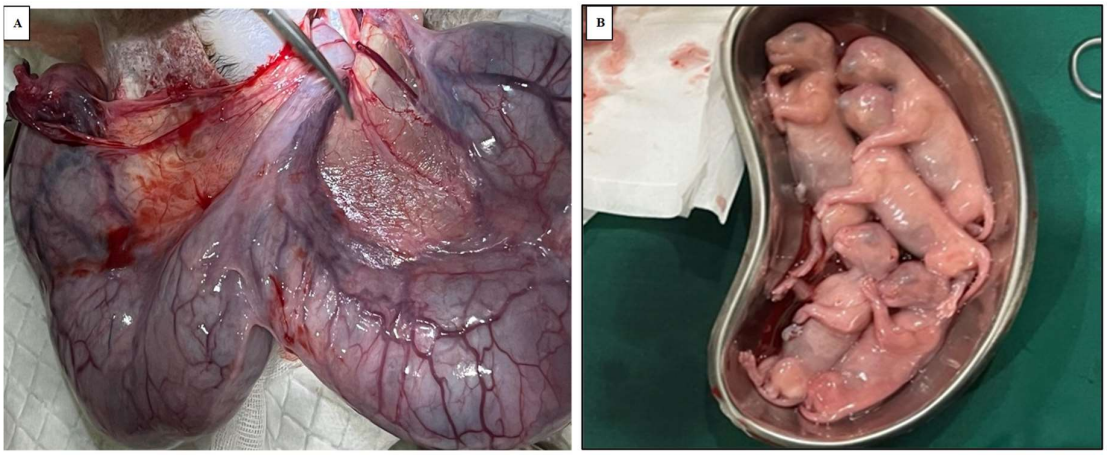

Fig. 4: Image 4A shows the uterine horn containing a fetus, while image 4B depicts the fetus removed from the uterus, revealing a total of five fetuses at 45 days of gestation that had undergone abortion, with integumentary structures and eyes that were not yet fully developed.

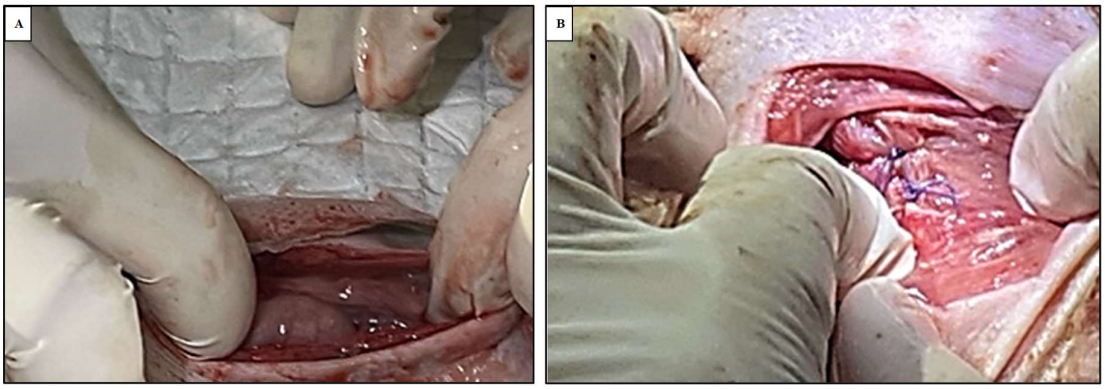

Fig. 5: Image 5A shows the hernial ring with protruding intestinal loops, while image 5B shows the hernial ring closed after suturing using the simple interrupted technique.

Postoperative care

Following skin closure, the surgical wound was cleaned with sterile saline and povidone iodine, and topical chloramphenicol (Kalmicetin®) was applied. Postoperative medications included intramuscular amoxicillin (0.1mL/kg BW, q24h), dexamethasone (0.25mL, q48h), and a combination of Hematodine® and Biodin® (0.5mL each, IM). The patient was fasted for three days to stabilize gastrointestinal function, with nutritional and fluid needs met via intravenous Ringer's lactate supplemented with Neurosanbe®. The cat was housed in a restricted cage and fitted with an Elizabethan collar.

On day 5, oral therapy was initiated, consisting of amoxicillin trihydrate and metronidazole (10mg/kg BW each, PO, q12h, 5 days), meloxicam (0.2mg/kg BW, PO, q12h, 5 days), and Imboost® multivitamin (1mL, PO, q24h). The abdominal sutures were cleaned twice daily with saline and topical chloramphenicol, while the purse-string suture received a 1:1 mixture of topical gentamicin and betamethasone.

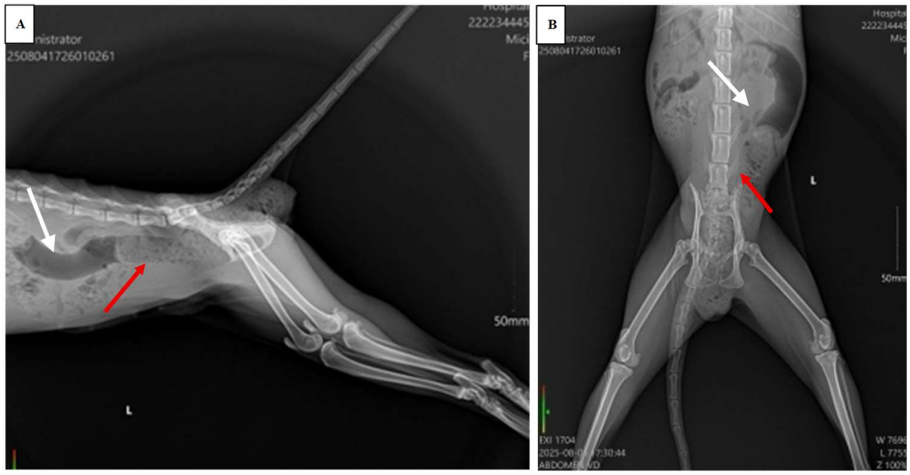

Fig. 6: Twelve days postoperatively, abdominal radiographs were obtained in lateral (6A) and ventrodorsal (6B) projections to assess the integrity of the surgical repair and evaluate the gastrointestinal status. Radiographic evaluation revealed no evidence of dehiscence or leakage along the muscle suture line, which indicated satisfactory healing of the abdominal wall. However, there was a marked accumulation of fecal material within the colon (red arrow) and gas-filled colonic segments (white arrow), suggestive of postoperative constipation.

Clinical progress

Follow-up monitoring revealed progressive clinical improvements. On day 12, abdominal radiography confirmed intact muscle sutures without evidence of leakage, although a large accumulation of fecal material was noted in the colon (Fig. 6A and 6B). Dietary modification with pumpkin supplementation results in softer stool consistency and increased defecation frequency. By days 13 to 15, the patient exhibited normal defecation twice daily with soft stool consistency, and the inguinal swelling had completely resolved. The cat was then discharged under stable conditions.

DISCUSSION

Inguinal hernia is a condition in which visceral organs, such as the intestines or adipose tissue, protrude through the inguinal ring, a natural opening between the abdominal muscles and the groin (Costa et al. 2017; De la Vega et al. 2018; Horňáková et al. 2021). Previous reports in cats and other species have described inguinal hernias involving the uterus, urinary bladder, and intestinal loops (Costa et al. 2017; De la Vega et al. 2018; Horňáková et al. 2021). However, the present case is unique because it demonstrates the rare coexistence of inguinal hernia with rectal prolapse and fetal death in a pregnant cat, conditions that have seldom been documented together in the veterinary literature. Inguinal herniation may occur as either a congenital anomaly or an acquired pathological condition. Congenital inguinal hernias are generally attributed to incomplete closure or developmental defects in the vaginal process during embryogenesis, resulting in persistent patency of the inguinal canal. Conversely, acquired hernias are frequently associated with external trauma, chronic elevation of intra-abdominal pressure, gestational strain, obesity, or progressive degeneration of musculofascial support structures due to aging (Yepez et al. 2021). In cats, the incidence is low, ranging from 0.02% to 0.025%, with no reported breed or sex predisposition (De la Vega et al. 2018).

In this case, the cat presented with swelling in the right inguinal region, accompanied by rectal prolapse. Prolapse was likely caused by constipation due to intestinal entrapment within the hernial sac. This condition is consistent with reports that hernias may involve the urinary bladder, colon, or nerves, potentially causing constipation and other complications (Rianto et al. 2024). Late-stage pregnancy exacerbates the condition by increasing intra-abdominal pressure, facilitating the entry of abdominal contents into the hernial sac.

Hematology revealed leukocytosis with increased granulocytes, indicating inflammation due to the four-day rectal prolapse. Reduced hemoglobin and MCHC levels may be related to decreased iron intake resulting from a reduced appetite (Donato et al. 2025). Ultrasonographic examination confirmed the presence of intestinal loops within the hernial sac, showing a hyperechoic mucosal striation pattern consistent with lacteal dilation commonly observed on small-intestinal ultrasonography (Sutherland-Smith et al. 2007). Radiographic findings further supported the presence of intestinal segments within the hernial sac.

Treatment was performed in stages, beginning with rectal prolapse repositioning. The rectal mucosa remained viable, allowing repositioning without amputation using local lidocaine anesthesia, which has a rapid onset of 1–2 minutes and a duration of 60–120 (Grubb and Lobprise 2020). A purse-string suture is used to prevent recurrence.

An ovariohysterectomy was performed promptly after diagnosis to remove the necrotic fetus and prevent the potential recurrence of an inguinal hernia associated with future pregnancies. This surgical approach aimed to eliminate hormonal influences on the reproductive tract, which could predispose patients to increased intra-abdominal pressure. Subsequently, herniorrhaphy was performed to reinforce the integrity of the inguinal wall and restore the normal anatomical alignment. During surgery, fibrous adhesions between the hernial sac and surrounding tissues were observed, requiring meticulous dissection to minimize trauma. Closure was achieved using absorbable synthetic sutures composed of polyglactin 910, selected for their optimal tensile strength, predictable absorption rate, and minimal tissue reactivity, which together reduce the likelihood of postoperative wound complications (Ragetly and Griffon 2011; Collins et al. 2020; Cymbryłowicz et al. 2024).

Postoperative antibiotic therapy consisted of amoxicillin and metronidazole to control aerobic and anaerobic infections, respectively (Tsuyuki et al. 2020). Pain control was achieved with meloxicam, a non-steroidal anti-inflammatory drug, and immune support was provided

with an immunomodulator (Taruklinggi et al. 2021).

Postoperative constipation was managed by glycerine lubrication, removal of the purse-string suture, switching the diet to gastrointestinal fiber, and addition of steamed pumpkin. Dietary pumpkin supplementation has been shown to improve stool consistency and defecation frequency in constipated cats owing to its high fiber content, which increases stool bulk and water content, reduces colonic transit time, and improves defecation frequency (Wahyudi et al. 2025).

Between the third and eleventh postoperative days, the surgical incision exhibited moderate to marked edema and erythema, which is consistent with the inflammatory phase of wound healing. This stage is characterized by increased vascular permeability and histamine-mediated vasodilation, which facilitate leukocyte extravasation and the initiation of tissue repair mechanisms (Lux et al. 2022). By day 15, the cat was discharged in stable condition with resolved swelling and normal defecation patterns.

Conclusion

This case demonstrates that an inguinal hernia accompanied by rectal prolapse and fetal death in a pregnant cat can be effectively managed using a staged surgical approach, including rectal repositioning, ovariohysterectomy, and herniorrhaphy, combined with appropriate postoperative care. Successful treatment was supported by accurate diagnosis through clinical examination, haematology, ultrasonography, and radiography as well as the selection of suitable surgical techniques and suture materials. Postoperative management, involving infection control, pain management, nutritional support, and dietary adjustment, plays a crucial role in accelerating recovery and preventing complications. This case highlights the importance of prompt surgical intervention for complicated inguinal hernias to prevent further morbidity and improve patient quality of life.

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Conflict of Interest: The authors declare that there is no conflict of interest regarding the publication of this case report.

Data Availability: All the data generated during the study are presented in the article.

Ethics Statement: This study did not involve any experimental procedures. All examinations and treatments were performed as part of routine clinical care at the Hasanuddin University Veterinary Teaching Hospital in Makassar, Indonesia. Written informed consent from the animal owner was obtained for all procedures and for the use of clinical data and photographs for publication under consent letter no. 035/SP/RSH_UH/XII/2025.

Author's Contribution: DF conceived and supervised the study. ARA and MUS assisted in the clinical management and surgical procedures. MZS and ATJEA contributed to the diagnostic imaging and data analysis. The WSM and ARU participated in postoperative care and documentation. DKS assisted with the literature review and manuscript preparation. DF drafted and finalized the manuscript. All authors have read and approved the final version of the manuscript.

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