

INGUINAL HERNIA AND ITS MANAGEMENT IN DOGS: A REVIEW OF EIGHT CASES

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Eight dogs were presented to University Veterinary Hospital, Mannuthy and Kokkalai of Kerala Veterinary and Animal Sciences University with the history of swelling at inguinal region. Seven dogs were female and one was male. The condition was diagnosed as inguinal hernia based on physical and radiographic examination. Under general anaesthesia, hernial sac was incised and explored. Spleen, intestine, uterus, omentum, urinary bladder and abdominal fat were found as hernial contents in different cases. The hernial contents were reduced and the hernial ring was closed with a series of simple interrupted sutures in all the cases. Reinforcement of suture line with polypropylene mesh as onlay graft was done in two cases. Ovariohysterectomy was performed in two animals in which uterus was the hernial content. Post-operatively antibiotics and analgesics were administered and all the animals had an uneventful recovery.

Keywords: Hernial contents, Inguinal hernia, Inguinal ring, Irreducible.

Inguinal hernias protrusion of abdominal organs or tissues through the inguinal canal adjacent to the vaginal process. It may arise from congenital abnormality of the inguinal ring or due to trauma (Fosum *et al.*, 2013). Inguinal hernia is commonly seen in old intact bitches (Simon and Kannan, 2011). Age, breed, gender, anatomical, hormonal and metabolic status are the factors involved in development of inguinal hernia (Ravikumar and Ranganath, 2014; Sainulabdeen *et al.*, 2016). The common contents in the hernial sac include uterus, omentum, fat, urinary bladder and ovary (Byers *et al.*, 2007; Kalitha *et al.*, 2012). Omentum is the most common organ present in the canine inguinal hernia. Herniorrhaphy by simple interrupted or mattress sutures has been reported as effective surgical treatment for inguinal hernia (Jahromi *et al.*, 2009).

Eight cases of inguinal hernia and their successful surgical management is placed on record.

Case History

Eight dogs were presented, with history of progressive swelling at inguinal region, to University Veterinary hospitals Mannuthy

and Kokkalai, Kerala Veterinary and Animal Sciences University, Kerala. Among eight dogs, only one was male and swelling was unilateral in all dogs except one dog which had bilateral swelling. There were four dachshund breed dogs, two pug breed dogs, one pomeranian breed dog and one cross breed dog. Most of the dogs belonged to female old aged group. Dogs were numbered as Dog 1, Dog 2, Dog 3, Dog 4, Dog 5, Dog 6, Dog 7 and Dog 8. On physical examination soft fluctuating, painless swelling could be palpated at inguinal region (Fig.1), it was irreducible in six cases and reducible in two cases (Dog 4 and Dog 7). Their physiological parameters were in normal range but in three dogs (Dog 1, Dog 5 and Dog 6) there was slight rise in rectal temperature. Granulocytosis in five dogs (Dog 2, Dog 3, Dog 5, Dog 6 and Dog 8) and anaemia in three dogs (Dog 3, Dog 4 and Dog 6) was revealed on haematological examination. Examination of blood smear revealed unsheathed microfilaria infection in four dogs (Dog 1, Dog 5, Dog 6 and Dog 8). Radiographic examination of the swelling was suggestive of the presence of intestinal loops in some cases; fat or omentum in some other cases.



Fig. 1: Soft swelling at left inguinal region.



Fig. 2: Lateral radiographic view of mass which revealed presence of gas filled intestinal loops



Fig. 3: Lateral radiographic view of mass which revealed presence of radio opaque mass.



Fig. 4: Spleen and abdominal fat were the hernial contents in Dog1 on right side.

Based on all these clinical observations the condition was diagnosed as inguinal hernia and was corrected by surgery. Animals which were anaemic and infected were treated and stabilized prior to the surgical intervention.

Treatment and results

General anaesthesia was induced with ketamine hydrochloride @ 5 mg/kg bodyweight intramuscularly under premedication with atropine sulphate @ 0.045 mg/kg body weight and xylazine hydrochloride @ 1-1.5 mg/kg body weight intramuscularly. The anaesthesia was maintained with 1.5-2% isoflurane. All dogs were given fluids intraoperatively and ceftriaxone @ 25 mg/kg body weight and tramadol @ 2 mg/kg body weight intravenously. The dog was controlled in dorsal recumbency and incision was made over swelling in unilateral cases and mid

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ventral incision was put in bilateral cases. Hernial sac was exposed and incised. The contents were spleen and abdominal fat in right side and only fat in left side in Dog1 (Fig. 4), uterus with intestine and omentum in Dog2 (Fig. 5), uterus and omentum in Dog3 (Fig. 6), urinary bladder with intestine and omentum in Dog4 (Fig. 7), intestine and omentum in Dog5 (Fig. 8), Dog6 and Dog8 and only omental fat in Dog7 (Fig. 9). Ovariohysterectomy was performed in two dogs (Dog2 and Dog3) where uterus was herniated. Adhesions between the contents and hernial ring were separated and reduced to abdominal cavity. The hernial ring was closed with polypropylene No.1 in simple interrupted suture pattern (Fig. 11). Reinforcement of suture line with polypropylene mesh as onlay graft was done in Dog2 and Dog6 as in those animals hernial ring was large with weak edges (Fig. 12). Subcutaneous tissue was apposed with 2-0/1-

0 polyglactin 910 in subcutaneous suture pattern. Sterile fenestrated tubes were fixed subcutaneously in Dog5, Dog6 and Dog8 where the dead space was evident to avoid seroma formation and wound dehiscence. The skin was apposed in horizontal mattress sutures using polyamide. Confinement and rest was advised to prevent self-mutilation of the surgical site. Postoperatively, cephalixin

at 20mg/kg body weight was advised two times orally daily for five days. Drainage given at the subcutaneous space was removed on fourth post-operative day. The sutures were removed 10th post-operative day and all the animals had an uneventful recovery except in Dog5, hernia developed in contralateral inguinal region after three months of surgery.



Fig. 5: Uterus with intestine and omentum were the hernial contents in Dog2.
Fig. 6: Uterus and omentum were the hernial contents in Dog3.

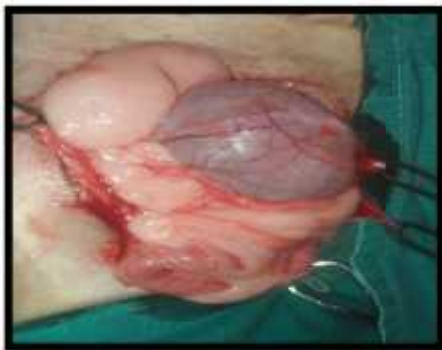


Fig. 7: Urinary bladder with intestine and omentum were the hernial contents in Dog4.
Fig. 8: Intestine and omentum were the hernial contents in Dog5.



Fig. 9: Intestine and omentum were the hernial contents in Dog6
Fig. 10: Abdominal fat was the hernial content in Dog 7.



Fig. 11: Herniorrhaphy.

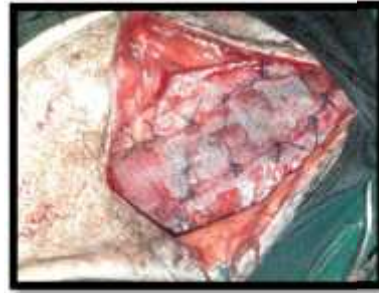


Fig. 12: Onlay grafting using polypropylene mesh.

Discussion

The incidence of inguinal hernia was observed more among small breeds that too in Dachshund breed. Similar findings were reported by Sainulabdeen *et al.* (2016). Reports suggest higher occurrence of inguinal hernia in old aged female dogs. Similar findings were observed in the present study in which 87.5% of cases were female and most of them were in their middle age or above. In females the condition appears mostly during estrus or pregnancy. Altered nutritional or metabolic status of an animal can also cause weakening of the abdominal wall as also reported by Parkes (1981). Fat accumulation around the round ligament may dilate the vaginal process and inguinal canal, allowing herniation. In the present study two cases were subjected to onlay grafting with polypropylene mesh, where the hernial ring was large with weak edges. Ventral midline incision facilitates examination of both inguinal ring as also reported by Jahromi *et al.* (2009) which was adopted in one case in this study. Complications after surgical correction are infection, wound dehiscence, seroma formation, post-operative swelling, recurrence, peritonitis and death. Surgical drains were fixed in three cases where dead space was present and use of surgical drains with herniorrhaphy as had been advocated to minimize post-operative seroma formation as also reported by Waters *et al.* (1993) also. The reported cases did not show any complications after monitoring for more than three months.

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