

## Short Communication

# SURGICAL CORRECTION OF RECURRENT PERINEAL HERNIA USING POLYPROPYLENE MESH, SYNTHETIC COLLAGEN AND SURGICAL GLUE IN ROTTWEILER DOG – A CASE REPORT

Deepak Kumar Kashyap<sup>1\*</sup>, Devesh Kumar Giri<sup>2</sup>, Govina Dewangan<sup>3</sup>

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**ABSTRACT:** A 10 years old intact Rottweiler male dog was referred to the clinics with a large swelling on the right perineal region. History and clinical examination showed difficulty in defecation with recurrence of the case after herniorrhaphy. As the herniorrhaphy done twice in a year previously and an account of its recurrence, herniorrhaphy by polypropylene mesh and castration was decided and radical surgery was performed. The animal was completely recovered on 10<sup>th</sup> postoperative day without any postoperative complications. Therefore, the present case study reports a successful perineal hernioplasty with polypropylene mesh and synthetic collagen.

**Key words:** Perineal hernia, Polypropylene mesh, Collagen powder, Surgical glue.

Perineal hernia is a protrusion of the internal or abdominal organ through the weak pelvic diaphragm which supports the rectal wall, made up of the coccygeal muscle and levator ani muscles. It occurs commonly in aged male dogs as compared to female. Other than the age, the staining during defecation or constipation, atrophy of the supportive muscle bundles, prostate gland enlargement and hormonal imbalance are major etiological factors for the perineal hernia.

The intact aged male is more prone for this condition as compared to the castrated one. The herniation is usually unilateral but sometimes bilateral herniations are also found. Species wise the incidence of perineal hernia most common in dogs, but occasionally also found in cats (Welches *et al.* 1992). In perineal hernia the contents is mostly urinary bladder but in some cases loop of intestine are also involved. The disease is diagnosed on the basis of history, clinical signs, physical examination and radiographic findings (Dean and Bojrab 1996). The corrective method for perineal hernia involves repositioning of the muscles of pelvic diaphragm using non absorbable suture materials (Bellenger and Canfield 2003). But there are chances of recurrence with the use of this technique especially if the muscles of pelvic

diaphragm are atrophied. An alternative surgical technique has been developed, especially in medical sciences to reduce the chances of recurrence (Szabo *et al.* 2007) as adopted in this case. To reduce the chances of recurrence, the castration is recommended to maintain the level of testosterone or relaxin which is responsible for prostate gland enlargement (Billbrey *et al.* 1990, Head and Francis 2002, Niebauer *et al.* 2005). The purpose of present study is to describe an adaptation of different biomaterials in veterinary science which was commonly used in medical sciences.

### Case history and observation

A 10 years old intact male Rottweiler dog was presented with the complaint of large swelling on right perineal region and difficulty in defecation. Further anamnesis revealed, in dog herniorrhaphy was already performed, twice in a year but recurrence occurred just after few months of surgery. On clinical examination of the animal showed bulged protruded mass present below the anus (Fig. 1). On palpation, reduction of the mass inside the cavity through typical hernia ring was observed. Other parameters were non-significant, near to the normal value. On the basis of previous history and clinical

<sup>1</sup>Assistant Professor, Veterinary Polytechnic, Parri, Surajpur, Chhattishgarh, India.

<sup>2</sup>Assistant Professor, Veterinary Polytechnic, Mahasamund, Chhattishgarh, India.

<sup>3</sup>Assistant Professor, College of Veterinary Science and Animal Husbandry, Chhattishgarh Kamdhenu Vishwavidyalaya, Anjora, Durg, Chhattishgarh, India.

\*Corresponding author. e - mail: deepakkashyap31@gmail.com

findings the case was diagnosed as perineal hernia. Finally the hernioplasty was decided to perform with the help of advanced material like polypropylene mesh, collagen powder and surgical glue.

## Surgical procedure

### Preparation of the animal

First the operative as well as intravenous sites were prepared by clipping, shaving and application of antiseptic solution. To combat the any complication and 0.9 % normal saline intravenously as a fluid therapy was started before the operation.

### Anaesthesia

The animal was pre-medicated with Atropine sulphate @ 0.04 mg/kg body weight, subcutaneously and after 10 minutes Xylazine @ 1 mg/kg body weight, intramuscularly were given. General anaesthesia was achieved by Ketamine hydrochloride @ 6 mg/kg body weight intramuscularly. After loss of pedal reflexes, the animal was intubated with endotracheal tube and anaesthesia was maintained with Ketamine hydrochloride under umbrella of fluid therapy.

The dog was positioned in ventral recumbency with tail pulled over the back. The pelvis was elevated by the positioning bags and limbs padded against the table. Prepared site was draped and purse string suture was applied on the wall of anal opening to reduce the chances of prolapse (Fig. 2). A 6-8 cm lion curved dorsoventral skin incision was made over the herniated mass. The subcutaneous and supportive tissues were incised. Hernial sac was secured and incised. Hernial ring was explored and loop of intestine found as a hernial content (Fig. 3 and Fig. 4). The loop of intestine repositioned inside the normal anatomical location. It was also found that due earlier surgeries, the muscles of pelvic diaphragm were weakened and unable to differentiate clearly. First the visible muscle layers were aligned through absorbable suture material catgut no. 0 to give extra support to the mesh layer (Fig. 5). The site was washed with normal saline and the bleeding points were checked with the HB seal powder (Fig.6). After checking of all bleedings, the polypropylene mesh was spread over the sutured muscle bed and mesh was interrupted with peripheral muscle layers with catgut no.1 (Fig. 7). For better tissue regeneration, the collagen powder was sprinkled over the site which supports the tissue for fast healing (Fig. 8). The subcutaneous layer was sutured by catgut no.1. The antibiotic powder was instilled for prevention of secondary infection. Finally, the skin incision was opposed by the surgical glue (an adhesive material) in place of non-absorbable suture material (Fig. 9 and Fig. 10). After completion of hernioplasty, castration was done

through median raphe approach and both the testicles were removed from single incision line (Fig. 11). All layers including skin layers were sutured in usual manner.

Postoperatively, the operated site was dressed with antiseptic solution and ointment. To reduce the chances of infection and pain, inj. ceftriaxone @ 20 mg/kg and inj. Meloxicam @ 0.2 mg/kg intramuscularly were given. Endotracheal tube was removed, when animal showed the signs of coughing and swallowing reflexes. Similar protocol of antibiotic and analgesic drugs was followed for 7 days postoperatively. Owner was recommended for Elizabethan collar and padding of limb to prevent self-mutilation of the operative site. The owner was also advised to feed the laxative diet along with syrup sodium picosulfate monohydrate @ 0.25 mg/kg body weight BID orally, for 5 days to release the pressure load over the surgical site during defecation. Daily dressing of the surgical site done with the povidone iodine liniment and ointment for 8 days. The skin wound was completely healed on 10<sup>th</sup> post-operative days with an uneventful recovery or any postoperative complication.

Many clinicians reported some breed predisposition for perineal hernia i.e. Rottweiler, Pekingese, German shepherd and Scottish Collie (Vnuk *et al.* 2008). As per the location of perineal hernia, incisional infection rates associated with hernia repair in dogs were found to be high (Hosgood *et al.* 1995). A study by Bowman *et al.* (1998) with polypropylene mesh implanted to repair hernias in dogs and cats reported immediate postoperative complications as incisional infections and seroma formation. However, in the present case no such type of complications were observed. In present study, it was observed that the recurrence of perineal hernia was mainly due to weakness of muscles of pelvic diaphragm and prostatic enlargement similar findings were reported by Mortin *et al.* (2012). Due to previous history of recurrence of the case hernial repair was done by the hernioplasty with the help of polypropylene mesh in addition to other synthetic biomaterials like collagen and surgical glue which yielded cent percent success. The collagen provide mesh work for better healing whereas the surgical glue facilitate for good alignment and fast healing of incision line, without use of suture material. The use of polypropylene mesh provided better strength to the defect site (Mortin *et al.* 2012). Orchiectomy helps in reducing the relaxation effects of androgens on the perineal musculature as well as to reduce the size of the prostate. Postoperatively laxative provided to reduce the pressure over the surgical site. As the animal was maintained in a laxative diet, chance of dehiscence of sutured wound in the perineal region was also reduced. Additionally, polypropylene mesh, which is a network of non-absorbable monofilaments, are thought to prevent bacteria





**Fig. 1.**



**Fig. 2.**



**Fig. 3.**



**Fig. 4.**



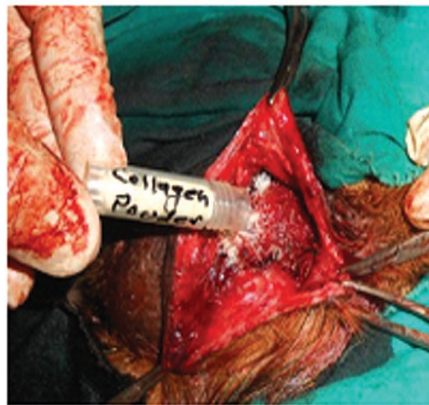
**Fig. 5.**



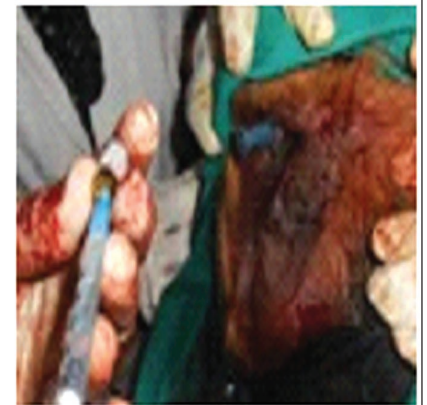
**Fig. 6.**



**Fig. 7.**



**Fig. 8.**



**Fig. 9.**



**Fig. 10.**



**Fig. 11.**

Fig. 1. Showing the bulged protruded mass present below the anus.  
 Fig. 2. Purse string suture was applied on the wall of anal opening.  
 Fig. 3&4. Hernial ring with of loop of intestine as content.  
 Fig. 5. Showing closing of herinial ring.  
 Fig. 6. Instillation of HB seal powder.  
 Fig. 7. Application of polypropylene mesh.  
 Fig. 8. Application of collagen powder over the site.  
 Fig. 9 and 10. Skin incision was opposed by the surgical glue.  
 Fig. 11. Showing removal of both the testicles from single incision line.

from being trapped within the fibres, making them less likely to become infected than any other synthetic mesh as reported by Brown *et al.* (1985).

It can be concluded that this type of case of recurrent perineal hernia in dogs can be successfully managed by hernioplasty using polypropylene mesh along with synthetic collagen and surgical glue with proper post-operative care.

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