Coexistence of Sciatic, Dorsal, and Caudal Perineal Hernias in a Dog

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Abstract:
A 5-year-old castrated male Chihuahua weighing 1.8 kg was presented for examination of a right perineal swelling. No clinical signs other than the swelling were observed by the owner. Digital palpation to the swelling confirmed right reducible perineal herniation. Dorsal perineal hernia was observed during surgery. A modified internal obturator transposition combined with a modified traditional perineal herniorrhaphy was performed for the perineal hernia repair. Contralateral herniation involving fat was noted a month after surgery. Coexistence of sciatic, dorsal, and caudal perineal hernias was observed during surgery. The follow-up information was based on physical examination by veterinarian. The owner reported that there was no evidence of complications related to surgery.

Key words: perineal hernia, modified internal obturator transposition, modified traditional perineal herniorrhaphy, dog.

Introduction

Perineal hernia results from a weakness, separation, and eventual failure of the muscular pelvic diaphragm that consists of the coccygeal and levator ani muscles, with subsequent displacement of pelvic or abdominal contents into subcutaneous perineal region (1,3,17,18). Perineal hernia is most common in older intact male dogs (8,14,15,20). Factors that have been proposed to contribute to the development to of perineal hernia include chronic constipation as a result of rectal abnormalities, straining to defecate due to prostatomegaly, pelvic fracture and increased intra-abdominal pressure, and imbalance of gonadal hormones (10,16,19). Clinical signs associated with perineal hernia include constipation, obstipation, tenesmus, dyschezia, diarrhea, stranguria, and skin ulceration (4,11). Four types of perineal hernia have been described: caudal, dorsal, ventral, and sciatic (15). Caudal perineal hernias are the most common, while sciatic perineal hernias are rare (15). To the authors’ knowledge, canine sciatic perineal hernia concurrent with dorsal and caudal perineal hernias has not been reported. This report describes the diagnosis and surgical management of sciatic perineal hernia concurrent with dorsal and caudal perineal hernias in a dog.

Case

A 5-year-old castrated male Chihuahua weighing 1.8 kg was presented to the University of Konkuk Veterinary Medical Teaching Hospital for examination of a right perineal swelling that had been present for approximately a month. No tenesmus, stranguria, or any clinical signs other than the swelling was observed by the owner. On physical examination, digital palpation to the swelling confirmed right reducible perineal herniation. Plain radiographs revealed that no pelvic or abdominal contents other than the fat were displaced into subcutaneous perineal region. A diagnosis of right reducible perineal hernia was made.

The dog was premedicated for surgery with butorphanol (0.4 mg/kg IM) and atropine sulfate (0.02 mg/kg SC), followed by anesthetic induction with propofol (6 mg/kg IV). The dog was intubated and anesthesia was maintained with isoflurane and oxygen. Lactated Ringer’s solution was administered intravenously at a rate of 5 mL/kg/h until completion of the surgical procedure. The dog received cefazolin (20 mg/kg IV) at the time of anesthetic induction. The patient was placed in a perineal position and the tail was fixed over the back with tape. The pelvic limbs were secured over the edge at the end of the table. In order to prevent fecal contamination during perineal surgery, a purse string suture was placed around the anus and tied to occlude the anus. Prior to tightening the purse string suture, a lubricated gauze tampon was placed in the rectum to contain feces. The surgical approach to the hernia was via a curvilinear right perineal skin incision. After blunt dissection through the hernia sac, the hernia content (retroperitoneal fat) was observed to protrude into the perineal region between the levator ani and coccygeus muscles. The herniated fat was partially amputated and reduced. The pelvic diaphragm structures were identified before closure. Atrophy of the levator ani and coccygeus muscles was observed. The hernia was repaired using a modified internal obturator transposition combined with a modified traditional...
perineal herniorrhaphy. Complication was noted after surgery. The dog was presented a month after surgery with contralateral herniation involving fat. The surgical approach to the hernia was via a curvilinear left perineal skin incision. After blunt dissection through the hernia sac, the hernia contents (retroperitoneal fat) were observed to protrude into the perineal region between the coccygeus and levator ani muscles, between the coccygeus muscle and sacrotuberous ligament, and between the external anal sphincter, levator ani, and internal obturator muscles (Fig 1). The herniated fats were partially amputated and reduced respectively. Atrophy of the levator ani muscle was observed. The hernias were repaired using the modified internal obturator transposition combined with the modified traditional perineal herniorrhaphy (Fig 2). In brief, the origin of the internal obturator muscle including the fascia and periosteum was incised along the caudal border of the ischium. The periosteum and internal obturator muscle were elevated using a periosteal elevator. Simple interrupted sutures (3-0 polyglycolic acid) were preplaced in the external anal sphincter muscle, levator ani muscle, coccygeus muscle, and sacrotuberous ligament. Then, simple interrupted sutures (3-0 polyglycolic acid) were preplaced in the internal obturator muscle and the external anal sphincter muscle and in the internal obturator muscle, levator ani, coccygeus muscle, and sacrotuberous ligament respectively. The external anal sphincter muscle was secured to the levator ani muscle, coccygeus muscle, and sacrotuberous ligament. Then, the internal obturator muscle was secured to the external anal sphincter muscle and the levator ani muscle, coccygeus muscle, and sacrotuberous ligament respectively to close ventral defect. The subcutaneous tissues and skin were closed using 3-0 polyglycolic acid and 3-0 nylon respectively. The follow-up was completed by veterinarian’s physical examination 6 months after the second surgery. The owner reported that there was no evidence of complications related to surgery such as sciatic nerve injury, rectal prolapse, wound dehiscence, or perineal hernia recurrence.

Discussion

Four types of canine perineal hernia have been described: (1) dorsal perineal hernia-herniation between the coccygeus and levator ani muscles; (2) sciatic perineal hernia-herniation between the coccygeus muscle and sacrotuberous ligament; (3) caudal perineal hernia-herniation between the external anal sphincter, levator ani, and internal obturator muscles; and (4) ventral perineal hernia-herniation ventral to the ischiourethralis muscle, between the bulbocavernousus and ischicavernous muscles (15,20). Each type of perineal hernia has been reported occurring independently (5,9,15). In the right perineal region of the case reported here, the hernia content (retroperitoneal fat) was observed to protrude into the perineal region only between the levator ani and coccygeus muscles; however, in the left perineal region, the hernia content (retroperitoneal fat) was observed to protrude into the perineal region between the coccygeus and levator ani muscles, between the coccygeus muscle and sacrotuberous ligament, and between the external anal sphincter, levator ani, and internal obturator muscles. The perineum is the region that closes the pelvic canal and deeply bounded by the third caudal vertebra dorsally, the sacrotuberous ligaments bilaterally, and the ischiatic arch ventrally, including the pelvic diaphragm (7). The pelvic diaphragm is formed by muscles and fasciae such as the coc-
eygeal and levator ani muscles and superficial and deep perineal fasciae (7). A weakness of the pelvic diaphragm results in displacement of pelvic or abdominal contents into subcutaneous perineal region. Hormonal or neurogenic influences have been implicated in weakening the structures that compose pelvic diaphragm (2,11,12). A weakness of a muscle or fascia may cause a weakness of other structures composing the pelvic diaphragm. More than one type of perineal hernia can occur simultaneously in the weakened parts of the pelvic diaphragm although perineal hernia would occur through the weakest part of the pelvic diaphragm.

Each type of perineal hernia has been reported with different factors causing herniation including tenesmus (possibly due to constipation) and congenital or acquired weakness of the pelvic diaphragm (1,11,15). In Rochat’s report, the sciatic hernia was implicated with tenesmus created by sacculectomy without no atrophy of pelvic musculature (15). The levator ani muscle atrophy was associated with the more common dorsal or caudal perineal hernia. In Dorn’s report, the sciatic hernia was reported in a three-year-old miniature poodle and was considered congenital (6). Proposed etiologies currently accepted for the levator ani muscle atrophy include neurogenic and hormonal pathways (3,10). Factors causing tenesmus or stranguria such as prostatomegaly and rectal disease are implicated as contributors to herniation (17,19). In the case reported here, it is impossible to determine what caused the sciatic hernia; however, atrophy of the levator ani and coccygeus muscles may suggest that a neurogenic etiology take the blame for the right perineal hernia since the dog was castrated. Factors causing tenesmus or stranguria were not contributors to the right perineal hernia; however, the history of previous right perineal herniorrhaphy may have been contributory to the left perineal hernia as well as neurogenic etiology. Irritation created by the herniorrhaphy may have resulted in unobserved tenesmus.

Choosing an appropriate technique for herniorrhaphy is very important to prevent perineal hernia recurrence, restore normal defecation and urination, and minimize postoperative complications. In the left perineal hernia of the case reported here, the muscle flap technique using the modified internal obturator muscle transposition was performed to close the ventral aspects of the sciatic and caudal perineal hernias because of better closure of the ventral aspect of sciatic and caudal perineal hernias and the low recurrence rate and minimal complications. In this technique, the lateral part of the internal obturator muscle was secured to the sacrotuberous ligament as well as the muscles (the levator ani and coccygeus muscles) that are used for the traditional internal obturator muscle transposition, to provide better closure of the ventral defect of the sciatic hernia. The modified traditional technique where the external anal sphincter muscle was secured to the sacrotuberous ligament as well as the muscles (the levator ani, coccygeus, or both muscles) that are used for the traditional herniorrhaphy, to repair the sciatic and dorsal perineal hernias and the dorsal aspect of the caudal perineal hernia. In the right perineal hernia of the case reported here, the traditional herniorrhaphy would have been indicated; however, the modified traditional herniorrhaphy combined with the modified internal obturator muscle transposition was performed because the levator ani and coccygeus muscles were severely atrophic and the caudal part of the sacrotuberous ligament was not secured tightly to the external sphincter muscle. The external anal sphincter muscle should be secured to the sacrotuberous ligament as well as the levator ani and coccygeus muscles in case that the levator ani and coccygeus muscles are atrophic or the hernia contents protrude into the perineal region not only between the coccygeus muscle and sacrotuberous ligament but also between the levator ani and coccygeus muscles.

Some technical and anatomic consideration in surgery may increase the likelihood of a successful surgery. When the suture is engaged to the sacrotuberous ligament, care should be taken to not place the suture around or through the sciatic nerve because of the proximity of the nerve to this ligament (13). When the origin of the internal obturator muscle is incised and elevated along the caudal border of the ischium, the fascia and periosteum should be included to provide greater holding power on repairing aspect of perineal hernia. The retroperitoneal fat can be partially amputated and then reduced. A blunt dissection may not be effective to provide anatomy of the muscular pelvic diaphragm in case that the retroperitoneal fat is adherent to the perineal region severely. Fail to obtain anatomy of the muscular pelvic diaphragm can decrease the likelihood of a successful surgery.

Contralateral herniation is not common complication described after perineal hernia repair, accounting for 0 to 3.5% of dogs undergoing unilateral perineal herniorrhaphy (4,11,18). Although perineal herniation occurs unilaterally, the contralateral side of the pelvic diaphragm may also have possibility of perineal hernia because of the pelvic musculature weakening (5). In the case reported here, severe atrophy of the levator ani and coccygeus muscles was observed during the right perineal herniorrhaphy and the contralateral pelvic musculature weakening was observed during the left perineal herniorrhaphy as well.

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개에서 좌골, 등쪽, 뒤쪽 회음탈장의 동시 발생 증례

문헌참고

요약 : 체중 1.8 kg 5년령 중성화 수컷 치와와 개가 오른쪽 좌골을 펴두는 평가를 위해 건국대학교 부속 동물병원에 내원하였다. 좌골 팽대 외에 다른 증상이 없으며 신체 검사에서 환남성 좌골 팽대를 확인 하였다. 좌골 팽대 교정을 위해 수술을 시행하였고 좌골 팽대를 보고하고 수의사의 신체검사에서 좌골 좌골 팽대 비정상 증상이 확인되었다. 수술 중 좌골, 등쪽, 뒤쪽 좌굴을 동시에 발생한 것으로 알려져 좌골 팽대의elf한 교정이 완료되었다. 좌골 팽대 교정을 위해 좌골 팽대 위치를 동일한 좌골 팽대로 교정하였다. 정기 검진은 수의사의 신체검사 혹은 보호자와의 전화 통화를 통해 실시되었으며 양쪽 수술 부위에서 수술과 관련한 합병증 상이 없음을 확인하였다.

주요어 : 좌골 팽대, 수술 적응증, 좌골 팽대 교정, 좌골 팽대