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Modified semitendinosus muscle transposition to repair ventral perineal hernia in 14 dogs

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(Article begins on next page)

1 **Manuscript entitled “Modified semitendinosus muscle transposition to repair ventral perineal**
2 **hernia in 14 dogs”**

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4

5 **Summary**

6 **Objectives.** To describe a modified technique of semitendinosus muscle transposition for the repair
7 of ventral perineal hernia.

8 **Methods.** Retrospective review of case records of dogs with ventral perineal hernia that were
9 treated by transposing the medial half of the longitudinally split semitendinosus muscle of one limb.
10 The transposition of the internal obturator muscle was used when uni- or bilateral rectal sacculation
11 was also present in addition to ventral perineal hernia; colopexy and vas deferens pexy were also
12 performed.

13 **Results.** Fourteen dogs were included. In addition to ventral perineal hernia, unilateral and bilateral
14 perineal hernia was also present in five and six of the dogs, respectively. The mean follow-up time
15 was 890 days. Ventral perineal hernia was successfully managed by the modified semitendinosus
16 muscle transposition with minor complications in all the dogs included in the study.

17 **Clinical Significance.** Despite the small number of dogs included, the unilateral transposition of the
18 medial half of the longitudinally split semitendinosus muscle consistently supported the ventral
19 rectal enlargement in perineal hernia without obvious adverse effects.

20

21 **Keywords**

22 Dog, longitudinally split semitendinosus muscle, ventral perineal hernia.

23

24 **Introduction**

25 Perineal hernia (PH) occurs because of weakness and separation of the pelvic diaphragm (Aronson,
26 2012) resulting in rectal sacculation or dilatation (Niles and Williams, 2005). Many factors may
27 contribute to the degenerative changes of the pelvic diaphragm, including tenesmus (Head et al.
28 2002; Aronson, 2012), pelvic musculature variations (male vs. female) (Aronson, 2012), hormone
29 influence (Mann et al. 1989; Mann et al. 1995; Merchav et al. 2005; Niebauer et al. 2005), and
30 pelvic muscles atrophy due to neuropathy (Sjollema et al. 1993). The transposition of the internal
31 obturator muscle (TIOM) is the most commonly recommended procedure to re-establish the pelvic
32 diaphragm (Hardie et al. 1983). Other techniques have also been described (Burrows and Harvey,
33 1973; Spreull and Frankland, 1980; Stoll et al. 2002; Bongartz et al. 2005; Szabo et al. 2007; Lee et
34 al. 2012; Pratummintra et al. 2013). In cases of PH with major rectal sacculation, PH recurrence,
35 retroflexed bladder and/or prostate herniation, herniorrhaphy may be combined with colo-, cysto-
36 and vas deferens pexy (Bilbrey et al. 1990; Brissot et al. 2004). PH may recur, especially in cases
37 with muscle atrophy and/or ventral perineal hernia (VPH) (Orsher, 1986). VPH, often associated
38 with bilateral PH, is a rectal sacculation between the ischiourethralis, bulbocavernosus, and
39 ischiocavernosus muscles (Aronson, 2012). It represents a considerable challenge to the surgeon. If
40 the degree of ventral sacculation is small, suturing the elevated obturator flap as far medially as
41 possible is often satisfactory (Niles and Williams, 2005). Larger ventral rectal defects can be
42 managed with the semitendinosus muscle transposition (SMT), as reported in two cases (Chambers
43 and Rawlings, 1991).

44 It has been the authors' experience that standard SMT was not optimal for VPH repair.
45 Subsequently an alternative to the full SMT through the median separation of the semitendinosus
46 muscle (SSMT) was developed that appeared to be more useful and successful. The aim of this
47 study was to describe this new technique and to report its efficacy and clinical outcome in a
48 population of dogs affected with VPH. It was hypothesized that the SSMT would be successful in

49 treating VPH.

50

51 **Materials and Methods**

52 *Inclusion Criteria*

53 Medical case records of dogs undergoing VPH repair with SSMT were reviewed (2007-2013). Only
54 complete records with signalment, history, clinical presentation, treatment modalities, intra- and
55 post-operative complications and a minimum of 6 months follow-up were included.

56

57 *Pre-surgical evaluations*

58 Work-up included a complete physical examination, blood cell count and serum chemistry profile,
59 urinalysis, abdominal, scrotal, and, if needed, perineal (for bladder retroflexion and/or prostate
60 herniation) ultrasound. Diagnosis of VPH was reached by rectal digital and perineal palpation,
61 always performed by the same surgeon (PB). When ventral rectal sacculation was still present after
62 colopexy and TIOM, SSMT was performed to give ventral rectal support.

63

64 *Anaesthesia and Pain Management*

65 After methadone administration (0.2 mg/kg intramuscularly (IM)) (Eptadone, Molteni
66 Farmaceutici), anaesthesia was induced with propofol (4-8 mg/kg intravenously (IV) administered
67 to effect) (Fresenius, Kabi) and maintained with isoflurane in oxygen. Analgesia was provided with
68 target-controlled infusion of fentanyl (Fentanest, Pfizer). Pre-operative cefazolin (22 mg/kg IV)
69 (Cefazolina, TEVA) was administered at anaesthesia induction, then every 90 minutes until
70 completion of surgery.

71

72 *Animal preparation and positioning and ancillary procedures*

73 The skin of the abdomen, perineum, scrotum, tail base and thigh of one limb were clipped; rectum
74 and anal sacs were digitally emptied and the urethra catheterized. When uni- or bilateral rectal
75 sacculaton/dilatation with marked rectal enlargement because of faecal accumulation was detected
76 at pre-operative rectal digital exploration, colopexy and vas deferens pexy were also performed. For
77 colopexy and vas deferens pexy or orchiectomy, dogs were placed in dorsal recumbency and the
78 abdominal and scrotal skin aseptically prepared. At the end of the abdominal surgery, the dogs were
79 positioned in sternal recumbency, with the pelvic limbs hanging over the edge of the surgical table
80 (de Mello Souza and Mann, 2013). At this point, before herniorrhaphy, the decrease of rectal
81 sacculaton as a result of colopexy was evaluated by digital exploration. The tail was fixed over the
82 back and a purse-string suture was placed around the anus; then perineum, tail base and caudal
83 thigh were aseptically prepared. In all the unilateral PH cases, the limb opposite the lateral rectal
84 defect was clipped; the right limb was systematically prepared in all other cases (VPH only or
85 bilateral PH).

86 Colopexy, vas deferens pexy, orchiectomy and herniorrhaphy were performed during the same
87 anaesthesia. Colopexy consisted of descending colon cranial traction and left flank, 3-4 cm long,
88 incisional musculo-muscular suture (Williams, 2012); for vas deferens pexy each vas deferens was
89 sutured to itself after passing it caudo-cranially through an ipsilateral abdominal wall muscular
90 tunnel (Aronson, 2012); 3/0-2/0 monofilament absorbable material (glycomer 631, Biosyn, Tyco
91 Healthcare) was used for both procedures.

92

93 *Perineal Herniorrhaphy*

94 Lateral PHs were repaired by TIOM (elevated with periosteum) (Aronson, 2012) and VPHs by
95 SSMT (see later). When combined with TIOM, SSMT was performed after completion of TIOM.
96 Herniorrhaphy was always performed by the same surgeon (PB).

97 The skin incision was continued from the ventral end of TIOM incision or, if not combined with
98 TIOM, approximately 3 cm lateral to the tail base, extending ventrally toward and across the
99 midline up to the opposite ischiatic tuberosity. The incision was then continued distally along the
100 contralateral caudal thigh, up to the popliteal area. In contrast to SMT, in which the entire muscle is
101 transected proximal to the popliteal lymph node (Chambers and Rawlings, 1991), the
102 semitendinosus muscle was first isolated, then longitudinally and bluntly split in two parts with
103 scissors, sparing both the proximal and distal vascular pedicles (proximally caudal gluteal artery
104 and distally distal caudal femoral artery) (Figure 1). Then only the medial part of the muscle was
105 transected distally, proximal to the popliteal lymph node (Figure 2). The distal stump was sutured to
106 the intact lateral muscular half, whose fascia was opposed with a simple continuous suture (Figure
107 3). The transected split muscle was rotated medially, passing ventral to the anus up to the opposite
108 lateral perineum (Figure 3, 4). The distal end of the flap was sutured to either the coccygeus muscle
109 and/or the sacrotuberous ligament (Figure 3, 4), the medial border of the flap to the ventro/lateral
110 aspect of the external anal sphincter, while the lateral border to the internal obturator muscle
111 (elevated in case of TIOM), ischiourethralis and bulbospongiosus muscles (taking care to avoid the
112 urethra) and fascia of the dorsal border of the ipsilateral ischiatic tuberosity (Figure 3, 4). A 3/0-0
113 monofilament absorbable suture material was used (glycomer 631, Biosyn) in an interrupted
114 pattern. Drains were not used.

115 A rectal examination was performed after procedure completion to assess the reestablishment of
116 rectal wall support and to ascertain that no sutures had penetrated the rectal lumen.

117

118 *Post-operative care*

119 All dogs received buprenorphine post-operatively (10 µg/kg 6-8-hourly, subcutaneously (SC))
120 (Temgesic, Schering-Plough Spa,) for 48-72 hours. Metronidazole (10 mg/kg 12-hourly, per os
121 (PO)) (Flagyl, Zambon) and amoxicillin/clavulanic acid (22 mg/kg 12-hourly, PO) (Amoxicillina/ac
122 clavulanico, TEVA) were administered for 7-10 days. Carprofen (2.2 mg/kg 12-hourly, PO)

123 (Rimadyl, Pfizer) was given for 7 days. An Elizabethan collar was placed. At discharge, owners
124 were advised to feed the dog with a low-residue diet for the first 30 days.

125

126 *Follow-up*

127 Dogs were re-examined for early and late post-operative complications and long-term outcome. For
128 long-term follow-up (≥ 6 months), attention was focused on PH recurrence, determined both by
129 clinical signs and digital rectal examination. Tenesmus, faecal and/or urine incontinence, rectal
130 prolapse and lameness were classified as transient or persistent when present for less or more than 6
131 postoperative months, respectively.

132 Physical, rectal and limb function were evaluated at 7, 15 and 30 days from hospital discharge.
133 Thereafter, the dogs were re-revalued by the referring veterinarians every 3 months in the first
134 postoperative year and every 6 months thereafter. When PH recurrence was suspected or lameness
135 noted, the dogs were re-checked by the surgeon (BP).

136

137 **Results**

138 *Signalment - Clinical Findings*

139 Fourteen dogs were included. Median age was 9 years (range 6-14; mean 9.2); median weight was
140 22 kg (range, 7-37; mean 21.1). All the dogs were male. The affected breeds as well as clinical
141 signs at presentation (mean duration 153.5 days, range 95-201, median 159.5) are reported in Table
142 1. Preoperatively, none of the dogs showed pre-existing orthopaedic problems.

143 Previously performed surgeries and abdominal ultrasound findings are reported in Table 1.

144 At presentation, in addition to VPH (Figure 5), 3 dogs had a left-sided PH, 2 a right-sided PH, and 6
145 a bilateral PH (Table 1).

146

147 *Ancillary procedures*

148 Colopexy and vas deferens pexy were performed just before herniorrhaphy in 6 dogs (Table 1). The
149 preoperatively diagnosed paraprostatic cyst (Table 1) was treated by partial cyst wall resection and
150 omentalization. Orchiectomy was performed simultaneously to herniorrhaphy in 6 dogs (Table 1).
151 Histology of all testicles removed was available and revealed an interstitial cell tumour in one dog
152 (Table 1). Histology of the enlarged prostate on a tissue sample collected during abdominal surgery
153 revealed benign prostatic hyperplasia (Table 1).

154

155 *Perineal Herniorrhaphy*

156 In 5 and 6 dogs (Table 1) unilateral and bilateral TIOM was performed, respectively. Right (1, 2, 5,
157 6, 7, 9, 10, 11, 12, 13, 14) or left (3, 4, 8) SSMT was performed.

158 Postoperative digital rectal examination confirmed the resolution of PH in all the dogs and the
159 absence of sutures penetrating the rectal wall.

160

161 *Complications*

162 Partial wound dehiscence occurred in 3 dogs (Table 1) at the dorsal aspect of the SSMT incision;
163 healing was achieved on a twice-a-day sterile saline solution wound cleaning basis; antibiotics
164 (amoxicillin/clavulanic acid, 22 mg/kg 12-hourly, PO; metronidazole, 10 mg/kg 12- hourly, PO)
165 were continued for 10 days. Some swelling at the caudal thigh and perineum was observed in all
166 cases; spontaneous resolution occurred within the first post-operative examination (7 days). Post-
167 operative limb function appeared normal in 11 dogs; in two dogs (n. 7, 8) a persistent (≥ 6 months)
168 grade I (subtle, intermittent weight-bearing lameness) (Anderson et al. 2002) painless lameness was
169 evident. Neurological and orthopaedic examinations performed post-operatively were normal.

170 Post-operative tenesmus occurred in all dogs. It was transient (spontaneous resolution within 7-15
171 days) in 12 cases and long lasting but intermittent (>6 months) in 2 dogs (Table 1). Rectal prolapse
172 occurred in 1 dog (Table 1), despite colopexy and herniorrhaphy; this was treated 1 month after
173 herniorrhaphy by partial rectal amputation (Aronson, 2012).

174

175 *Outcome*

176 Median follow-up time was 833 days (range 582-1237; mean 890). No PH recurrence was detected
177 at 7, 15 and 30 days. A long-term PH recurrence with recurrence of tenesmus and perineal swelling
178 was detected on rectal examination in 2 dogs (Table 1), at 731 and 527 days, respectively.
179 Recurrence occurred bilaterally (Table 1) or on the opposite site from SSMT (Table 1). Owners
180 refused further treatment. VPH never recurred. At the time of writing 11 dogs are still alive (median
181 914; range 582-1237 days); 1 dog (n. 2) was lost to follow-up after 731 postoperative days, and 2
182 dogs (5, 9) died of unrelated causes (hit by a car, old age) after 724 and 1133 days, respectively.

183

184 **Discussion**

185 It was hypothesized that SSMT would be useful to treat VPH in dogs. In the present study, all 14
186 dogs clinically affected with VPH were successfully treated with SSMT. Recurrence occurred in
187 two dogs, but only on the lateral component of their PH.

188 Factors negatively influencing the outcome of surgical repair include bilateral and ventral rectal
189 sacculation (Burrows and Harvey, 1973; Orsher and Johnston, 1985), previous surgeries (Brissot et
190 al. 2004), marked rectal faecal impaction (Brissot et al. 2004) and concurrent prostatic disease
191 (Brissot et al. 2004). Eight out of 14 dogs in this study had already been surgically treated
192 elsewhere for PH on one or multiple occasions, one dog had an enlarged prostate, and one had a
193 paraprostatic cyst; marked rectal sacculation with faecal accumulation was present in all cases.

194 TIOM is the recommended treatment for PH with lateral rectal sacculation (Szabo et al. 2007) but

195 difficulties in restoring the pelvic diaphragm have been reported because of muscle atrophy, VPH
196 or PH recurrence after TIOM (Burrows and Harvey, 1973; Hardie et al. 1983; Orsher, 1986). In
197 cases of VPH, the defect can be only partially repaired by suturing the two internal obturator
198 muscles at the midline (Chambers and Rawlings, 1991), while a ventral rectal support has been
199 successfully provided by semitendinosus muscle transposition (Chambers and Rawlings, 1991).

200 The semitendinosus muscle has most of the features required for a vascularized muscular
201 transposition flap (Mortari et al. 2005). To the authors' knowledge, no large case series dealing with
202 SMT for VPH repair in dogs has been published so far. The procedure is reported in some
203 veterinary surgical textbooks (Niles and Williams, 2005; Aronson, 2012), and it has been published
204 as an experimental work (Mortari et al. 2005) and as a case report in two dogs (Chambers and
205 Rawlings, 1991).

206 In this study, it was proposed to transpose the muscle to fill in the ventral perineal defect according
207 to a modified technique based on the unilateral transposition of the medial half of the longitudinally
208 split semitendinosus muscle. The rationale to modify the standard SMT was that in some dogs (not
209 presented here) having a thick semitendinosus muscle, redundancy did not allow a proper tension to
210 ensure an adequate ventral rectal support, while the modified technique resulted in a subjectively
211 better result, and it became the preferred technique at the authors' institution in selected cases. In
212 particular, the post-operative rectal examination of the dogs treated by SSMT revealed subjectively
213 a consistent ventral rectal support in all cases; furthermore, the lateral support was subjectively
214 much stronger when SSMT was combined with TIOM on the same side.

215 Colopexy and vas deferens pexy were performed during the same anaesthetic procedure for
216 herniorrhaphy. According to previous studies (Brissot et al. 2004), colopexy contextually to
217 herniorrhaphy partially resolved the rectal deviation also in this study, thus making herniorrhaphy
218 easier. When judged appropriate, vas deferens pexy was useful for stabilizing both the prostate
219 gland and bladder neck (Bilbrey et al. 1990).

220 Partial surgical wound dehiscence was observed in 3 dogs (21%). This is commonly observed after
221 PH repair (4-26%) (Orsher, 1986; Hosgood et al. 1995; Brissot et al. 2004; Szabo et al. 2007; Niles
222 and Williams, 2005). A higher incidence is reported after semitendinosus muscle transposition
223 (40%) because of faecal contamination and extensive surgical dissection (Mortari et al. 2005). The
224 cause of dehiscence was not further investigated in the present study because second intention
225 healing was easily achieved.

226 Normal limb function has been reported by Mortari et al. (2005) after complete semitendinosus
227 muscle transposition. In the present study, limb use did not appear to be subjectively affected by the
228 procedure in all but two dogs (14%), in which a persistent grade I and painless lameness was noted.
229 In these two dogs, preoperative limb function was normal; when these dogs were re-evaluated for
230 this slight lameness, both neurological and orthopaedic examinations were normal.

231 A long lasting but intermittent tenesmus was observed in two dogs (14%). Tenesmus is a reported
232 complication after perineal herniorrhaphy (8-44%) (Hosgood et al. 1995; Brissot et al. 2004; Szabo
233 et al. 2007; Grand et al. 2013). Causes of persistent post-operative tenesmus have not been exactly
234 determined. Rectal deformations associated with persistent recto-colitis, colo-rectal hypomotility
235 due to long-term straining and a possible influence of colopexy have been suggested (Hosgood et al.
236 1995).

237 PH recurrence occurred in two dogs (14%); it was evident bilaterally in one dog and on the side
238 opposite to previous SSMT in the other. However, in both dogs, the ventral rectal support was still
239 present at rectal examination. Recurrence is a reported complication after perineal herniorrhaphy
240 with TIOM (10-20%) (Niles and Williams, 2005; Brissot et al. 2004; Szabo et al. 2007; Grand et al.
241 2013). A higher risk of recurrence and worse prognosis has been associated with bilateral, ventral
242 and complicated hernias (Orsher, 1986; Brissot et al. 2004).

243 Rectal prolapse occurred in one dog (7%) after herniorrhaphy. This complication can develop after

244 reconstruction of the pelvic diaphragm in cases of both bilateral and ventral PH (9-17%) (Hosgood
245 et al. 1995; Bongartz et al. 2005; Aronson, 2012). Partial rectal amputation was needed and curative
246 in this dog.

247 In a previous study electromyography showed that the transposed semitendinosus muscle was still
248 able to contract, but atrophy was detected by both ultrasonography and morphological analysis
249 within its distal part (Mortari et al. 2005). Neither ultrasound nor electromyography was performed
250 in the present study. Nevertheless, the low number of recurrences recorded suggests that, if atrophy
251 was present, it did not prevent SSMT from functioning as a support to the rectum.

252 The long-term results presented in this retrospective case series suggest that a) the semitendinosus
253 muscle can be safely longitudinally split, b) the transposition of half of the muscle was enough to
254 adequately fill in the ventral pelvic diaphragm defect, c) the SSMT achieved long term support of
255 the ventral aspect of the rectum.

256 This study provides evidence that SSMT can be used to sustain the rectum ventrally in case of
257 severe VPH, but further studies involving more dogs are warranted. It is also believed that a
258 comparison with dogs treated by transposing the entire muscle (standard SMT technique) may be
259 useful.

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- 340

341 **Table**

342 **Table 1.** Signalment, clinical signs at presentation, ultrasound examination findings, treatment
343 modalities and outcome of the 14 dogs included in the present retrospective case series.

344

345 **Figure legends**

346 **Figure 1.** Intraoperative view of the blunt dissection of the semitendinosus muscle from the
347 adjacent structures.

348 **Figure 2.** The muscle is longitudinally and bluntly split in two parts, in this modified technique.
349 The medial part of the muscle is then transected distally, close to the popliteal lymph node (dotted
350 black line), the lateral half remains intact in its anatomic position.

351 **Figure 3.** Intraoperative view of the medial rotation of the split muscle, passing beneath the anus up
352 to the lateral perineum of the opposite site.

353 **Figure 4.** Schematic artwork of the surgical technique proposed in the present paper. The transected
354 medial part of the split muscle is rotated medially, passing beneath the anus up to the lateral
355 perineum of the opposite site. After rotation, the distal end of the muscle is sutured to the coccygeus
356 muscle and/or to the sacrotuberous ligament. The medial border of the muscle is sutured on both
357 the lateral aspects of the anus to the ventro/lateral aspect of the external anal sphincter, while its
358 split border is sutured to the internal obturator muscle (elevated in the case of TIOM), the
359 ischiourethralis and bulbospongiosus muscles (on the sagittal plane), the fascia of the dorsal border
360 of the omolateral ischiatic tuberosity and the perineal fascia.

361 **Figure 5.** Clinical evidence of severe ventral rectal sacculation at digital rectal examination.

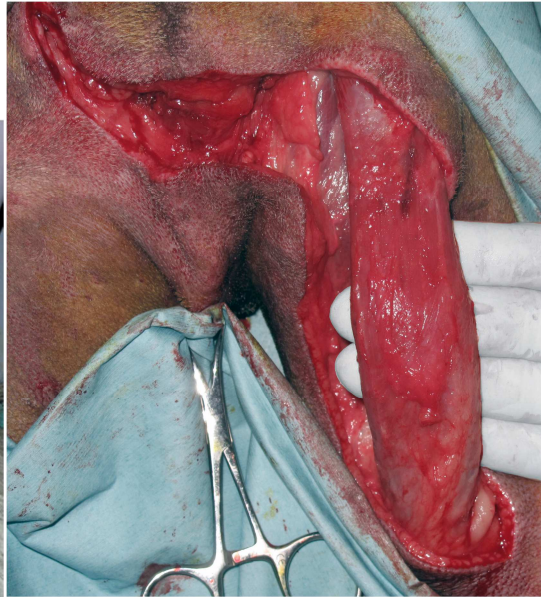
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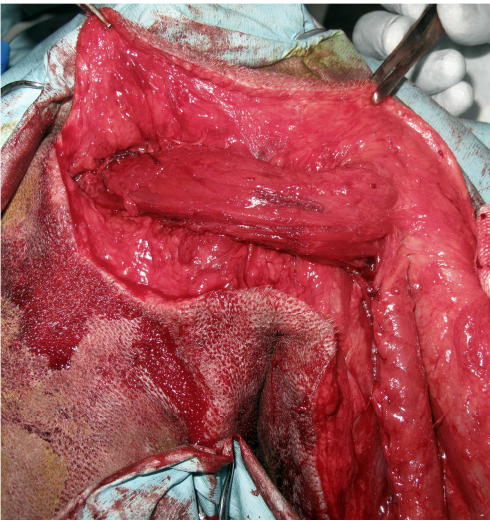
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Case n°	Breed	Weight (Kg)	Age (yy)	Sex	Clinical signs at presentation	Previous surgery (herniorrhaphy and ancillary procedures)	Ultrasound examination findings	PH Side	Current surgery	Follow up (days)	Post surgical complication	PH recurrence
1	Mixed	7	9	MC	Tenesmus, dyschezia with fecal impaction, perineal swelling	COLP, OR, DEFP, L R TIOM	NR	V	R SSMT	1033	persistent tenesmus	N
2	Mixed	10	9	MC	Tenesmus, dyschezia with fecal impaction, perineal swelling	OR, R L SPH	NR	L, R, V	COLP, DEFP, R SSMT, L R TIOM	731	none	Y, L and R
3	Maltese	8	10	MI	Tenesmus, dyschezia with fecal impaction, perineal swelling	N	Enlarged prostate	R, V	OR, DEFP, COLP, L SSMT, R TIOM	1237	none	N
4	Pekingese	8	9	MI	Tenesmus, dyschezia with fecal impaction, perineal swelling	N	NR	R, V	OR, L SSMT, R TIOM	1133	persistent tenesmus	N
5	Mixed	35	7	MC	Tenesmus, dyschezia with fecal impaction, perineal swelling	L TIOM, OR, OM prostatic abscess	NR	R, L, V	R SSMT, R L TIOM	724	none	N
6	Mixed	32	10	MC	Tenesmus, dyschezia with fecal impaction, perineal swelling	COLP, DEFP, OR, L R TIOM	NR	V	R SSMT	1024	post operative rectal prolapse	N
7	German Shepherd	34	8	MI	Tenesmus, dyschezia with fecal impaction, perineal swelling	N	Testicular tumor	R, L, V	COLP, DEFP, R SSMT, L R TIOM, OR	582	wound dehiscence, slight lameness	N
8	American bull dog	22	7	MC	Tenesmus, dyschezia with fecal impaction, perineal swelling	OR, COLP, DEFP, R L SPH	NR	R, L, V	R SSMT, R L TIOM	708	wound dehiscence, slight lameness	Y, L
9	Siberian Husky	25	14	MI	Tenesmus, dyschezia with fecal impaction, perineal swelling	N	Paraprostatic cyst	L, V	OR, COLP, DEFP, R SSMT, L TIOM, paraprostatic cyst OM	1133	none	N
10	Collie	22	8	MC	Tenesmus, dyschezia with fecal impaction, perineal swelling	L SPH, OR	NR	L, V	R SSMT, L TIOM	752	wound dehiscence	N
11	German Shepherd	33	9	MI	Tenesmus, dyschezia with fecal impaction, perineal swelling	N	NR	R, L, V	OR, COLP, DEFP, R SSMT, R L TIOM	1142	none	N
12	Hovawart	37	9	MI	Tenesmus, dyschezia with fecal impaction, perineal swelling	N	NR	R, L, V	OR, COLP, DEFP, R SSMT, R L TIOM	914	none	N
13	Maltese	12	14	MC	Tenesmus, dyschezia with fecal impaction, perineal swelling	L SPH, OR	NR	L, V	L TIOM, R SSMT	713	none	N
14	Bolognese	11	6	MC	Tenesmus, dyschezia with fecal impaction, perineal swelling	R L TIOM, COLP, OR, DEFP	NR	V	R SSMT	639	none	N

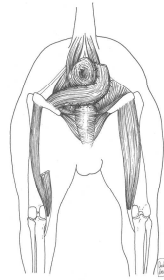
M: Male; C: castrated; I: intact; L: left; R: right; V: ventral; SSMT: split semitendinosus muscle transposition; COLP: colopexy; OR: orchiectomy; DEFP: vas deferens pexy; TIOM: transposition internal obturator muscle; OM: omentalization; PH: perineal hernia; SPH: standard herniorrhaphy by simple muscle apposition; NR: nothing relevant; N:no; Y:yes



365



366



367



368