

## Sacrotuberal Ligament in the Kars Dogs

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**Abstract:** The sacrotuberal ligament was studied in seven Kars dogs. It was observed that *Lig. sacrotuberale* that started in the last sacral vertebra and first two coccygeal vertebrae and clinged to the lateral angle of the *Tuber ischiadicum* was a flat structure, yet it was in the shape of a strong round fibrous cord after 28 mm onward. It was also determined that *Lig. sacrotuberale* served as an origin for *m. gluteus superficialis*, cranial part of *M. biceps femoris*, *M. piriformis* and *M. abductor cruris caudalis*.

**Key words:** Ligament, sacrotuberal, dog

### INTRODUCTION

According to some researchers (Nickel *et al.*, 1986; Dursun, 1994; Dyce *et al.*, 2002), *Ligamentum sacrotuberale* is a formation, extending to the *Tuber ischiadicum* from the last sacral vertebra; according to other researchers (Miller and Evans, 1964; Pascuini *et al.*, 1995; Evans and Lahunta, 1996; Bahadir and Yildiz, 2004), it is a round connective tissue (a fibrous cord), which starts from sacrum (*Apex ossis sacri*) and first coccygeal vertebrae and then extends to the lateral angle of *Tuber ischiadicum*. The thickness of the middle part of ligament, which comes from the big dog stock, is 3 mm, but it ends in a round point of 1 mm width.

In fact, *Ligamentum sacrotuberale* extends under *M. gluteus superficialis* as covered by it and *Ligamentum sacrotuberale* forms the caudodorsal border of *For. ischiadicum* (Miller and Evans, 1964). Ligament partly or completely forms an origin to the following muscles (Miller and Evans, 1964; Evans and Lahunta, 1996; Dursun, 1994).

*M. abductor cruris caudalis* comes out from the ventrocaudal border of *Ligamentum sacrotuberale*.

Caput superficial of *M. biceps femoris* emerges from the ventrocaudal border of *Ligamentum sacrotuberale* as well as partially from the lateral of *Tuber ischiadicum*.

*M. gluteus superficialis* takes its origin by means of *Ligamentum sacrotuberale* partly from the first coccygeal vertebrae lateral border of the sacrum by means of deep gluteal fascia in the cranial of *spina iliaca dorsalis*.

*M. piriformis* originates from the *Proc. transversus* of the last sacral vertebra and *Ligamentum sacrotuberale* (Miller and Evans, 1964; Nickel *et al.*, 1986).

In the treatment of the hip luxatio often seen in the dogs that some researchers (Kilic *et al.*, 2002; Ozaydin *et al.*, 2003) in the veterinary surgery took advantage of this ligament and there are very few studies with regard to this subject constitutes the basis for this study.

### MATERIALS AND METHODS

In this study, 7 Kars dogs (Kirmizibayrak, 2004), which were raised in farm of Kafkas University Veterinary Faculty between 3 and 6 years old, were used. Not only was the gender discrimination not made among the dogs, but the body weight was not also taken into consideration. Following the anaesthesia of the animals, the blood was poured out of *A. carotis communis*. Again 10% of formaldehyde solution was given into the same vein and then cadavers were left into the pool which contained 30% of formaldehyde solution. Later on, the dissection of the dogs was taken starting from the lumbal and hip regions to articulation tarsi. Finally, they were photographed.

### RESULTS AND DISCUSSION

In the dogs that were dissected, it was observed that the length of *Ligamentum sacrotuberale* (Fig. 1) was almost 88 mm and was a ligament that began from the last sacral vertebrae and the first two coccygeal vertebrae and had a fibrous characteristics clinging to the exterior surface of *Tuber ischiadicum*. At the beginning, ligament, which had (a flat or similar outflow like aponeurosis) an origin in the style of flabellum, then took a round and cordon shape after 28 mm onward from the origin. After

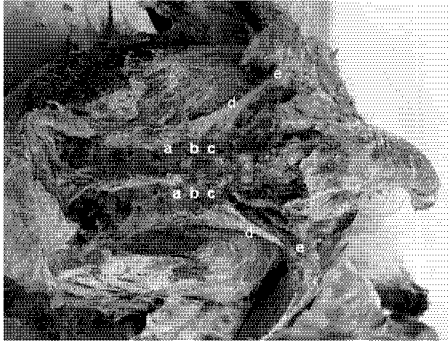


Fig. 1: Dorsal view of the sacrotuberous ligaments, a: Last sacral vertebrae, b: First caudal vertebrae, c: Second caudal vertebrae, d: Sacrotuberous ligaments and e: *Tuber ischiadicum*

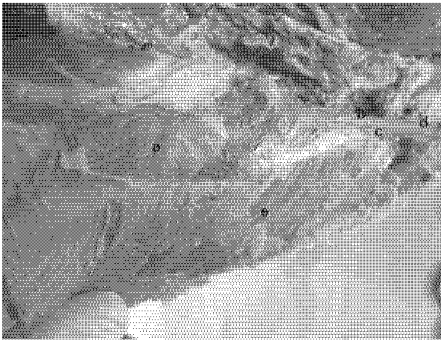


Fig. 2: Medial view of the sacrotuberous ligament, a: *M. abductor cruris caudalis*, b: Lateral branch of the sacrotuberous ligament, c: Medial branch of the sacrotuberous ligament, d: Sacrotuberous ligament and e: *M. biceps femoris*

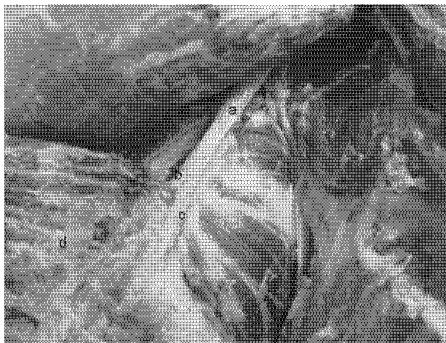


Fig. 3: Lateral view of the sacrotuberous ligament, a: Sacrotuberous ligament, b: Medial branch of the sacrotuberous ligament, c: Lateral branch of the sacrotuberous ligament, d: *M. biceps femoris*

56 mm from the origin, the cranial part of *M. biceps femoris* formed a strong origin on the dorsolateral surface of *M. gemelli*. In other words, it was determined that after 56 mm onward from the origin of ligament, it divided into 2 branches (Fig. 2 and 3), the medial branch that formed origin to the cranial parts of *M. biceps femoris* and the lateral branch that continued to *Tuber ischiadicum*. So, far *Ligamentum sacrotuberale* has been under *M. gluteus superficialis* and the dorsolateral of the proximal part of *Ligamentum sacrotuberale* formed an origin to *M. gluteus superficialis*, whereas *M. priformis* takes its origin from the ventromedial border of *Ligamentum sacrotuberale*. After 31 mm from the beginning of *M. biceps femoris*, it was observed that *Ligamentum sacrotuberale* formed an origin to *M. abductor cruris caudalis* on the medial surface of this muscle.

In the present study, it was determined that *ligamentum sacrotuberale* originated from the last sacral and first two coccygeal vertebrae and ended in *T. ischiadicum*, it was 88 mm long, hard and strong fibrous cord; although, it had a flat origin like aponeurosis at the beginning, it took the shape of a round and thick cord after 28 mm onward; after 56 mm onward, ligament divided into 1 weak medial branch that went to both the cranial part of *M. biceps femoris* and *M. abductor cruris caudalis* through the medial surface of *M. biceps femoris* and a stronger lateral branch that adhered to the lateral of *Tuber ischiadicum* and seemed as the continuation of ligament; as reported in literature (Miller and Evans, 1964; Evans and Lahunta, 1996), it was determined that it formed an origin to *M. gluteus superficialis*, the cranial part of *M. biceps femoris*, *M. priformis* and *M. abductor cruris caudalis*. However, in the contraction of the muscles mentioned above, though partially, as Dreier (2002) reported, it is very interesting that (one-sided) cutting of this ligament, 88 mm long, did not bring about an insufficiency in the functions of the lumbar and hip of animals.

## CONCLUSION

We can conclude from these results that this ligament and muscles from which the ligament originates do not have much effect on the acts that do not require much effort in the walking and rest of animals, or the insufficiency of the ligament cut might be eliminated through the help of the neighbouring ligament, muscle and fascia.

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