

## The study of Achilles tendon rupture in dogs

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### Abstract:

*During these last years in our country have been diagnosed many cases of tarsus tendons (Achilles) rupture. The main cause of this pathology is trauma. The clinical syndrome consists on painful movement, flush of the damage part, edema, and lameness. This pathology is diagnosed more easily in humans than in dogs, while the treatment techniques are the same for both of them. Achilles tendons rupture is a lesion that can affect all of animals. In pet animals like cats and dogs this pathology is frequent and it could be treated in medical, conservative and surgical way. During the period October 2012-May 2015, were examined 20 dogs of different breeds, gender and ages. The examined dogs were 7 weeks and 12 years old. All these dogs had exhibit Achilles tendon lesions. At the end of the study we can conclude that our medical and surgical treatment of the tarsus tendon rupture was very successful. It is very important to identify the type of the lesion because in this way it can be manage better in medical and in the surgical way.*

**Key words:** tarsus tendons, rupture, ultrasound, surgical

### INTRODUCTION

During these last years in our country have been diagnosed many cases of tarsus tendons (Achilles) rupture. In most of the cases this has happened because the animals are kept in

unsuitable conditions or dangerous conditions where the animals could be self-damaged in traumatic way: as for example the terrace, car parking etc. Furthermore the physical stressful work like the cases of hunting dogs or the overweight lead to the Achilles tendons rupture. This pathology is also frequent in humans.

The main cause of this pathology is trauma. The most affected persons are those that exercise ski board, jumping sports and athletes. Although it could be caused from an accident like the sudden return of the body from one side to another. The clinical syndrome consists on painful movement, flush of the damage part, edema, and lameness. This pathology is diagnosed more easily in humans than in dogs, while the treatment techniques are the same for both of them. Achilles tendons rupture is a lesion that can affect all of animals. In pet animals like cats and dogs this pathology is frequent and it could be treated in medical, conservative and surgical way. This pathology happens more frequently in dogs that exercise intensively like hunting dogs, race dogs and sled dogs. The most predispose dogs are the hunting and sport dogs.

The tarsus tendon (Achilles) is the tendinoses termination of one muscles group: m.biceps femuris, m.semitendinos, m.flexor digitalis and m.triceps. The anatomic lesions that are observed during the Achilles tendons damage include:

- ❖ muscular stretch
- ❖ disjunction of muscle from its site location
- ❖ tendons rupture

The tendons have good regenerative capability. This capability should be used from the surgeon to stimulate their healing and the adhesion of those structures that are ruptured or have lost their physical integrity. The tendons suturing is realized through different surgical techniques. One part of these techniques requires very sophisticated instruments. In our conditions the treatment of partial or complete tarsal tendons

rupture could be possible through the external immobilization technique or suturing of these structures with unabsorbable monofilamentose silk. In both cases the medical treatment with antiinflammatory drugs should not be avoided. The most interesting surgical cases are those where the tendons rupture is associated also with bones lesions. These lesions consist on tendons rupture together with a part of bone where it is fixated (*insertio tendinae*).

The tendons lesions could be presented in different ways:

- Dismemberment of tendon. In this case are formed two tendons parts.
- Detachment of the insertion of tarsus tendon from the calcaneus
- Detachment between the muscular part and tendons part.

Echography gives detailed information on tendons calcaneus rupture. During the echography examination of the tendon is observed some white streaks that are the tendons filaments. Normally they are placed in horizontal way one after the other or one over the other. The black spot shows the location of the pathology. The type of the treatment depends to the echography data, if it will be medical or surgical treatment. The treatment of the tarsus tendons or the treatment of tendinitis is based in general on medical or surgical treatment. In spite of the treatment used, both of these techniques are accompanied with external mobilization of the damaged region and with the limited movements. The medical treatment consist on the use of antiinflammatory drugs like injectable cortisonics: Prednizolone and hidrocortizone in doses from 5-20 mg. the medicament doses depends on type of the lesion and it should be injected between the tendons and its slip.

Procaina 1% is often used after the injection, to cause local anesthesia and to regulate the volume of injected drug.

If the inflammatory specific place is not identified the injection is realized in the softest place.

The prevention of the chronic tendons inflammation is the best way in surgical intervention in tendons slip. The treatment of the tendons pathologies is very difficult because in many of the cases they are refractory against the treatment. The treatment of these lesions could be through the conservative treatment (mobilization), or surgical treatment. The first one consists in the mobilization of the tarsus joint accompanied by the use of antiinflammatory drugs.

The second one consists in the suture of the ruptured tendon. Bunellis suture is the best technique used for the surgical repair of the tarsus tendon. In our days this technique is less used because in larger breeds it could be unsuccessful. According to some authors (Easley e coll-1991 Bojab e Coll1990) the Kesslerit technique is more successful (with one double ore triplet ligature). The suture material should be nonabsorbable or with slow absorbable rate, such are polidiossanone or acidpoliglikolyc (Morikoni e call-1992). It is also described the use of stainless steel ligature. This technique is more resistant against the tendons rupture (Duter1974: Glimore1984).

## **MATERIAL AND METHODS**

During the period October 2012-May 2015, were examined 20 dogs of different breeds, gender and ages. The examined dogs were 7 weeks and 12 years old. All these dogs had exhibit Achilles tendon lesions. Tendons lesions were classified in: partial rupture (all 8 dogs) witch have been treated in medical way accompanied with external mobilization of the damage region. The other part (12 dogs) was diagnosed with complete rupture of the tarsus tendon. These dogs were treated in surgical way. The surgical treatment was based on different surgical treatment (the surgical techniques mentioned above). After the surgical intervention the operated region was bandaged and mobilized including the paw.

The immobilization was performed by putting the tarsus in hemiflexion position. In this way the tendon tension is discharged by the tendon.

The bandage was kept about two months in animals that weight less than 5 kilos and two weeks more in animals with weight over 5 kilos. In some cases the bandage is removed and was applied the physiotherapy and the damage region is bandaged for the second time. Before the second bandage is performed ultrasound examination. After the strong bandage was put the Robert Jones bandage that was let for more than 30 days.

## RESULTS AND DISCUSSION

On Table no.1 was presented the frequency of the tarsus tendons according to the animals' gender and animals' age. According to the tables data the gender does not influence in this pathology. In general, this pathology is more frequent in males than in females. This is related with the temperament of male dogs.

**Table No. 1**

All	Sex		Age (years old)			
	Female	Male	0-1	1-5	5-10	Over 10
20	9	11	2	11	4	3

### **The frequency of the tarsal tendons rupture in dogs according to the sex and age.**

The dogs from 1 to 5 years old are more affected because in this age they are hyperactive.

**Table No. 2**

All	Weight (kg)			
	0-5	5-10	10-15	Over 15
20	1	3	9	7

### **The frequency of the tarsus tendons in dogs according to the body weight**

According to the Table No.2 the weight is an important factor for the tarsus tendon rupture. The dogs of 10-15 kilos are those that are under a big physical stress as for example the hunting dogs that are one of the most affected breeds from this pathology. In the case of one aggressive Rotvailer that has jumped with its first legs the partial rupture of its tarsus tendon was fatal and incurable because of its big body weight (about 60 kilos).

The breed influence in this pathology is evident. While the mixed breed are very resistant against this pathology.

**Table No. 3**

All	Breed						
	Crossing breeds	Sportive breed		Large breed			
	Metis	Setter	Pointer	Pastor	Rotvailer	Doberman	Husky
20	5	3	3	4	2	2	1

### **The frequency of tarsus tendon in dogs related to breed**

The sportive breeds (Setter, Pointer) are most predisposed breeds of tendons Achilles lesions because of their intense physical activity during hunting. Tarsus tendons rupture is observed in the other breeds because of their impulsive character, protector behavior, or from different accidents.

The treatment of tarsus tendon (calcaneus, Achile) consisted in medical and surgical treatment. Both of them were accompanied with external immobilization of the damaged region.

The medical treatment was performed in all cases of the partial rupture of the tarsus tendon (all 8 dog). This treatment resulted successful in 6 dogs while in 2 others (1 Rottweiler and one 1 Pastor) it resulted unsuccessful. Two other dogs (1 Setter and 1 Metis) have exhibit faintly lameness that increased after coupled of hours of walk or physical exercise.

**Table No. 4**

All	Treated		Curing		Unsuccessful treatment
	Medical	Surgical	Medical	Surgical	
20	8	12	6	11	3

### **Treatment results of tarsus tendon in dogs**

As it is shown on the table No.4 in 12 dogs was performed surgical intervention. 8 months after the surgical intervention 9 of them have completely recovered and had completely normal function of the tarsal tendon. The hunting dogs were completely recovered and they had the same physical activity as before the tarsus tendon damage.

The surgical intervention resulted unsuccessful only in one Doberman. In this dog the surgical intervention was repeated. In this dog were created adherence. This dog lost forever the flexion function of the limb.

At the end of the study we can conclude that our medical and surgical treatment of the tarsus tendon rupture was very successful. It is very important to identify the type of the lesion because in this way it can be manage better in medical and in the surgical way.

The intervention success is always related to the postoperator development that predicted the immobilization time of the joint and the time of the animal rest (from 6 to 7 month).

### **CONCLUSIONS**

- ❖ The injury of the tarsus tendon (calcaneusit, Achilles) in dogs is a frequent pathology in our country.
- ❖ The diagnosis of this pathology is very important. It should be based on a careful anamnesis and in specialized clinic controls like routine orthopedic examination and ultrasounds controls.
- ❖ The tarsus tendon injury is not influenced by the gender of the animal even it is more frequently seen in male dogs because of their temperament.

- ❖ The most affected age from the tarsus tendon injury is from one to five years old.
- ❖ The injury of the tarsus tendon has breed predisposition and it is frequently seen in hunting dogs.
- ❖ The body weight influence in the development of the tarsus tendon in dogs.
- ❖ The partial treatment of the tendon tarsus can be successfully treated in medical way.
- ❖ The most successful treatment of the completely rupture of the tarsus tendon is the surgical treatment.
- ❖ Ultrasounds examination is one of the best diagnostic method of the tarsus tendon injury.
- ❖ The medical treatment of tarsus tendon injury (calcaneus, Akilit) in dogs is successful if it is accompanied with the immobilization of the joint.

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