



Clinical Reports

Interfalangeal flexural deformity in a pelvic limb of an quarter horse: a case report

Deformidade flexural interfalangeana em membro pélvico de equino quarto de milha: relato de caso

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ABSTRACT

Flexural deformity in growing animals is a condition in which a joint is kept in a flexed or abnormally extended position. In foals, it is characterised mainly by deviation of the limbs. As such, the aim is to report a case of flexural deformity in a pelvic limb of Quarter Horse. The animal was treated at the Jerônimo Dix-Huit Rosado Maia Veterinary Hospital (HOVET-UFERSA): a female, with dappled coat, approximately two years of age, presenting with interphalangeal flexural deformity of the left pelvic limb. In the anamnesis, the owner reported that the animal had shown the deformity from six months of age, and on physical examination, presented grade IV lameness of the left pelvic limb, excessive wear of the toe, with the limb offering no support. Upon palpation, contracture of the superficial and deep digital flexor tendons was identified. Surgical treatment was therefore chosen, including tenotomy of the deep digital flexor tendon together with desmotomy of the lower check ligament. Medicinal therapy based on antibiotics and an anti-inflammatory was carried out, in addition to corrective trimming of the hoof and a horseshoe with toe extension; cleaning and changing the dressing was performed every 48 hours, and active physical therapy was given through a daily 15-minute walk. After 15 days hospitalisation, the animal was discharged, showing considerable improvement in its clinical condition, with a reduction in the degree of contraction of the flexor tendons, and grade I lameness. The surgical wound had fully healed, and there was no inflammation or infection.

RESUMO

A deformidade flexural é uma condição de animais em crescimento, na qual uma articulação é mantida em posição flexionada ou estendida anormalmente. Em potros, caracteriza-se principalmente pelo desvio dos membros. Desta forma, objetiva-se relatar um caso de deformidade flexural em membro pélvico de equino Quarto de Milha. Foi atendido no Hospital Veterinário Jerônimo Dix-Huit Rosado Maia (HOVET-UFERSA), uma fêmea, da raça Quarto de Milha, pelagem tordilha, com aproximadamente dois anos de idade, apresentando deformidade flexural interfalangeana em membro pélvico esquerdo. Na anamnese, o proprietário relatou que o animal apresentava encastelamento do membro desde os 6 meses de idade. Ao exame físico, apresentou claudicação grau IV no membro pélvico esquerdo, desgaste excessivo de pinça, e sem apoio do membro. À palpação foi identificada contratura dos tendões flexores digitais superficial e profundo. Desta forma, optou-se pelo tratamento cirúrgico de tenotomia do tendão flexor digital

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profundo associado a desmotomia do “check” inferior. Foi realizada terapia medicamentosa a base de antibiótico e anti-inflamatório, além disso, foi realizado casqueamento corretivo e colocação de ferradura com prolongamento de pinça, limpeza e troca de bandagem a cada 48 horas, e fisioterapia ativa por meio de caminhada de 15 minutos diariamente. Após o período de 15 dias de internamento, o animal recebeu alta médica apresentado considerável melhora no quadro clínico, com redução no grau de contração dos tendões flexores, e claudicação grau I. A ferida cirúrgica apresentava-se totalmente cicatrizada e não havia presença de inflamação e/ou infecção.

INTRODUCTION

Among the various locomotor disorders in equines, the most important are flexural deformities, frequently seen by large animal practices, and which have a favourable prognosis for a return to sporting activities if properly treated by conservative clinical methods. However, the prognosis is poor when the degree of deviation is severe and the only option is surgical treatment (DEARO et al., 2012; CARLIER et al., 2016). Flexural deformity is a condition seen mainly in growing animals, in which a joint is kept in an abnormally flexed or extended position. Its origin can be congenital, or it can be acquired, with the first being most prevalent, affecting foals from birth through the first years of life respectively (SANTOS & NOGUEIRA, 2013; NUNES et al., 2016).

There are varying degrees of limb deviation in animals, that can affect the superficial and deep digital flexor tendons. In mild cases, there is a slight cranial or palmar/plantar projection of the metacarpal/metatarsophalangeal joint, and the animal is able to recover without clinical/or surgical treatment due to development of the muscles of the affected limb (PENTECOST et al., 2016).

In mild to moderate cases, the prognosis is considered favourable with regard to a return to athletic activities; but only if identified early, with the necessary measures taken concerning treatment. Severe cases, where there is no response to therapy, can lead to secondary problems, such as distortion of the hoof capsule, changes in the distal phalanx and early-onset degenerative joint disease that results in a long-term prognosis of solidification (CALDWELL, 2017).

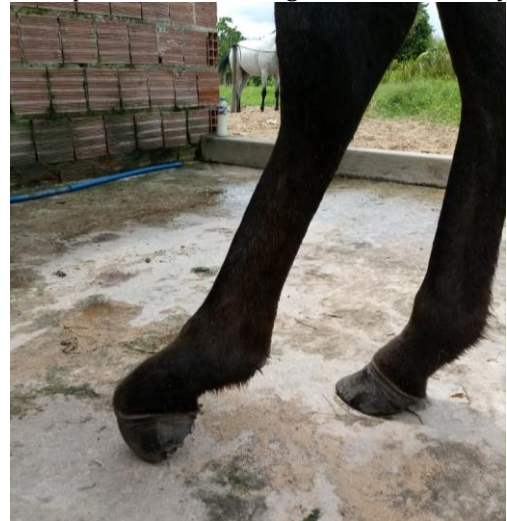
Suitable treatment in cases of locomotor problems is essential, given the importance of animal selection based on conformation, performance and lineage, as the conformation of the limbs is considered an indicator of performance and orthopaedic health (COSTA et al., 2018).

Thus, the aim is to report a case of interphalangeal flexural deformity in a pelvic limb of an American Quarter Horse, describing the treatment employed and the results obtained through surgical procedure.

CASE REPORT

The animal was treated at the Jerônimo Dix-Huit Rosado Maia Veterinary Hospital (HOVET-UFERSA): a female American Quarter Horse, with dappled coat, approximately two years of age, from the district of Russas in the state of Ceará, presenting with interphalangeal flexural deformity of the left pelvic limb. In the anamnesis, the owner reported that the animal had shown talipes of the left pelvic limb (figure 1). The first veterinary session showed a flexural deformity of congenital origin, and it was therefore decided to employ conservative treatment, using a splint and periodic corrective trimming.

Figure 1. Left pelvic limb showing flexural deformity.



Upon general physical examination, the physiological parameters, blood count and serum biochemistry, as well as preoperative examinations, were all within the normal range for the species, allowing the procedure to be performed. In the specific physical examination, the animal presented grade IV lameness of the left pelvic limb, excessive wear of the toe, with the limb offering no support, and palpation identifying contracture of the superficial and deep digital flexor tendons. After the physical evaluation, a radiograph was requested, which showed the absence of parallelism of the distal phalanx relative to the ground, with no alteration in bone opacity and no compromising of the joints (Figure 2). From the results, the contracture was classified as grade III (severe).

Figure 2. Radiograph of the left pelvic limb lateromedial projection.



In view of the results of the radiography, together with the history and anamnesis, surgical treatment was chosen, including tenotomy of the deep digital flexor tendon (DDFT) together with desmotomy of the lower check ligament. On 28 June 2019, the surgical procedure was performed, with pre-anaesthetic medication (PAM) based on detomidine at a dose of 20 mcg/kg, followed by anaesthetic induction with ketamine at a dose of 2

mg/kg, maintained in lateral decubitus under inhalational anaesthesia with isoflurane (PAULIN, 2017).

After trichotomy, local antisepsis was carried out with 2% degerming iodine and 70% alcohol. The sterile field cloths were then placed, and a skin incision made on the lateral aspect of the proximal third metatarsus, of approximately 5 cm in length, using a number 4 scalpel and 24 blade. This was followed by sectioning of the tendon sheath with Mayo scissors, identification and division of the accessory ligament and DDFT, and placement of the Mayo curved haemostatic forceps (figure 3a) to separate the structures and their subsequent diatheresis. The tendon sheath was then sutured in a simple continuous pattern with 2-0 polyglactin thread, and the skin in a Wolf pattern with 2-0 polypropylene thread, followed by a compression bandage of orthopaedic cotton, a 13-thread crepe bandage, 15 cm x 1.80 m, and adhesive tape (figure 3b).

During the postoperative period, drug therapy was started with penicillin at a dose of 20,000 IU/kg, intramuscular, at an interval of 48 hours for 7 days, and flunixin meglumine at a dose of 1.1 mg/kg, intravenous, once a day for 7 days. Corrective trimming of the hoof was carried out, and a horseshoe with toe extension (figure 4) was applied. The surgical wound was cleaned with 2% degerming iodine, and the dressing changed every 48 hours. Active physical therapy was by a 15-minute walk for 15 days, aiming at the natural stimulation of the animal to lengthen the tendons.

Figure 3. (A) Curved forceps isolating the deep digital flexor tendon. (B) compression bandage.



Figure 4. Corrective trimming of the hoof, and horseshoe with toe extension.



DISCUSSION

The animal had a history of congenital flexural deformity, and during the first days of life, repair was attempted using splints as a conservative method. However, the results were unsatisfactory since, once the animal had been discharged, the owner was unable to follow the medical recommendations. According to Earl & Gaughan (2017), when diagnosed early, flexural deformities have a good chance of recovery with conservative treatment, but the results depend on basic care, so as to avoid worsening of the condition or secondary complications.

As there was no possibility of the deformity regressing with conservative treatment, and due to the time it took the owner to return to the veterinary clinic, the prognosis for the animal was poor. Surgical treatment was therefore chosen. However, Caldwell (2017) demonstrated in his studies, that animals of more than one year of age, do not usually show satisfactory results to surgery compared to horses of a younger age.

Surgery was chosen due to the time the animal had had the condition, as well as the signs it presented at the time of consultation, where the specific physical examination showed grade IV lameness with grade III tendon contracture, and wear of the toe of the left pelvic limb. In cases of flexural deformity together with hyperflexion, surgical intervention is recommended if conservative treatment has not given satisfactory results, or when the alteration is classified as grade II. The main surgical techniques include desmotomy of the accessory ligament and tenotomy of the deep digital flexor (SANTOS & NOGUEIRA, 2013). In the present report, a 5 cm incision was made in the proximal third, and desmotomy of the lower check ligament was therefore necessary for greater tendon release.

The severity of the lesion impaired the normal activities of the animal, such as trotting and galloping, thereby decreasing its chances of participating in sporting

events. Waguespack et al. (2009) reported that from the chronicity and the signs presented by the animal, tenotomy might be required - also due to changes in the articular capsule and soft tissue surrounding the tendon.

The surgical procedure was performed with the animal in the left lateral decubitus position. After the procedure, a reduction in the degree of contraction of the flexor tendons was seen (figure 5). Associated with the surgery, active physical therapy was given by daily walking (figure 6) in order to stimulate the animal naturally. The prognosis in foals for a sporting career is considered poor to unfavourable, since the ability of the affected limbs to resist impacts is reduced due to changes in the musculoskeletal system from the neonatal period on (SCHADE et al. 2019).

Figure 5. Left pelvic limb six months after tenotomy.



Figure 6. Animal returning to light activities.



During the postoperative period, cleaning the wound every 48 hours with iodine tincture was recommended, followed by dressing using crepe bandages, corroborating Hussni et al. (2010), who reported

cleaning the wound with iodine tincture, followed by applying a dressing up to the 12th post-operative day, when the skin sutures are removed.

For drug therapy, antibiotics were used (Penicillin at a dose of 20,000 IU/kg, intramuscular, once a day for 7 days) and an anti-inflammatory (phenylbutazone at a dose of 2.2mg/kg, intravenous, once a day for 7 days). The same was seen in the work of Tracey & McClure (2018), who showed benzathine penicillin treatments associated with phenylbutazone intravenously for 7 to 10 days after surgery.

Together with cleaning the wound and drug therapy, corrective trimming was carried out and the use of a horseshoe with toe extension, aiming to reduce the recovery period of the animal. Applying an extension to the hoof helps to protect the region, and increases the tension forces in the tendon of the deep digital flexor muscle during each gait phase (SOUZA et al., 2017). After 15 days in the hospital, the animal was discharged, showing considerable improvement in clinical condition, with grade I lameness. The surgical wound had fully healed and there was no inflammation and/or infection. In contrast, Carlier et al. (2016) reported in their research that around 50% of horses treated surgically, did not show perfect cosmetic healing of the surgical wound.

Continuing restrictions on the animal are essential for total recovery. Periodic corrective trimming was recommended, as well as continuing physiotherapy with a daily 20-minute walk, in addition to 30 days resting, with the animal in a small enclosure. According to Auer et al. (2019), confinement is recommended for a few days after surgery, followed by access to a small pen or yard, with the limb kept bandaged until the sutures are removed.

CONCLUSIONS

Following tenotomy of the deep digital flexor tendon and desmotomy of the lower check ligament, the animal showed a significant improvement in the clinical condition of flexural deformity. The patient was two years old, thereby differing from studies that show a poor to unfavourable prognosis in animals older than one year. There was a good response to the surgical procedure, as well as to the drug treatment, with the wound seen to be healing seven days after surgery. After fifteen days hospitalisation, the animal was discharged, with restrictions on movement and returning to sporting activities; after six months rest the animal was cleared to carry out light exercise. After a further five months, the animal was able to perform moderate training, highlighting the possibility of future participation in sporting events.

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