

Fariery.-
A Description Of
Some Actual Cases
Requiring Special
Consideration.

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P R E F A C E

This dissertation has been prepared from experience and knowledge gained as a farrier in association with veterinary surgeons, other farriers and teachers of the subject.

The cases discussed are those with which I have personally been involved and are typical of the cases that may confront the farrier in his everyday work.

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Fig. duplicate radiograph shows damage to third phalanx caused by horn tumour. 1983 horse is still in work.

KERATOMA OR HORN TUMOUR

A keratoma is a horn tumour, which develops on the inner surface of the horn wall, as shown in Fig. 1.

This type of tumour is not common, but when it occurs, its seat is usually in the toe. It is believed that they are due to chronic inflammation of the sensitive wall, with suppuration between the sensitive and horny laminae of the hoof. The pus is retained, causing partial degeneration of the sensitive laminae, which in turn causes separation of the horny and sensitive laminae.

When the pus has escaped, either through a passage caused by pressure, or through an artificial opening, an empty space is left, which allows hard horn to form on the free margins of the sensitive laminae, thereby causing the keratoma.

A keratoma thus formed gradually occupies the formerly empty space. The size of which may vary from about half an inch diameter up to one and a half inched diameter. This causes pressure on the anterior of the third phalanx, Fig. 2.

The tumour is first detected at the bearing surface, where it appears as a mass of hard horn between the wall and the sole, which deflects the white line inwards, as can be seen in Fig. 3. It is composed of hard glistening horn. a waxy-looking mushroom shape. The new growth occasionally undergoes degeneration, producing a depression of varying depth, with dark coloured walls, from which a greyish-black pus is sometimes discharge. Figs 4 and 5.



Figs. 1-2-3.

One of the first views of the Tumour
at first visit, and dressed hoof.





Shows a close up of Horn Tumour composed of hard and glistening horn, waxy looking, Fig. 4.



Second visit shows dark coloured walls from which a greyish black puss is sometimes discharged. Fig. 5.



Lateral view of horse off hind suffering from Horn Tumour. Note horse well back on the bulbs of the heels. Fig. 6

Symptoms

Lameness gradually develop, with the horse 'going back on its hells.'

Fig. 6. when lameness is present, pain, increased warmth and pulsation of the digital artery may usually be detected.

Causes

Chronic inflammation of the sensitive wall may be caused by:

- (i) Bruising
- (ii) Pricks when shoeing
- (iii) Corns or treads
- (iv) Pressure from an extended toe piece shoe
- (v) Hammering a clip of a shoe to the angle of the foot

Treatment

It is essential to relive the pressure from the immediate area of the tumour and fit a special shoe, designed to alleviate force on the tumor area.

CASE 1

Actual treatment for a horse with a keratoma. – With advice from the veterinary surgeon, I cut three vertical grooves and horizontal groove on the hoof. As illustrated in Fig. 7 and 8. this will weaken the outer wall of the hoof, so as to relive any pressure on the third phalanx that may be causing lameness. The grooves would also facilitate the removal of a strip from the horn wall of the hoof. Should it be necessary at a later date.

I manufacture a special shoe, which was set down at the toe area and spread so as to protect the tumour, Fig. 9. The quarter clips where also set well back, with all nails away from the affected area. See fig. 10 and 11.



Fig. 7. Position of grooves to weaken outer wall.



Close-up anterior view shoe fitted showing Set Down area immediately below tumour, small red spot centre, possible seat of tumour! Fig. 8.



Shows type of shoe suitable for use in the case of Horn Tumour. Fig. 9.



Fig. 7. Position of grooves to weaken outer wall.



Solar surface showing shoe fitted with toe set down and spread well out to protect the sensitive area above. Fig. 10.



Fig. 11.
Hoof dressed and shoe being burnt on.
Note nails well back from Tumour area.



Fig. 12.
Shows hoof after first visit being left too long before being re-called.



Fig. 13.
Anterior view showing hoof after being pared back after being left too long.

Fig. 14.
Shows shoe fitted in place and tool designed for grooving i.e. a 4" nail welded to a flat bar, heated and burnt in the hoof. Afterwards well cleaned with veterinary grooving knife.



The owner of the horse was then advised to have us inspect the hoof at short, regular intervals, but contrary to this advice, we were not contacted until after ten weeks had elapsed. The amount of new horn growth during this ten weeks was astonishing, Fig. 12, and unfortunately the horse had reverted back to the stance when we were initially called.

The hoof was correctively trimmed and re-grooved, as shown in Fig. 13. The tools used to groove the hoof are shown in fig. 14. the 't' shaped tool was manufactured from a piece of flat steel and a six inch nail welded to form the 't'.

This tool was heated and used to burn the grooves into the hoof. By using this method the grooves were cut speedily and without causing pain to the horse.

Finally, the grooves were dressed with a file to make them more presentable.

During the process of trimming, I noticed a small prominence in the hoof, which can be seen in Fig. 15. This indicated that by weakening the horn with grooves, the pressure was transferred on the outside layer of horn, thereby relieving pressure from the inside layer, Where it would cause pressure on the third phalanx.

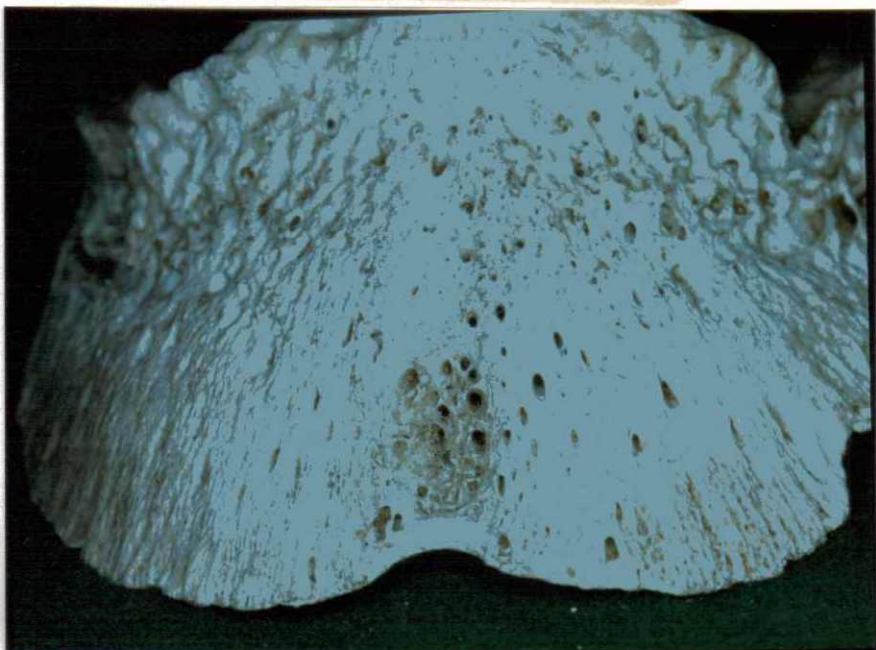
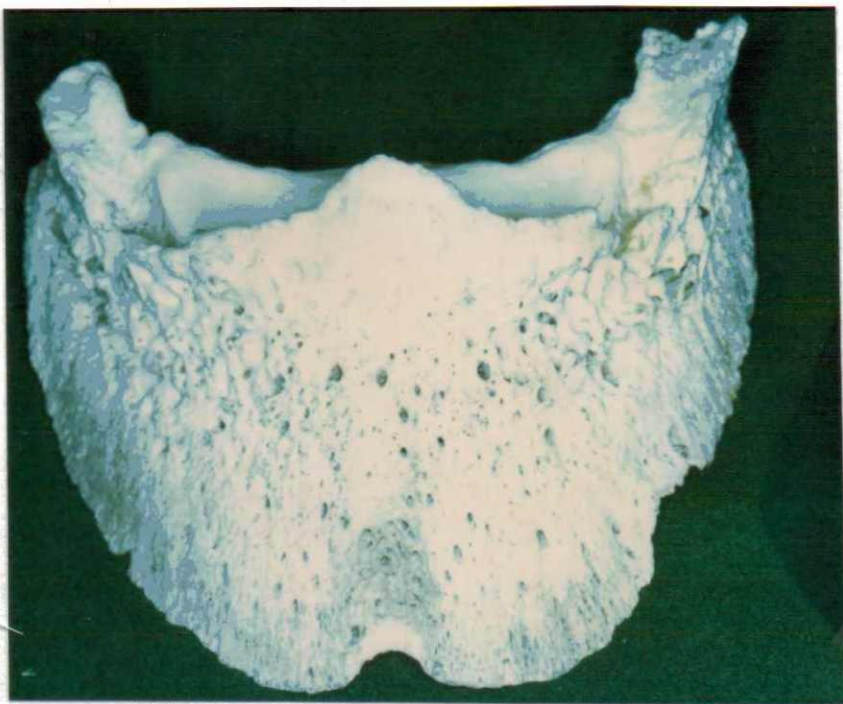
If the tumour was allowed to go untreated, pressure would increase on the third phalanx and as well as causing considerable pain, indentation would be caused in the third phalanx, as shown in Fig. 16 and 17. These illustrations are photographs that I took several years ago, showing a third phalanx which has been deformed from the pressure of a keratoma which had not been treated. The indentations can be seen clearly on the photographs.

After further visits to the horse in question, the pus had stopped seeping from the affected area and the tumour seemed to have subsided, fig. 18.



FIG.15. Lateral view showing horny prominence after hoof being grooved 10 weeks previous.

Photograph of third Phalanx from a previous dissection showing groove worn into the bone by Keratoma. Figs. 16-17.



The horse is now standing in a more normal position Fig. 19. and has continued to go sound ever since.



Fig. 18.



Fig. 19.

Case study 2

Contracted tendons

At the outset, it should be said that little is known or has been written about contracted tendons.

Contracted tendons may be divided in to two main categories:

- (i) Acquired – this type occurs usually in young horses between about four months and twenty months of age.
- (ii) Congenital- which is present at birth.

1. Acquired contracted tendons.

These are most common in yearlings and can be acquired at any time of the year.

One or both feet Fig. 1 and 2. may be affected and the condition nearly always occurs an rapidly growing foals.

All breeds of horses, ponies and donkeys appear to be susceptible to this condition.

The first signs that will be evident are the pasterns becoming rather upright and the fetlock points becoming straight Fig. 1-2. also the coronary bands of the feet may be unduly warm or puffy and the wall of the foot may flake away at the toe.

Some separation of the wall from the sole may also be evedent at the white line Fig. 3.

This stage usually progresses quite rapidly, causing the foal to stand on its toes with heel raised from the ground. In this condition there is only wear on the toe area and the heels grow long , so that as the toe wears the foot becomes boxy or club footed.

Affected animals tend to stand with there fore legs out in front and slightly apart; this stance becomes more extreme as the condition progresses.

If effective treatment is not instituted early and the condition is allowed to progress, the foot will pass the point of no return and the horse will start to walk on the front of the wall, rather than the sole Fig. 4.



View of Solar Surface, showing infiltration of gravel around the toe area. Fig. 4.



Lateral view showing both feet affected, and foal in peak condition.



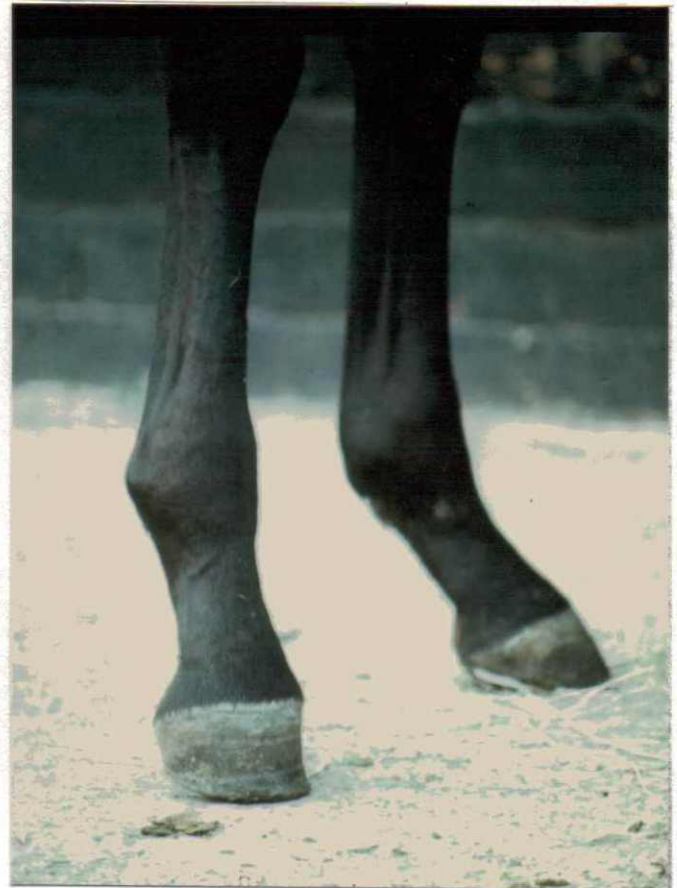
View of feet gone past the point of no return. Fig. 11.



Anterior view on first visit, showing leg's splayed out to ease the condition.

Foal in peak condition, note the height of the foal. FIG. 1-2.

Antero-Lateral view showing one affected hoof in comparison to opposite normal hoof. Age 4 months FIG. 3.



The term "contracted tendon" covers a number of related conditions, therefore the sequence is not always exactly described. In some animals the fetlock will knuckle forward with there hoof position remaining normal; in others the hoof and third phalanx will rotate with the fetlock remaining normal. However, in a large proportion of cases, both fetlock and hoof are affected.

In cases of contracted tendons there is an excessive pull on one or both flexor tendons, and possibly also on the suspensory ligament. (The suspensory ligament is an elastic ligament giving support to the fetlock joints. It has no muscle attachment and is not capable of voluntary contraction.) This results in the abnormal positioning of the foot.

The cause of this exceeds pull is controversial. The common theory is that there is literally a contraction or shortening of the tendons. Whilst this may occur in the suspensory ligament, there are many theoretical reasons why it could occur in the tendons. A second theory is that in rapidly growing animal the bones grow disproportionately faster and longer than the tendons. Again a number of people find this explanation untenable.

A third possibility is that there is excessive tension on the tendons by there muscle. This may be due to some problem with the muscle themselves. Dr. van Hoosen-1977. writes of his experiences, strongly indicating that it is not a tendon inflammation, but primarily a muscle inflammation caused by nutrition imbalance, infection and allergies i.e. oats.

The use of one injectable vitamin E-selenium supplement, and antibiotics, diet correction and the use of special shoeing methods applied as early as possible.

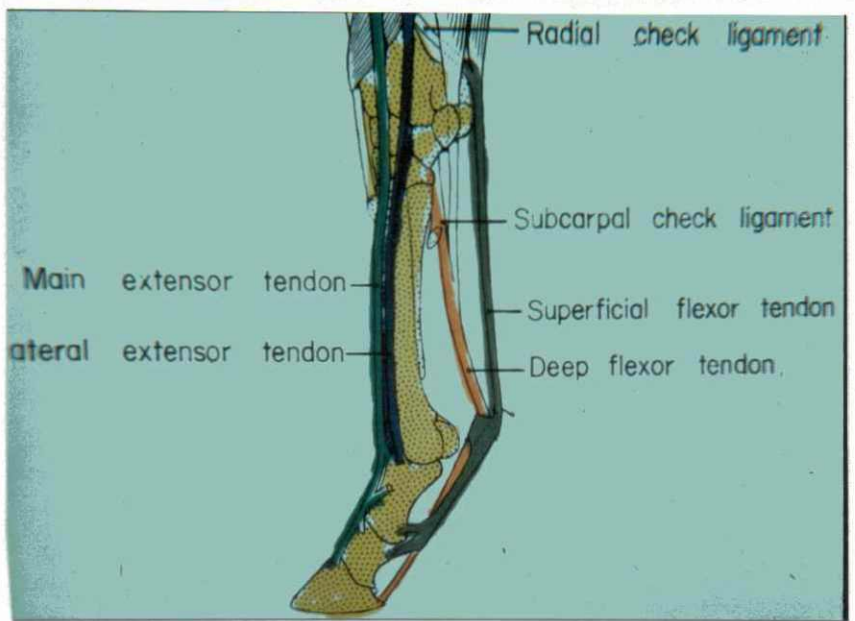
Method

Contracted tendons occur in animals that are growing rapidly. The first method is to curtail growth by reduction of food intake. Foals still on the mare should be weaned and the diet should be restricted to hay and water. Exercise should be encouraged.

It is perhaps ideal to keep the animal in the yard, and if necessary exercise it in hand as well. After two or three weeks of treatment the animal should have lost weight and the condition should be markedly improved. Concurrently the posture should have returned to normal. Once the normal stance is resumed, great care must be taken to maintain a diet with low calorific value, since contraction can re-occur and treatment a second time is seldom satisfactory.

A number of animals will not respond to this simple starvation theory. In some cases there is an underlying calcium /phosphorus imbalance or vitamin 'D' imbalance this can be ascertained in a laboratory by examination of blood samples. Possibly a urine sample is collected at the same time will also be required. In other cases, where treatment may not have been instituted soon enough, the foods intake may not be adequately curtailed. Occasionally, it fails for other reasons so far unknown. If surgery to cut the sub-carpal check ligament may be advised by the veterinary surgeon. This ligament reinforces the pull of the muscle of the deep flexor tendon and it may be necessary to section this in some animals to eliminate the problem.

A third line of treatment sometimes advocated by veterinary surgeons involves surgery of the deep flexor tendon behind the second phalanx. This should be carried out as a last resort. Since the success rate for this treatment is poor and the animal will not be suitable for riding purposes afterwards. In a number of cases this surgery has resulted in severe complications, necessitating destruction of the animal Fig. 5.



View of leg's with feet gone past the point of no return. Note Solar Surface verticle, shortly afterwards an operation was carried out, but with terminal results. Fig. 5.



Complicating factors

Because of extra weight borne by the toe of the affected feet, the hoof may break or crack. Once such crack has occurred, treatment is further complicated and so it is probably advisable to shoe all affected animals at the onset of clinical signs.

A small number of cases occur after a tendon or muscular injury and in these cases surgery is nearly always necessary. In very severe or protracted cases there may be damage to bone or joints and secondary arthritis may occur Fig. 6. for this reason a veterinary surgeon may require radiographic examination prior to surgery Fig. 7.

Congenital contracted tendons

Foals born with congenital contracted tendons are not uncommon, but even less is known about the congenital condition than the acquired form. Again calcium phosphate and calorie intake by the mare has been suggested as a cause, but there is no scientific evidence or even a large body of opinion to support or refute these suggestions.

Treatment

The first line of treatment is to ensure the foal can walk on the soles of the feet, rather than on the 'tip toe', and to protect his limbs from damage caused by wear on abnormal areas. The joints often respond simply to manual straightening over several days, but it may be necessary to splint or plaster the limb. Protective bandaging may be necessary. Once the foal can walk, this should be encouraged as much as possible, as weight of the tendons will stretch them.

Generally in cases of congenital contracted tendons, the prognosis is good, providing correct treatment is started early. Again, however, in a small number of cases treatment is unsuccessful for reasons we do not understand. In some severe cases there is bone involvement or joint fusion, which makes the prognosis hopeless.



Fig. 6. Skeleton of photograph opposite.



Fig. 7. Radiograph prior to dissection



Fig. 8. Foal 2 weeks old
Cases of congenital contracted tendons, both feet affected.

Shoeing

The photographs in this folder are of several four month old foals, i.e. two colts and one filly. All were shod with an extended toe piece shoe made from an old rasp. I find these quite easy to make, and most of all, being of high quality Steel, will do very good surface for maximum pressure at all times. (Two of the foals in question received injections administered by the veterinary surgeon in charge.)

The main problem when fixing shoes to young horses when both feet are affected, is how to make the foal stand comfortably on the foot with the extended toe piece shoe on, whilst you put the other shoe on. The most common answer is to put the foal on its back and possibly frighten it for the rest of its life.

Fig. 10. when faced with this problem, I thought there must be a more gentler way, so I drilled and tapped one shoe and put in 2" x 2" bolts whilst I worked on the other leg. After both shoes were on I removed the bolts and let the weight descend evenly on both legs. It must be said I encountered no problems whatsoever. I did only fit a small extended toe piece to ascertain whether or not any movement was possible, then when I was certain I fit a longer toe piece and after visits at four week intervals you can see the results in the photographs. It must be remembered not to fit the extended toe piece up to the wall as this may result in an abscess and in turn a possible horn tumour.

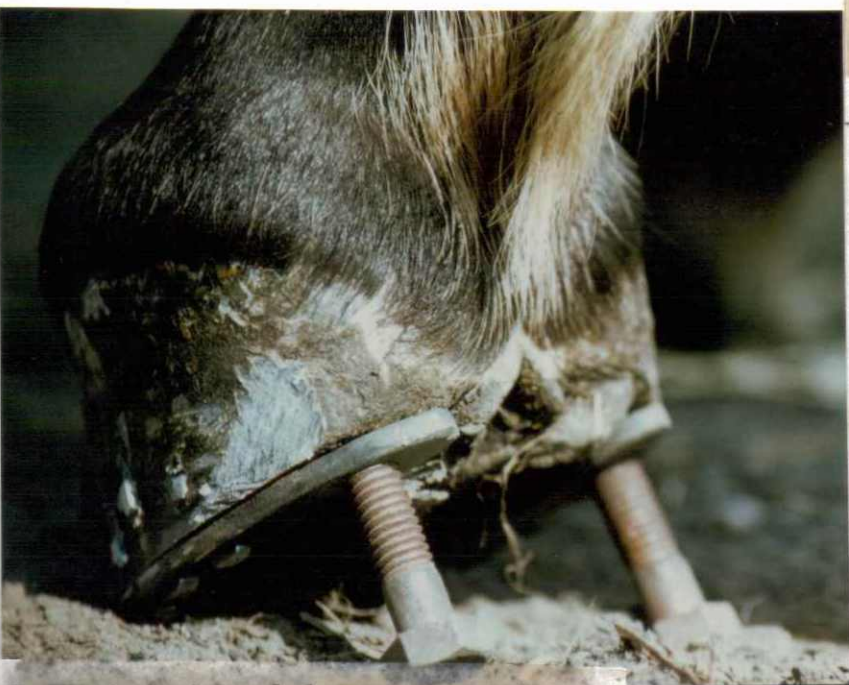
Fig. 11. Shows an eighteen month old colt foal, both fore feet passed the point of no return. An operation was carried out, i.e. tenotomy, to no avail, so the horse was destroyed. Photograph of the radiograph shows the third phalanx about to come through the anterior surface of the hoof. Note also the arthritis around the joints.

View of shoe's used and material made from. The old rasp's being split along the chalk line. FIG. 9.

View of shoe nailed on, designed to support leg whilst opposite foot is shod leaving the toe nails out. FIG. 10.



Lateral view showing leg supported on 2 bolts. 2" x 1/2"



Posterior view of foot supported on bolts, whilst other foot is worked on.



Lateral view of feet with longer toe piece on third visit prior to re-shoeing.



View showing toe piece not touching hoof wall to avoid pressure on the wall, which may result in abscess or possible Horn Tumour.



Lateral view showing pressure placed on Flexor Tendons by the toe piece, (first visit). Note clenches not bedded into the foot just turned over for strength



View of shoe applied on the second visit, with longer wider toe piece, very much improved.



Fig. This photograph is the same hoof some 4 weeks later. Note even wear from toe to heel.



Lateral view of feet on fourth visit after having shoes removed and feet cut down.

Rupture or lacerated tendons

For which a swan-necked shoe was fitted

Occasionally horses may meet with accidents in which both deep and superficial flexor digital tendons, and even the suspensory ligaments, may be severed. This can happen in front or hind and anywhere from the carpus to the fetlock or the tarsus to the fetlock.

Causes

Lacerated tendons may be caused by numerous types of accident. Examples of these are:- over-reaching thus cutting the tendon of the fore leg, kicks from other horses, backing in to or kicking sharp objects, ect.

Signs

If the flexors are cut above the middle of the metatarsus or metacarpus, the inferior check ligament may also be severed. When only the superficial flexor tendon is cut the fetlock joint will drop, but it will not touch the ground. If the superficial and deep flexor are cut, the fetlock will drop and the toe will come up in the air. When the animal puts its weight on it, when both deep flexor and superficial and suspensory ligament are cut, the fetlock will rest on the ground. If the wound is below the distal end of the first phalanx only the deep flexor can be involved.

The photographs that follow are of a four year old that was purchased one day and was found the following morning in the field with an injury, which had an obvious diagnosis- both superficial flexor and deep flexor were ruptured. The veterinary surgeon carried out an operation to stitch the two tendons back together and afterwards strapped a wooden wedge under the heel, plus heavy strapping to support the fetlock joint. I was requested to fit a swan-necked shoe with a foam pad fitted between the shoe and the fetlock one week after the operation. In this case the shoe should be fullerd, so as to enable the nails to be withdrawn individually with a nail puller, thereby enabling the shoe to be removed with ease.



Fig. 4. shows same operation
4 weeks later after operation
was carried out, shows leg
now badly infected.



Hind Leg

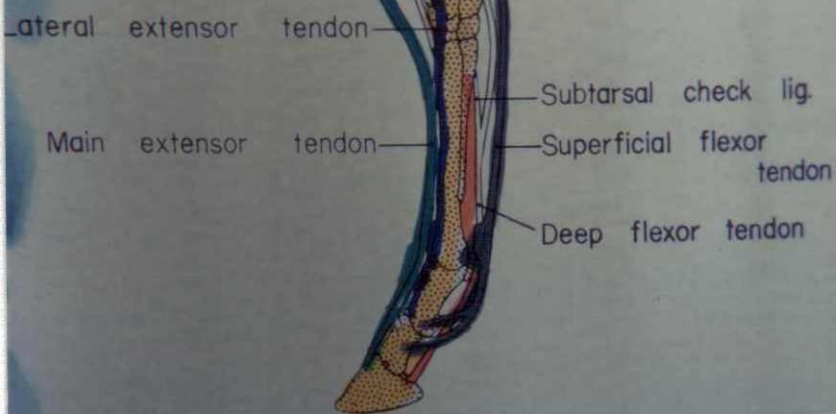


Fig. 1. diagram showing lateral view of tendons, extensor and flexor.



Fig. 2. posterior view shows injury 10 days after operation was carried out to repair both flexor tendons. Also swan-necked shoe in use.



Fig. 3. lateral view shows depth of laceration with swan-necked shoe supporting injury.



Fig. 5. shoe has been removed and hoof dressed down after 8 weeks, leg is still weak so shoe was re-fitted.



Nail Pullers for the removal of individual Nails from the fullering avoiding any stress on the leg.



Fig. 7. shows posterior view after some 2 years later.



Fig. 8. some 13 weeks after operation leg much stonger, and no longer relying on foam pad for support.



Fig. 9. 4 years after operation to repair lacerated flexor tendons, job satisfaction at its best.



The only problem encountered in making the shoe was estimating the size of the foot as it was heavily bandaged, and as a result when the shoe was removed several weeks later a small pressure sore had formed on the bulb of the heel, where the heels of the shoe continue upwards to the height of the ventral surface of the normal fetlock and had been causing pressure.

When the shoe was applied the owner was advised to bed the horse on sawdust as straw would tend to get tangled in the shoe.

The horse quickly adapted to the shoe and began to move quite freely. The operation wound became infected, but at this stage, the veterinary surgeon was concerned, since he thought that the pressure from the infection would keep the cut tendons together. After a few weeks the fetlock began to lift from the foam pad that was attached to the shoe. As the tendons became stronger, the fetlock lifted further from the pad until the weight of the horse was taken entirely on the tendons.

The horse eventually returned to complete soundness, and is now jumping five bar gates. No shortening of the tendons has occurred and the only evidence of the injury remaining is the crusty scar on the posterior of the leg.

The last photograph in this case shows what our profession is all about the expression of joy shown on the girls face is just reward.

Fracture Of The Third Phalanx

Cause Of Fracture

Fractures are commonly caused by some form of force, or violence:

- 1) A fracture may result from direct force, for example, when a severe blow breaks the bone at the point where the force is applied.
- 2) A fracture may result from indirect force, in which case a bone breaks at some distance from the point where the force is applied. In such cases the force is transmitted along the intervening bones, which may themselves escape injury.
- 3) Occasionally, the third phalanx may be fractured as a result of penetration of a foreign body through the sole. The third phalanx also may be fractured as the result of trauma to a large sidebone, in which case, the third phalanx usually breaks through one of the lateral wings.

Symptoms

If the third phalanx is fractured through the centre of the bone and the fracture involves the articular surface, the lameness is an acute supporting leg lameness. In such cases, the horse may refuse to place the affected foot to the ground. There will be increased pulsation and heat in the affected hoof. If the fracture had been present for some time, signs of lameness will not be as evident and an x-ray will be necessary to diagnose the problem.

Treatment

When treating this type of fracture, the third phalanx should be immobilised as effectively as possible by use of a fullbar shoe, with quarter clips. Fig. 3. The bar should be placed on the shoe so that it is recessed from the frog, preventing frog pressure. The quarter clips should be welded to the outside of the branches of the shoe near the junction of the heel quarters. This prevents the quarters from expanding and when combined with the bar, to prevent frog pressure, reduces



Fig. 1. radiograph shows fracture through wing of third phalanx.



Fig. 2. lateral view of foot showing the position of clips on the shoe, for fracture of the wing.



Fig. 3. shoe with bar set-down and spread to prevent any upward and outward movement of the frog.



Fig. 4. basal view showing exfoliation that had taken place during the period the bar was fitted.



Fig. 5. final X-Ray of the palomino - Cameo, shows fracture clinically healed.



Radiograph being taken 7 weeks after date of injury. Fig. 6.

movement of the third phalanx. This type of shoe should be re-set every four to six weeks, for a period of at least six months.

Case No. 1-cameo, Palomino 15.2 Mare, 7 Years Old

On the third of April 1979, the owner had been out riding, and on returning turned the horse out in to the field. Being in peak condition, she started to buck and landed on a large rock. The veterinary surgeon's diagnosis was a bruised sole. After some seven weeks, it was decided to x-ray the foot, which proved that there was a fracture of the third phalanx through the lateral wing. At the time the veterinary surgeon did not think anything could be done and advised that the animal should be destroyed.

Before taking this drastic step, I enquired if it would be possible for me to fit a special shoe, to a design similar to that described in a book written by Dr. O. R. Adams. We consulted the veterinary hospital at oakham and they suggested that it would be well worth the effort to fit a shoe of this type and to have the mare put in foal whilst she was resting.

After fitting the shoe the mare started to walk sound. The shoe was re-set every six weeks. There was considerable contraction and exfoliation taking place. After eighteen months, the hoof returned to its original size. During all this time the mare was perfectly sound. A final x-ray was taken on 25th march 1981, which revealed that the bone was clinically healed.

Case No. 2-Grey Gelding, 9 Years Old

On the 27th of September 1981, this horse pulled up lame after a cross country event. The following day the leg was badly swollen also was the full length of the metatarsus and hock joint, and the veterinary surgeon treated it accordingly.

It was not until after the swelling had subsided, some six weeks later, and the horse was still lame, that the veterinary surgeon decided to x-ray the foot, only to find that the third phalanx was fractured through the surface. Fig. 6.



Fig. 6. first radiograph of 9 year old grey gelding. Fracture through anterior surface of third phalanx; shoe fitted for maximum support.

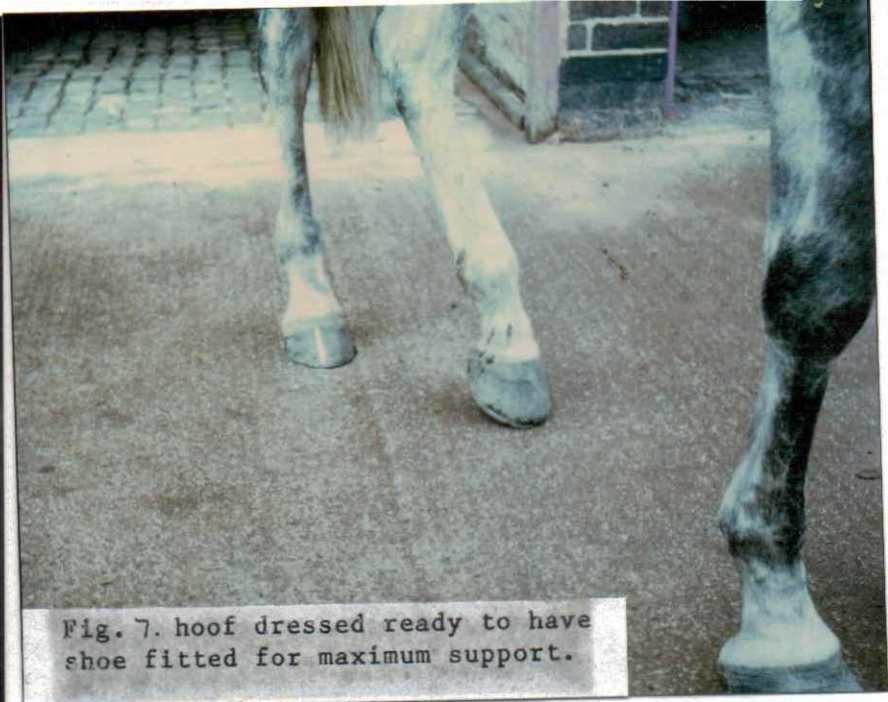


Fig. 7. hoof dressed ready to have shoe fitted for maximum support.

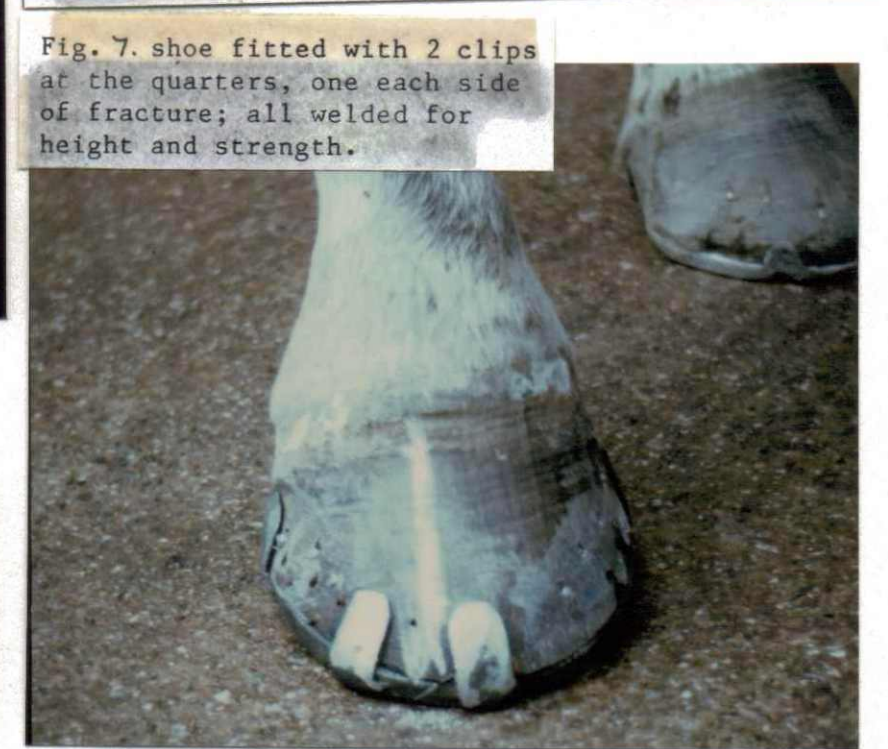


Fig. 7. shoe fitted with 2 clips at the quarters, one each side of fracture; all welded for height and strength.

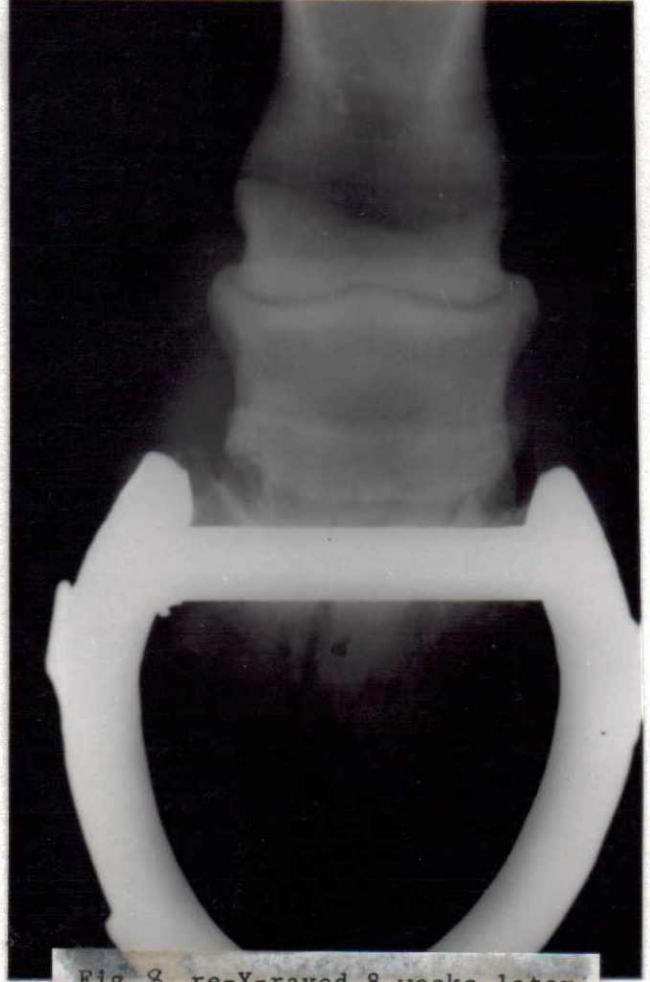


Fig. 8. re-X-rayed 8 weeks later with shoe fitted, shows slight fusion mid way anterior surface of third phalanx.



Fig. 7. Posterior view shows the shoe with bar welded, this horse had a large bulbous frog.

I was then requested to fit a shoe similar to the one referred to in the book by Dr. O. R. Adams, i.e. a shoe with a bar across the heel set down to remove all pressure from the frog, so as to eliminate any expansion and contraction. The clips are welded in such a way as to lend more support around the fracture, see Fig. 7. After the shoe was fitted, the horse immediately walked sound.

On the 22nd of November 1981 the horse was re- x-rayed, after eight weeks, see Fig.8. This showed that slight fusion had begun, but a horny prominence had appeared at the coronary band on the anterior surface and was growing downwards, see Fig. 9.

On the 20th of February 1982, Fig.10. Shows the bone fracture clinically healed. The horse continues to do well, and has been in steady work for one month. On the x-rays shown in fig.11. The lateral view shows a small exostosis on the extensor process of the third phalanx.

Summery

Case number 1: the horse returned to full work, and it is still hunting to this day.

Case number 2: this horse also returned to work after eight months, and has hunted for two seasons with no apparent lameness.

Fig. 9. shows horny prominence,
at this time no one knew what it
was.



Fig. 11. radiograph shows small bone
exostosis, possible cause of
external prominence.



Fig. 10. final radiograph shows
8 months after fracture was diagnosed
Shows bone clinically healed.





Fig.12 normal shoe fitted and ready for work.



Fig.13 Cross Country event 2 months after final radiograph.



Fig.12. Palomino - normal shoe fitted and ready for work.

SUMMARY

The photographs you have seen in this folder are but few from a collection of 35mm slides I have in my possession which I have taken over the years, in preparation for this time.

As well as getting fulfilment from my work as a farrier I have been able to incorporate my hobby as an armature photographer which also gives me great pleasure.

In summing up I have included photograph from 35mm slides which have been cut and sandwiched together, to reiterate the cases you have seen within.



Fig. 1. on the right, Keratoma some 10 weeks after first treatment was diagnosed. On the left, hoof in normal stance 2 years later.

Fig. 2. below left, heel slightly raised after 4 weeks with extended toe piece shoe, progress good. Below right, heels now down flat after 8 weeks and colt improving every day.



Fig. 4. bottom left, 2 radiographs of the same third phalanx from the grey gelding. Left shows fracture and right clinically healed.



Fig. 3. centre right, scare of lacerated tendons 4 years later and the shoe that contributed to its recovery.