EXPERIENCES WITH THE USE OF WEDGE SOLES IN THE TREATMENT OF HOOF AND LIMB IMBALANCE IN ADULT HORSES

OCT 96

Summary

Normal Limb Balance is defined and the consequences of abnormal limb balance considered. A novel method of shoeing is described and ten cases of limb imbalance treated by this method are highlighted. In the hands of the author the use of wedge soles in the treatment of hoof and limb imbalance in adult horses has given much better results than previously described in more conventional methods.

Introduction

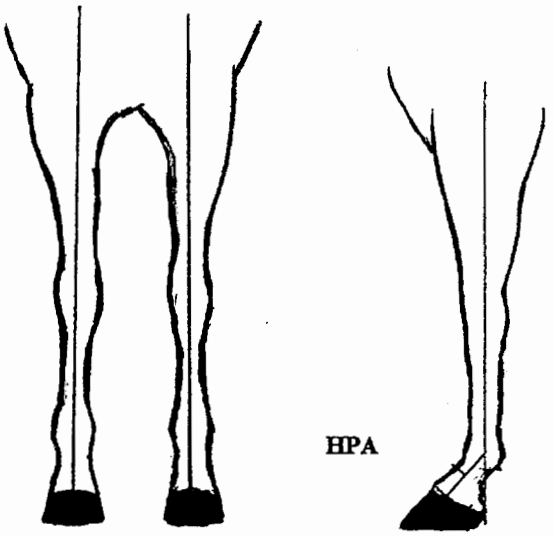
Limb deviations in the horse are not uncommon. Whenever descending bodyweight is not transferred to the next bone column evenly there are uneven distributions of pressure, sometimes resulting in medio-lateral or antero-posterior limb deviation. This causes hoof capsule distortion. No single method of surgical shoeing has managed to alleviate these problems satisfactorily. This paper describes the use of wedge soles in cases of mature horses with these deformities. All horses were unsound prior to commencement of treatment.

Normal hoof balance (Fig A I - A IV)

Viewed anteriorally the hoof is central and distal to the structures above, providing a balanced base for the limb. Lateral and medial walls are similar angles. (J Hickman 1977).
Laterally the hoof pastern axis (HPA) is not broken. The angle of the anterior hoof wall corresponds with the angle of the heels. The direction and rate of growth is even and straight from the coronary band to the bearing surface.

Normal Hoof Balance In Relation To Limbs

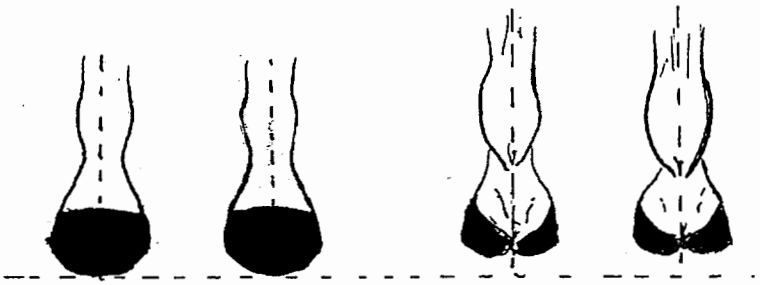
Fig A. I



Anterior View *Lateral View*

(Fore Limbs)

Fig A. II

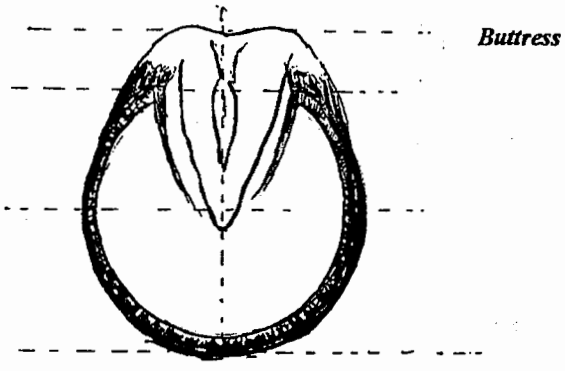


Anterior View *Posterior View*

Normal Balanced Foot (Fore)

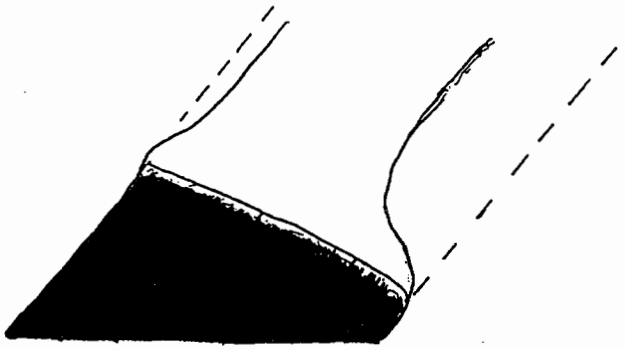
Fig A III

Bulbs of the Heels



Solar View

Fig A IV



Lateral View

Assessing Long Axis For Medio Lateral Imbalance Using Protractor Head 'T' Bar

The limb is flexed at the knee keeping the natural line of the limb.

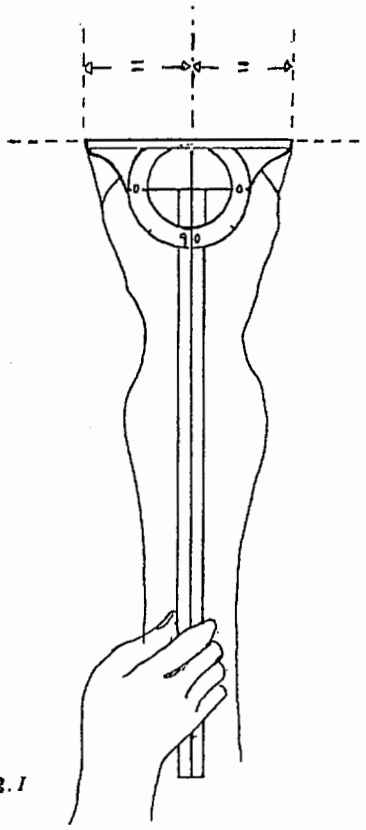


Fig. I

Correct balance T bar is placed over the flexor tendons in line with the large metacarpal. Check T bar against the foot solar plain posteriorly across the heels.

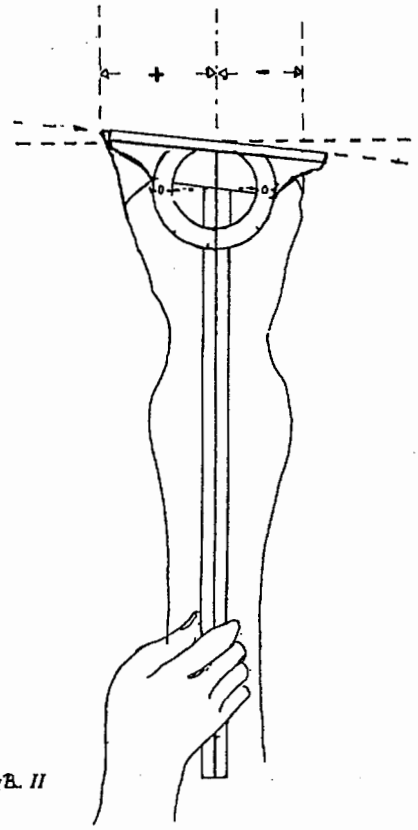


Fig. II

Medio lateral imbalance. Solar surface is not at 90° to the limb, exact degree is measured and redressed by rotation of wedge sole. Note low heel is usually closer to axis.

A horse with a normal conformation of its hoof pastern axis observed coming towards an observer is seen to move its legs in alignment with its body. The toe is pointed forward and the foot is set down flat. (Hickman 1977)

Hoof Imbalance

Wherever the hoof capsule deviates from the previously described parameters uneven weight distribution results, hence more distortion. The analogy of a soft ball illustrates similar physical changes. If the ball, placed on a hard surface, is compressed evenly from above it will evenly expand its circumference horizontally. If the compression is replaced off centre one side is compressed while the other bulges. Similarly with the horses foot if the loading becomes out of balance uneven weight distribution results.

Shoe wear is a valuable indicator of balance and action (Dollar and Wheatley 1993). Foot trimming and shoe fitting are carried out using this as a guide. Excess wear at the toe may indicate the toe needs shortening, or there is a lack of flexion in one or more of the joints of the limbs. On front feet more wear on one side of the shoe than the other usually means the foot needs shortening in this area. When uniform wear is achieved the foot is balanced.

Practical assessment of balance

Factors to take into account:

Static assessment - standing horse before approaching. Fig A. I - IV.

Conformation - is it normal or abnormal?

straight or deviating at joints,natural or otherwise? (correctable or not) e.g. does it point a foot, stand square, stand comfortable, or keep shifting weight?

View - anteriorly - laterally - posteriorly.

Flexing limb - Use of 'T' bar with protractor head. View long axis - balanced or out of balance?

Wear of shoes or hoof - even or uneven?

Shape of hoof - normal or abnormal?

Growth of horn - growth rings even or converging, straight or distorted?

Dynamic assessment

Lead on a free rein - at the walk and trot straight towards the observer, away, and past.

noting: flight of limbs and feet - straight or deviating?

- wide or close and/or interfering?
- short or long - shuffling or free?
- high or low?

Foot fall - level or one sided, stumbling or fluent?

Fetlock descent/rotation - behind hoof or to one side?

Viewing the horse in motion enables detection of any incorrect hoof trimming that will cause articular pinching and determination of the natural conformation of the horse (rotation and deformities)

Materials and Methods

1. Materials

Stromsholm super sole wedge soles available in two sizes, small (145 mm) or large (170mm), with a 6° slope. Stockholm tar, cotton wool, broad webbed shoes, various sizes of horseshoe nails.

2. Methods

a. Straight heel to toe.

b. Rotated wedge.

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Stockholm tar applied to clean solar surface.

Cotton wool applied to fill contours and bind together.

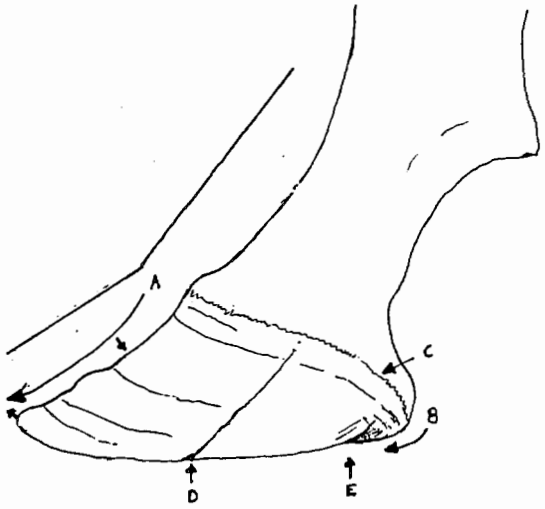
Shoe and wedge sole nailed on form a shock absorbing surface. The thick wedge prevents the frog from prolapsing between the heels of the shoe, improving frog function.

Use of Wedge Soles In Relation To Broken Back Hoof Pastern Axis - Method A

Trimming and Balancing. Firstly most must be made of the hoof capsule. If H.P.A. is still broken back then the use of a wedge sole will help maintain correct axis.

Depending on how much wall is removed at the toe a shoe with toe or quarter clips may be used. A rolled toe combination may also be helpful in shortening the toe. On all counts the shoe bearing surface needs seating out to avoid sole pressure. A broad webbed shoe spreads the load and enables fuller fitting in the heel quarter whilst still giving bearing to the bars. The shoe is fitted to the wall around the toe, beginning to fit full in the second half of the foot, especially if the coronary border is wider than the ground surface. In the quarters the coronary border can be more of a guide for fitting than the ground surface. The heels of the shoe extend to the bulbs of the heels similar to the fitting of the egg bar shoe. The foot is stood on the shoe, not collapsing off the back. The wedge sole is placed thick end parallel to the heels, cut to the approximate profile of the shoe, no less. Occasionally to accommodate a bulbous frog a portion of the wedged sole may need paring. The wedge sole and the shoe can be nailed together before nailing to the foot, the nail ends being cut off. There is then one item to align on the foot. Painting the entire clean solar surface with Stockholm Tar and then filling the contours with cotton wool preserves and keeps healthy all parts between shoeings. The wedge sole and shoe are nailed as for a normal shoe. The two nails holding the sole to the shoe are then replaced. Sometimes due to the thickness of the wedge a longer nail is needed in the heel. The nail heads may need rasping to maintain a level ground surface. Attaining correct foot pastern axis appears to remedy problems.

The finished job is intended to leave the horse in a more comfortable position encouraging an even loading on the hoof capsule allowing future development to be closer to the ideal. If the treatment is going to be beneficial it usually begins to show benefit within the first shoeing period. Hoof shape takes longer to achieve. It is advised that shoeing intervals be no longer than 4 -5 weeks.



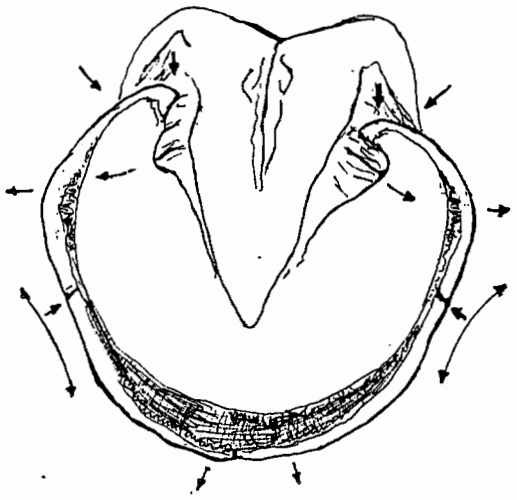
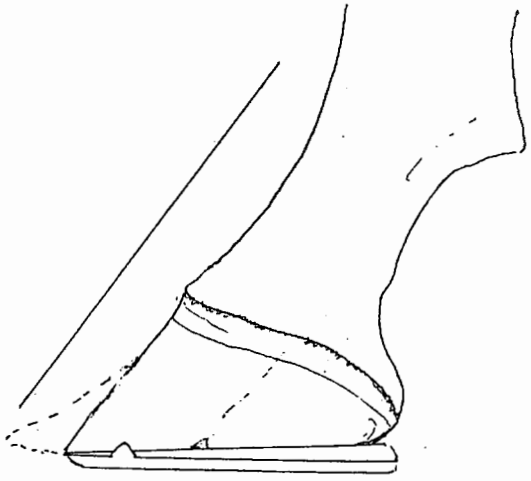


Fig C (Above) before trimming and shoeing

C I Lateral View
A & B Direction of growth and distortion
C Bowed coronary band at heel
D Quarter crack
E Fault caused by short shoeing.

Fig C. II Solar View arrows showing direction of distortion of hoof capsule.



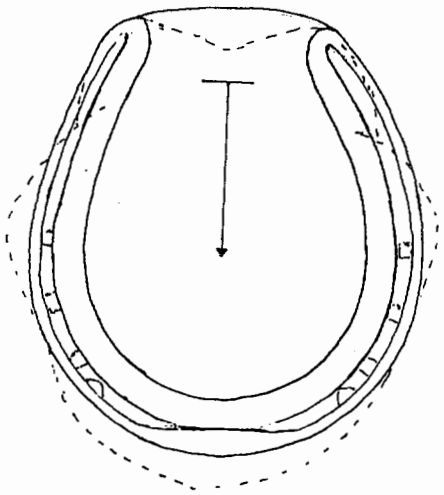


Fig C III & IV After trimming & shoeing

III Lateral view

IV Solar view

Shortened toe and removed flares. Side clips. Wedge sole fitted straight from bulbs of heels to toe. Dotted line denotes foot before trimming.

Example of quarter clips when shortening toes (Case 7).

Method B Illustrations below

Fitting full second half of foot, mild medial extension (Case 6).

Heels showing medio lateral graduation.

Use of Wedge Soles In Relation To Medio Lateral Hoof Imbalance - Method B

The foot is prepared working toward the normal balance as previously described. The shoe is again fitted as previously described, differing only where the hoof capsule is less symmetrical. For a low medial heel the medial branch of the shoe is fitted flowing full to the foot through to the bulb of the heel irrespective of the tightness of the wall in the heel quarter. This gives a more even medio lateral bearing surface under the limb. The shoe is more symmetrical than the foot. Fitting in this manner produces a mild medial extension. Having previously decided how much more depth is needed in the medial heel the wedge sole is rotated towards the medial heel until the discrepancy between the heels is reduced as much as possible. The angle of rotation is often best at 45°. The wedge sole is placed under the shoe at the required angle and cut to overall size. Intervals between shoeing should be between 4 and 6 weeks dependent upon severity of the disorder.

Each time the horse is shod the medio lateral balance is reassessed. For the first, second and third shoeings there is usually quite a marked improvement in the balance of the hoof, thereafter change is less marked. Use of wedged soles may be dispensed with on a temporary basis but it is almost always necessary to revert back to their use due to inability of the medial wall to support bodyweight of the animal.

Fig D Medio-Lateral Imbalance Right Fore Method B

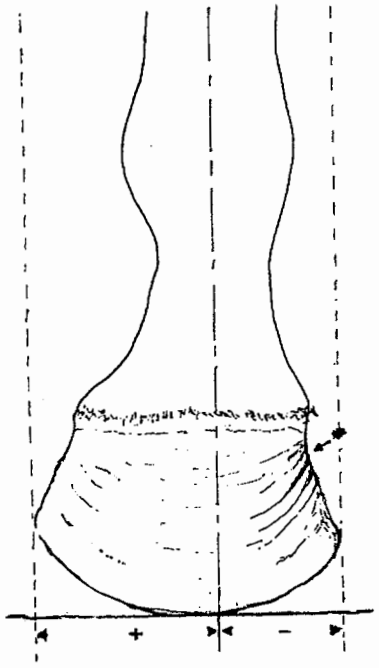


Fig D. I Anterior view before trimming and shoeing. Foot is off set, medial aspect overloaded
** = pronounced growth rings converge*

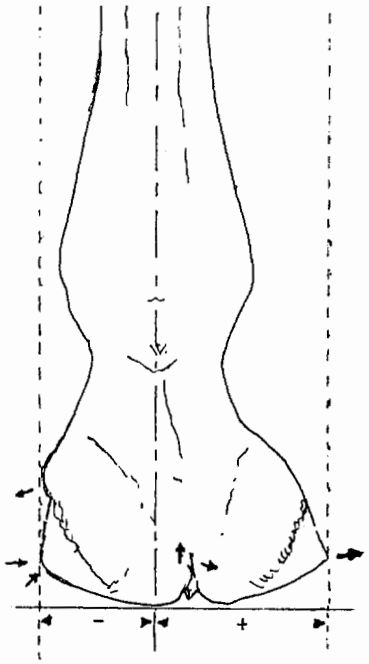


Fig D. III Posterior view showing direction of distortion and heel shearing - low medial heel

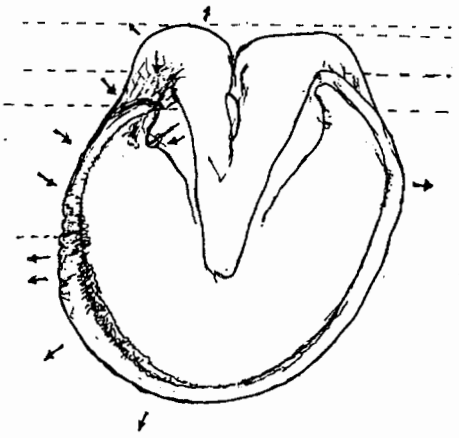


Fig D. V Solar view before trimming and shoeing. Arrows show direction of distortion.

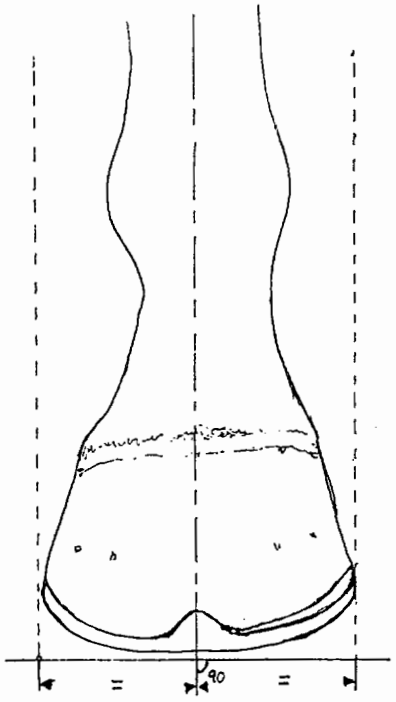


Fig D. II After trimming and shoeing using rotated wedge sole at 45°.
Bearing surface central under limb at 90°, articular pinching relieved.

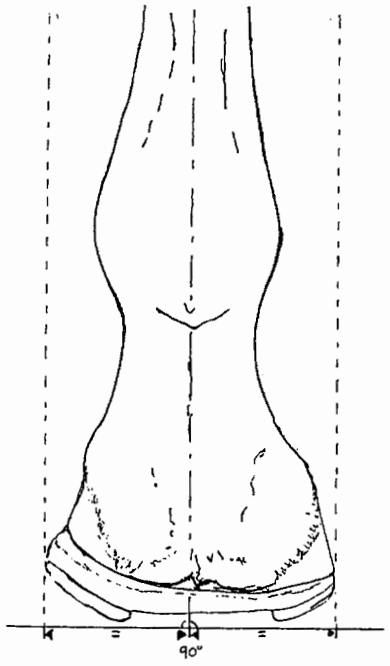


Fig D. IV Medial heel deficit - redressed by depth and width of wedge sole. Frog evenly supported.

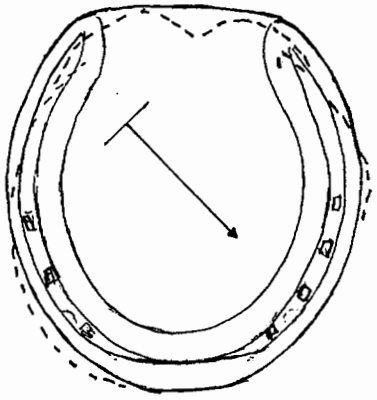


Fig D. VI After trimming and shoeing with wedge sole rotated 45°. Dotted line denotes outline before dressing. Note fullness of shoe from the quarters to the bulbs.

Horse walking towards camera prior to trimming and shoeing
Left fore lateral wall meeting ground in advance of medial wall.

After trimming medial toe and wall, shod with wedge sole rotated 45° to make up deficit (Method B).

Case Histories

Note: Photos show various applications, highlighting notable points. Angles are not necessarily exact before/after but clearly demonstrate the points.

Case 1

Spirit 16.2 hh 18 years old chestnut gelding Hunter - Method B

Brought from Ireland in autumn 1994 poorly shod and lame. He had medio-lateral imbalance and low heels, left fore worse than right. He had corns in all heels worse in medial heels. His action was poor, fetlock descending to the medial side. Stance straddled. The medial walls were poor quality and broken.

2.9.94. Shod with broad webbed upright heel shoes, with fullness and length especially to the medial heels. Getting fit for hunting.

14.10.94. Method B was used due to the above problems still not resolved. Was in work and able to hunt.

11.11.94. Second shoeing with wedge soles, improvement in all areas, the medial walls had gained depth. Corns had become smaller.

20.12.94. Plenty of horn growth and absence of corns. Tried shoeing without wedge soles.

31.1.95. Shod flat again.

13.2.95. Reverted to Method B shoeing as corns were present again and medial wall deterioration. He had been hunting throughout the season, and appeared to be going so well that the owner decided to take him team chasing. They were placed, but had overdone it. He pulled up lame on the right fore suspensory strain. Convalesced then turned out for the summer.

7.7.95 Shod as Method B wedge soles rotated medially 45°. Medial walls low and broken. He stood squarer moved straighter and generally more comfortable.

8.9.95 Had started going lame again. Shod as before.

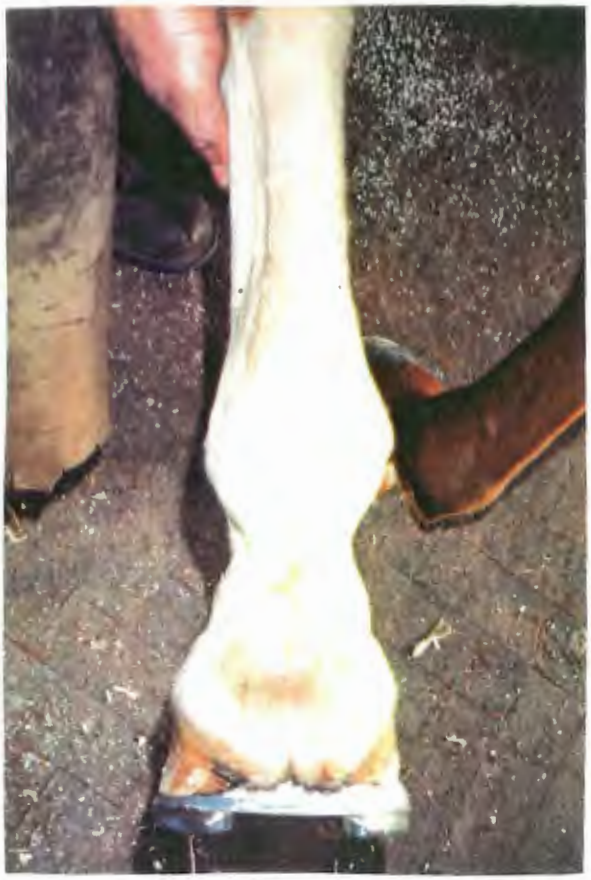
13.10.95 Owner decided to have horse put down due to suspensory ligament strain.

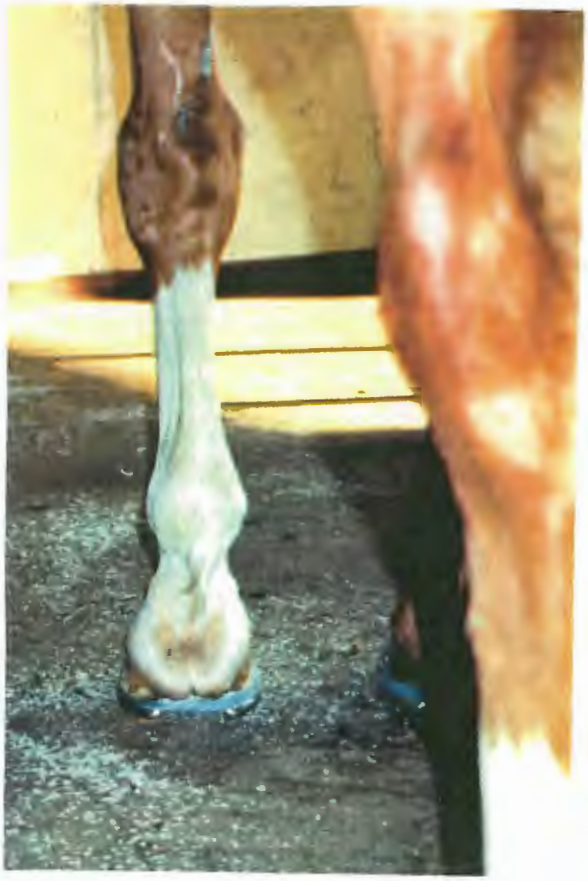
In the author's opinion the owner had abused the horse and overworked it as a result of improvement gained.

Above: Spirit - stance before and after shoeing.

Notice improvement in depth of medial wall.

Below: Left fore, showing degree of rotation of wedge sole to achieve alignment.





Case 2

Shucks. 16.2 hh. Twelve year old 7/8 thoroughbred gelding - Method B

Intermediate eventer and medium dressage horse. Won pony club horse trials senior championships Weston Park 1993. In 1995 competed at same competition and was placed in all events. Works daily as school master in busy equestrian centre. He has been shod since a four year old at the same establishment. From the outset his front limbs have caused problems. Due to gross medio lateral imbalance he was lame even before being worked or shod. Over the years conventional shoes, heel wedges and egg bars have been used. He was prone to corns and bruising in the medial heel quarter. Also slow, weak horn growth. Heels also collapsed.

13.7.94. Shod as Method B for the first time. Wedge sole rotation 45° . Was able to continue work as before.

16.8.95 Lost a large amount of medial wall from the right fore foot six weeks after being shod. Problem resolved using hoof filler.

24.11.95. Re-fitted shoes and wedge soles. All acrylic had grown out. He continues to work sound.

24.7.96. Continues willing and able. Shod as above.

A. Anterior view: stance before shoeing.

B. After shoeing.

C. Posterior view after shoeing - standing more evenly over feet.

w. Foot off set, medial toe flares.

E. Posterior view, low heels.

F. After shoeing - foot balanced under limb.

Case 3

Bob 15.3 hh twelve year old Cob gelding - Method A

Hunted since a four year old. First seen 3.11.94 when he had been lame on and off for 2 years. Lameness worse in the right fore. There were thickenings in tendons and fetlock, and lateral deviation of pastern. X-rays confirmed navicular disease. He was shod as in Method A on request of veterinary surgeon. In 3 days he was out on road exercise. Started hunting regularly and was shod in the same manner until 11.5.95 when he strained a tendon. He was then turned out without shoes.

17.8.95 - Shod as before. Horse sound but overweight.

21.9.95 - Still overweight. Still sound. Wedge soles left off for that shoeing and replaced by 5 mm soles. The case was monitored to 24.10.95 and the horse had worked satisfactorily until the owner took him for a three hour hard hunt, mostly galloping and next day he was very lame. Off work for 1 month. Now hunting sound.

Above: Stance before and after shoeing.

Below: Left, anterior view feet laterally off set.

Below: Right, left fore solar view shoe fitted wide and full at heels.

Case 4

Folly 16.2 hh Fourteen year old thoroughbred. Gelding - Method B

Raced as a two year old but suffered strained tendons and was bar and pin fired on both forelegs. Subsequently hunted and point to pointed and then purchased by present owner as an eight year old for hacking and cross country work.

12..8.94. Referred by veterinary surgeon due to lameness and poor shoeing over a long period. Pasterns laterally angled with severe medio lateral imbalance. Movement poor. The shoes were short, tight and followed the deformity of the hoof capsule (see photographs). Right fore was the worst with the foot and fetlock being dramatically twisted. The left fore was broader, flatter and lower at the heels. Horse shod with a broader webbed shoe with upright heels. They were fitted fuller along the medial branch following the coronary band to the bulbs of the heels. This immediately improved his stance and action.

16.9.94. Feet still significantly out of balance. Horse shod as method B. The left wedge sole rotated medially approximately 30°. The right wedge sole rotated approximately 45°.

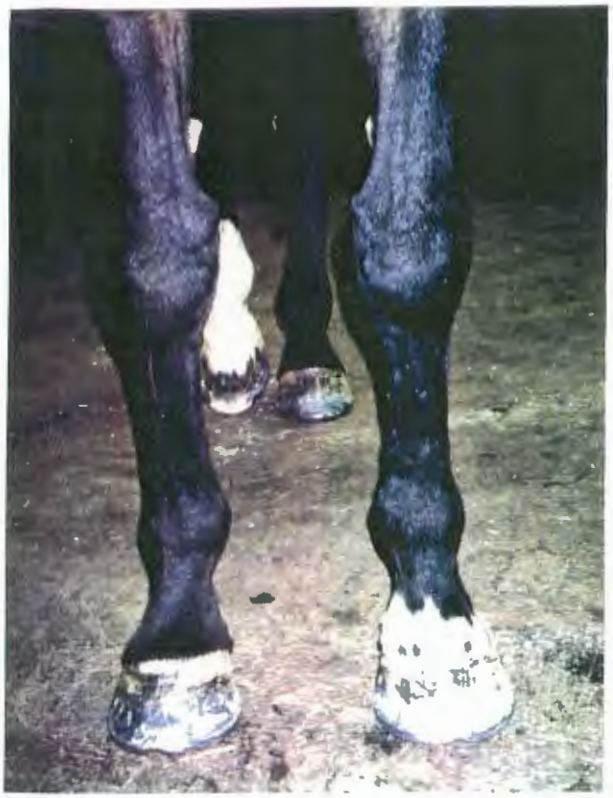
24.10.94. Third shoeing as Method B. Medial heel of right fore had more depth. The whole hoof capsule was undergoing a remodelling due to the more even loading placed upon it. Between shoeings the horse had galloped hard as it seemed so much better but after severe exercise went lame. After treatment with Phenylbutazone by the veterinary surgeon he went back into work after 2 weeks.

Throughout 1995 he continued to be shod in this manner and up to 29.7.96. he is sound in work.

Above: anterior view toe out conformation.

Posterior view bar and pin firing scaring. Left fore broader and flatter, right fore tighter and more distorted.

Below: After shoeing - note stance.



Left fore, showing depth of horn growth around medial wall.

Right fore, medial view showing depth and width afforded in the heel quarter.

Case 5

Laurence 14 year old 16 hh thoroughbred cross Swedish showjumper. - Method A

Showjumped, evented to intermediate level and hunted. In Summer 1993 he had shallow flat feet, bulbous frog,collapsed heels, walls flaring and splitting. Prone to corns, bruising and puncture wounds to the sole.

12.6.93. First he was shod with a wider section shoe with upright heels and not nailed in the toe. Bruising and puncture wounds continued.

26.7.93. Second shoeing - 5 mm "super soles" were added. The heels continued to grow horizontally.

22.10.93. Third shoeing - Method A was used. Some of the wedge over the frog was scooped out to accommodate the large frog. This worked well. The horse hunted regularly and remained sound.

16.12.93. A bulge appeared at the coronary border around the bulbs of the heels. The angle of the new horn growth began to run in line with the rest of the hoof.

1.2.94. The feet improved throughout the season. In the Spring of 1994 the horse had toe to nail into and stronger heels. Throughout the summer he was shod without the wedge soles and remained sound. Beginning of the 1994 hunting season owner requested he be shod as Method A again. This was continued at the owners request.

Throughout 1994/95 and up to 1.8.96. he is maintaining healthy feet and sound in work.

Posterior view: Left fore, example of Method A.

Solar View: broad dishy foot, contrast to cob foot case 3.

Case 6

Piggy Malone. 16 hh, fourteen year old 7/8 thoroughbred gelding. - Method B

Was an Intermediate eventer and BSJA. Now retired to school work but does occasional hunter trial. Show jumps regularly

31.8.94. Had been showjumping daily on a hard outdoor sand arena and was brought in lame. He straddled his front feet. The medial walls were low especially the right. Shod as Method B. Went back into work within days and continued without problem.

12.10.94. Re-fitted shoes and wedge soles. Turned out for a holiday for a few weeks over Christmas and was forgotten.

11.1.95. Thirteen weeks later shoes still on. Horse presented for shoeing without problems. The frog soles and walls had been preserved by the wedge soles, Stockholm Tar and cotton wool. The feet were trimmed to balance and no wedge soles were fitted due to ample horn growth. Within two weeks both front shoes had been pulled off in the field. Subsequently re-shod as for Method B.

31.7.96. He has continued to work with no problems to date.

Above: Posterior view straddled stance before shoeing.

Above right: after shoeing, standing straighter. Note windgalls and bursae at knee.

Right: Anterior view, this narrow chested horse has valgus knees and has lateral angulation from the fetlock, but has toe in conformation.

Case 7

Wellington. 16.1 hh. Sixteen year old 7/8 thoroughbred gelding - Method A & B

Intermediate eventer and medium dressage horse. He retired to school work five years ago. He had been on egg bar shoes for some time due to low heels. He had broad flat feet. He was susceptible to bruised soles and corns. The heels showed no signs of improvement during the shoeing with egg bars.

18.5.94. Fitted shoes - Left: Method B, Right: Method A Shod regularly at 5 week intervals.

24.7.96. Continues in work without problem.

Second shoeing. Notice angle of limb, also coronary border in the heel quarter is rounded.

Above: Before and after shoeing. Note hoof pastern axis and limb line, also compare heel quarters with earlier photo, coronary band is straighter, direction of horn growth is improved.

Right: posterior view, showing fitting, feet stood on the wedge soles.

Case 8

Muffin. 16.1 hh. Four year old Cleveland bay cross thoroughbred gelding - Method B

Came to local yard for schooling. Was intermittently lame on the left fore.

17.10. 94. Had poor horn quality, especially left front medial wall. Medial walls were close to the limb and overloaded. Right fore was wider and had lower heels. The soles were close to the ground. Shoes 7/8" x 3/8" section were fitted as Method B. The left fore was rotated 45° the right fore at 30°. After shoeing the horse appeared to move level and the immediate result was improvement in action and hoof pastern axis.

16.11.94. Shod for the second time as for the first. Horn integrity poor but had grown significantly. Horse had been turned out in mud. Foot trimmed. The horse had remained sound between shoeings. Before next shoeing due, schooling period over and the horse was returned to the owner. The owner was so pleased with the horse that he requested his own farrier to continue the same treatment.

Above: anterior view after shoeing.

Above left:

posterior view, left fore, angulation at knee. Toe in conformation. Right fore lower heels and broader foot.

Left fore, depth of wedge at the heels.

Case 9

Edward 16 hh 9 year old ¾ thoroughbred - Method A & B

Had been turned out for the previous eighteen months lame, was diagnosed by the veterinary surgeon as having navicular disease.

7.11.95. First viewed horse shod with heel wedges but too tight to the foot and short under the heel. Observed lead up in hand, action was poor and foot fall unlevel, the right fore medio- lateral balance out. There was room for improvement in these areas.

The feet were trimmed and wedge soles fitted, the left fore straight heel to toe, the right rotated medially to redress the imbalance. The horses stance and action were improved but the horse was still lame. Two weeks later the same was reported.

21.12.95. Second shoeing, report was much improved, he had become level without pain-killers for the first time in eighteen months. Shod again as first time. He is being ridden, to date progressing without problems.

Left and right fore feet after first shoeing (signs of post laminal trauma in all four feet).

Right: posterior view. First shoeing toe out, right more pronounced, wedge sole rotated. Left fore wedge sole straight.

Case 10

Parsley 16 hh 10 year old Irish draught cross thoroughbred - Method A

Use - hunting, cross country, Pony Club events and show jumping. Bought by present owner from Ireland as a four year old. At nine years old 1994-95 hunting season he developed an intermittent lameness. X-rays showed no changes in the foot. He had low heels and broken back hoof pastern axis. He did not like rough ground. the progression of change in the shoeing was first longer broader shoes, then 5mm soles, until

31.10.95. when wedge soles were fitted for the first time.

7.12.95. Second shoeing. The horse was reported as going better than ever. His heels were becoming a better angle.

11.1.96. Shod third time with wedge soles. Continues sound in work hunting regularly.

25.7.96. Hunted sound throughout season went on eventing and showjumping. Going well shod as above.

First shoeing method A.
Note angle of horn growth in heel quarter.

15.7.96. Heel quarter now deeper and stronger growing in line with toe.

Discussion

Throughout the history of farriery various shoes have been used to increase bearing surface, protect vulnerable parts or to redistribute loading on the hoof. In recent years the egg bar and heart bar and medial/lateral extension shoes have become popular for these reasons. Various materials are used as well as steel, e.g. alloys, plastics etc. Intelligently applied, improvements can be obtained. In an attempt to redress the imbalances with these cases various options had been tried but did not achieve the goal, for example:-

Case No 7 - Wellington works mainly on an outdoor school sand surface, sharp and abrasive, and compacts down hard. Egg bar shoes had been used but the condition of the heels remained poor and he suffered with bruised soles and corns; hence the progression to the use of wedge soles to maximise foot bearing surface, protect the flat soles and transfer some of the weight from the overloaded heels. This proved successful.

Due to improving the hoof pastern axis and limb balance, chance of shoe loss and interference with corresponding limb are reduced, as with Case No 6 - Piggy Malone. The wedge soles and packing protect from adverse conditions and keep healthy the whole underside of the hoof. When shoeing as described in Method B the wedge sole forms a strong angled buttress supporting the otherwise weak wall.

Experience shows that the previously overloaded wall is enabled to grow more evenly with the rest of the hoof. Case No 2 - Shucks despite his significant deformity aided by this therapy is able to continue to work at top level at 12 years old.

Adams/Stashak (1987) recommend elevating the heels and changing the usable ground surface of the foot in the treatment of limb imbalance. The use of wedge soles achieves this aim.

Ph Vanschepdael and Ph Debast (1996) used wedge sole pads to lift the heels but a major problem with pads is that they soften the hoof horn since they retain moisture within the hoof.

Experiences with wedge soles do not appear detrimental to the foot provided the foot is packed with Stockholm tar and cotton wool. When a shoe and wedge sole is removed a tar impregnated wad attached to all the sole growth and frog is revealed. This is removed leaving a healthy solar surface. During the time it takes to shoe the horse the revealed foot dries. When wedge soles have been left off problems which arose were the same as before they were used. In some cases no problems occurred. If the horse is dependant on the wedge soles the reasons usually are because the horse has a conformational or pathological defect.

Wim Busser (1996) observes that when pressure is applied to the frog, either naturally or by shoeing, the frog will not be able to drop further and due to its accordion shape it will be flattened thus causing the bars of the hoof to spread. When it is necessary to attempt to improve foot mechanism the author prefers a method which instead of spreading the counter pressure over a few centimetres (like a bar) spreads it over the whole foot.

(Brochet 1996) reinforces the author's objective which is not to correct the uncorrectable, rather to manage the horses faulty conformation, to limit the aggravation and give pain free gaits.

Left fore horn growth after eight weeks. Shod Method B. Note level of sole in relation to limb and depth of heels.

Solar view - deep healthy horn around medial wall and heel (Case 1)

Conclusion

As the majority of cases recorded have conformational defects being the root cause of the lameness, this palliative treatment is a viable and simple to apply option.

It immediately aids the horses comfort by positioning the foot more evenly beneath the limb, relieving disproportionate tension from joints, ligaments and tendons and allows the foot to grow in the right direction from day one. As a result shoes are often used two or three times before being worn out.

It increases depth and bearing surface in the area of deficit adding little extra weight to the foot, enabling more even load bearing and dispersal of concussion improving natural shape, function and health of hoof. Regular shoeing intervals of 5 weeks are important. With mild cases of imbalance due to poor trimming or temporary loss of a portion of hoof this treatment may resolve the problem after only one or two shoeings, thereafter returning to standard shoeing.

It is conducive to prolonging working life and managed correctly has many advantages.

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