

HEAD TRAUMA

by *Equine Veterinarians Australia (EVA)*

Dr Chris O'Sullivan
BVSc, MS, MACVSc, Dip ACVS

Dr Tamara McElroy BSc BVMS



Tara Hunter photograph

Case 2



Photo supplied by Randwick Equine Centre

A blow to the head may appear to be nothing more than a surface injury yet underlying damage, if severe, could have long-term effects on the horse's health and performance.

EQUITANA PRESENTATIONS



EVA will be presenting demonstrations on a range of subjects at Equitana 2008 between the 20th-23rd November at the Melbourne Showgrounds. For more details see www.equitana.com.au

Head injury in horses can occur during accident or misadventure but it is typically a result of the head hitting either another object or the ground due to shying, bolting, pulling back, rearing up and over or a kick to the head from another horse. These types of injuries are seen more commonly in younger horses and are often associated with the breaking-in period, or as a consequence of paddock accidents. Head trauma requires rapid expert attention as, depending on the severity of the injury, it can result in damage to various structures including skin, bone, nerves, the eyes and the brain. The severity of damage, and the structures involved, will determine what treatment is required and the ultimate outcome for the horse.

Lacerations and grazes to the skin are often the most obvious signs of injury, however injuries to deeper structures may be less obvious initially. A horse with a head injury

that has caused damage to the brain may show signs of changed behaviour, disorientation or become non-responsive to people or objects around them. In extreme circumstances the horse may be knocked out or suffer a seizure on the ground. The most important thing is to maintain a calm relaxed environment, call the vet and minimise danger firstly to the people around the horse and secondly to the horse. For example if the horse is seizing on the ground the handler should not put themselves in a position to be injured by the horse, which is unaware that they are there, and padding should be placed around it to minimise the damage the horse may do to itself.

The veterinarian's first step in assessing head trauma would be a thorough physical examination of the horse with a detailed inspection of the symmetry of the skull. This could include an oral exam to look for injury

Continued

Head Trauma cont....

inside the mouth or failure of the teeth to normally line up (malocclusion) which may indicate a fracture of the jaw.

If trauma involves the eyes or surrounding area, a thorough examination of eyelid and eye function (an ophthalmologic exam) will be carried out to ensure the eye or surrounding structures are not damaged.

A neurologic assessment would also be performed, where the vet will look for signs such as head tilt, abnormal eye or ear position, blindness, muscle paralysis, depression or an altered gait. Identifying these abnormalities will help the vet to localise the most likely site of nerve or brain injury.

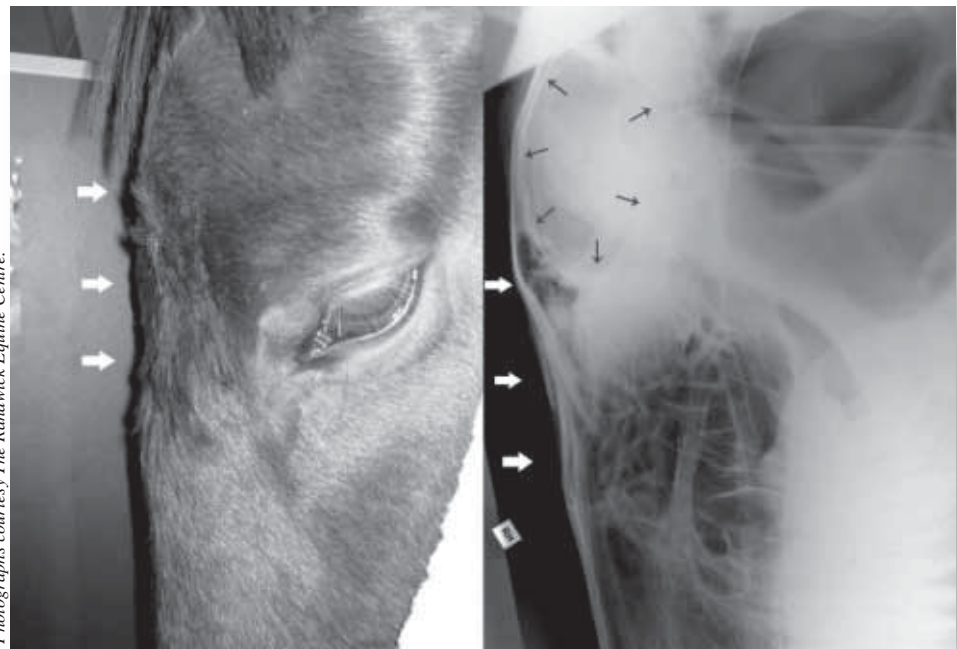
Once the initial assessment has been completed there are a variety of diagnostic tools available to further evaluate abnormalities identified should the veterinarian consider this necessary. Radiographs (X-rays) are valuable for locating and determining the presence and extent of bone fractures and whether the sinuses or brain cavity may be affected. Endoscopic examination ('scope') involves placing a long flexible tube up the horse's nostril with a camera on the end to examine the nasal passages, including sinus openings and guttural pouches. This can provide important information regarding damage involving these areas and is particularly useful if blood is coming from one or both nostrils (epistaxis). The muscles that attach to the base of the brain cavity can also be viewed from the guttural pouches. Techniques such as a CT (Computed Tomography) scan or MRI (Magnetic Resonance Imaging) are becoming available, and in some cases can provide excellent detailed assessment of head injuries. (Figure 4) However, these two techniques require general anaesthesia and the nature of many head injuries makes these horses unsuitable candidates.

SKIN WOUNDS

Like most animals, horses have excellent blood supply to the head region and even extensive skin wounds heal well on the head compared with other sites on the body. Full thickness skin injuries to such areas as the lips and eyelids, however, if left untreated often heal with significant scarring, and may result in permanent deformity and dysfunction. Eyelid and lip lacerations, therefore, heal best when repaired surgically.

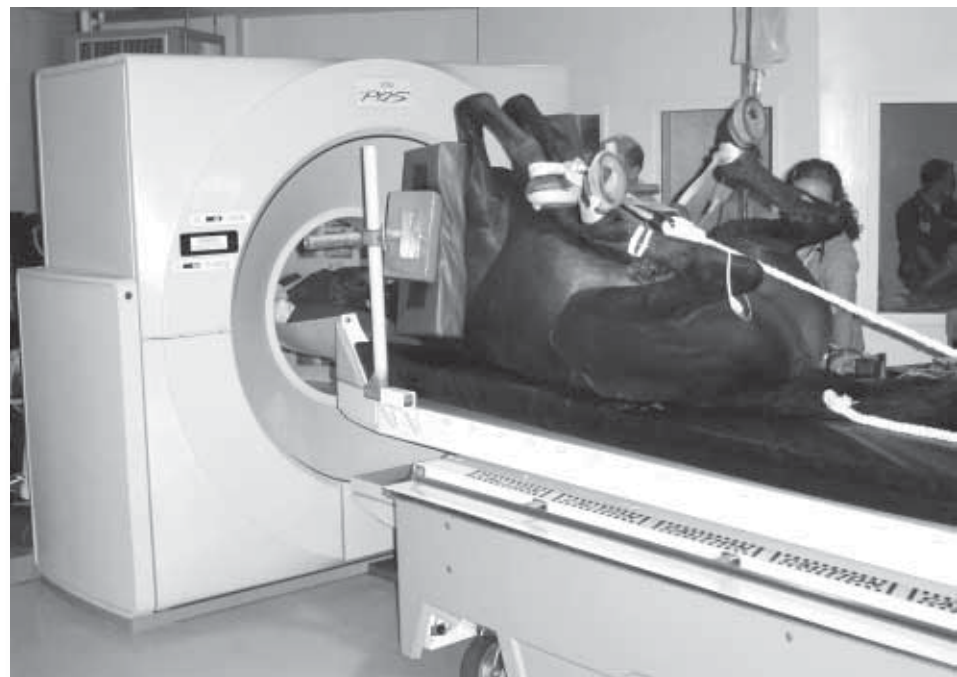
FRACTURES

Hits to the head which don't cause bone fractures - a break in the bone - can result in a bony lump, commonly known as a callus, forming 4-6 weeks after the injury between the bones of the skull. This is seen



Photographs courtesy The Randwick Equine Centre.

Above: The white arrows indicate an area of depression in the forehead consistent with a fracture in the photograph on the left. This is confirmed with the radiograph on the right showing similar arrows corresponding with fracture of the frontal and nasal bones over the frontal sinus. The cranium in which the brain sits is positioned just above and behind the fracture and is outlined with dark arrows.



Above: An anaesthetised horse undergoing a CT scan of the head.

Below: Before and after treatment. Without surgery this horse's eye would have had problems maintaining a healthy tear film resulting in drying of the surface of the eye, ulceration and likely loss of the eye.



most commonly across the forehead between the eyes.

Skull fractures can be divided into fractures of the jaw bone (mandible), brain cavity (cranium), and the other bones of the head including forehead, sinuses and orbit bones surrounding the eye. Jaw fractures are most easily identified by a horse having difficulty eating, dropping food, drooling or misalignment (malocclusion) of the teeth. Treatment options depend on the location of the fracture within the jaw, but in most cases jaw fractures should be repaired surgically. A variety of techniques may be applied to repair the fracture including metal plates, wires, intraoral splints (like human braces and plates), or external fixation techniques (pins screwed into the bone through the skin and attached to a rod).

Facial bone fractures vary in severity, from a mild facial deformity to more severe open fractures entering the sinuses, distorting the nasal cavities, or impinging on the eye ball. With severe fractures of the nasal cavity, horses can develop trouble breathing, particularly as swelling occurs after the accident. These horses may require a tracheostomy (a temporary hole in the wind pipe) to enable them to breathe properly. Though this may seem alarming to a worried owner, it's a simple and effective procedure.

If a cosmetic result is not important for the injured horse then those fractures that have not broken the skin (closed fractures) can often be left untreated. Surgery is advised for more severe or 'open' wound fractures, where an improved cosmetic result is desired, and in fractures that may affect the eye or airway functions. Any fractures with exposed bone or involving the sinuses carry a high risk of infection.

Fractures of the cranium (top of the head and surrounding the brain), typically occur as a result of the horse flipping over backwards or rearing and striking the poll, usually resulting in direct damage to the brain. These fractures most commonly occur in the skull at the base of the brain, and are not obvious when looking externally at the head, therefore good quality radiographs are required to identify them. Horses with these injuries may have bleeding from the nose and or ears, and unfortunately, in injuries of this nature there will usually be mild to severe brain or neurological damage.

INJURY TO THE NERVOUS SYSTEM

The most obvious sign of serious neurological or nervous system injury is the horse experiencing a loss of consciousness or uncontrolled seizures. Horses in a coma, or seizing, who fail to respond to veterinary treatment within 24 hours of injury, are highly unlikely to recover. This category of horses require rapid intensive



Left: Checking the eye of a head injured horse for both obvious trauma to the eye and normal reflexes.

Below: Often associated with the breaking-in period, head trauma injuries are seen more commonly in younger horses.

distressing for the owner to see, the animal will often respond well to treatment, and it learns to visually compensate as healing progresses. Affected horses often compensate better if kept outside, rather than stabled since it allows them to be more active and learn to adjust. Horses with skull base fractures or vestibular syndrome who fail to improve within the first couple of days have a poor prognosis as performance athletes.

The nerve that controls the muscles of expression in the head and face exits the skull base and runs along the side of the head. Damage to this nerve will result in drooping lips and nostrils, facial palsy and the inability to blink or close the eye. This inability can rapidly result in drying of the cornea, ulceration and ultimately loss of the eye. The good news is that the majority of facial nerve injuries will gradually regain function, but it can take a prolonged period of time (3-6 months or longer). Unfortunately, there will always be some of these horses that will



Hoofbeats photo

care treatment and may be treated with many different drugs including anti-inflammatories, anti-seizure drugs, antioxidants and diuretics. If the horse does respond within 6-8 hours there is a favourable prognosis for life, but the ultimate usefulness of the horse may not be determined for many months, as those that recover initially may go on to deteriorate several months later if fracture-healing-callus impinges on nervous tissue.

When the middle ear system (vestibular) is damaged, the horse's balance and coordination can become affected and it may walk in circles, lose its balance or develop a head tilt. Though this is

not regain these functions.

Head injuries are as potentially dangerous and life-changing for horses as they are for humans and, because of the nature of horses, will continue to occur despite good horse keeping practices or safe accommodation. When head trauma does occur or is suspected, the accurate identification of specific structures involved and the severity of damage is of paramount importance. Rapid and thorough clinical, ophthalmologic (eye), oral and neurologic examinations, combined with appropriate advanced diagnostics, give the best opportunity for correct treatment and a more positive outcome for the head injured horse.

About The Authors



Randwick Equine Centre is a seventeen veterinarian purely equine practice servicing the greater Sydney area. The hospital facilities include a modern surgery, laser surgery, radiology (x-ray), digital radiology, ultrasound, shock wave therapy, video-endoscopy (airway and stomach) and nuclear scintigraphy. See the web site: www.randwickequine.com.au/

For information on Equine Veterinarians Australia (EVA) visit the web site www.eva.org.au



Dr Chris O'Sullivan (BVSc, MS, MACVSc, Dip ACVS)

A registered specialist equine surgeon at Randwick Equine Centre, Chris graduated from Sydney University and trained in surgery at The Ohio State University USA. He enjoys working with performance horses and his specific areas of interest include lameness, diagnostic imaging (Computed Radiography, Ultrasonography, Scintigraphy), orthopaedic and soft tissue surgery.

Dr Tamara McElroy (BSc BVMS)

A first year graduate from Murdoch University in Western Australia, Tamara is currently an intern at Randwick Equine Centre.

hoofbeats

A National Riding, Training and Horse Care Magazine
incorporating *The Green Horse - sustainable horsekeeping.*

Produced by
HOOFBEAT PUBLICATIONS

90 Leslie Road, Wandi,
Western Australia 6167

Ph: (08) 9397 0506

Fax: (08) 9397 0200

Email:

Office/accounts: hoofbeat@inet.net.au

Subscriptions: hoofbeat@inet.net.au

Ads: ads@hoofbeats.com.au

Showscene:

showscene@hoofbeats.com.au

Editorial: editorial@hoofbeats.com.au

www.hoofbeats.com.au

MANAGING EDITOR
Sandy Hannan

EDITORIAL ASSISTANT
Carol Willcocks

Contributing Editor (Cyber Writer)
Wendy Elks

PHOTOGRAPHICS
Bob Hannan

ADVERTISING
Tracy Weaver

OFFICE MANAGER
Carissa Greentree

GRAPHICS AND WEB
Lisa Stevens
Caitlin Bolger

CONTRIBUTING WRITERS
Julia McLean
Equine Veterinarians Australia (EVA)
Coralie Smyth
Portland Jones
Dr Pamela Hamilton (USA)
Michelle Hungerford

INSERTS

W.A SHOW SCENE
Jess Holmes

Available in magazines sold in WA and to subscribers

The GREEN HORSE
Carol Willcocks

DISTRIBUTORS:
Gordon & Gotch

PRINTERS
P.K.Print

Manuscripts, results and photographs are welcomed. Preferably these should be emailed with hard copy posted - typewritten and double spaced, with clearly printed captions on the back of photographs. Failing this clearly written or printed material will be accepted. No responsibility is assumed for errors from handwritten material. Emailed photographs should be scanned at 300dpi then saved as jpegs and attached to email.

All material should be addressed to The Editor, Hoofbeat Publications, 90 Leslie Rd., Wandi 6167 or emailed to hoofbeat@inet.net.au

Although maximum care is taken, no responsibility is assumed for such material while in transit or at this office. Material will be returned if a stamped self addressed envelope is enclosed. All material published remains the property of Hoofbeat Publications.

Reproduction of any part of Hoofbeats is protected by copyright and only permitted when a written release has been received from the publisher.

The opinions expressed in this magazine are not necessarily those of the publishers or the editor.

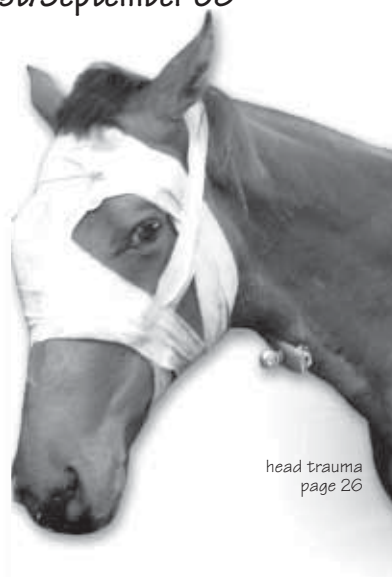
Contents of advertisements are the responsibility of the advertisers

Inside

Vol 30 No 2 August/September 08



photo by Julia McLean



head trauma
page 26

an insight into fitness pt 1
page 4

- 4 AN INSIGHT INTO FITNESS part 1** by Julia Mclean and Dr David Evans
To aim for and achieve a level of fitness to suit the work required, it is important to first have an understanding of what is happening physically to the horse.
- 10 OVER TO YOU**
Your chance to speak your mind on any subject relating to equine matters.
- 14 THE MYSTERY OF CHINA'S MORGANS** by Judi Daly
The importation of 27 Morgan horses from the US in the late 40's marked the start of a new breeding program in China and later, questions as to their fate.
- 18 DEMYSTIFYING DRESSAGE pt 2 - Transitions** by Coralie Smyth
One of the five basic movements of Grand Prix, transitions are a valuable part of dressage schooling and require an understanding of the various types and how to ride them correctly.
- 26 HEAD TRAUMA** by Equine Veterinarians Australia (EVA) Dr Chris O'Sullivan and Dr Tamara McElroy
Injuries to the horse's head require rapid expert attention, as trauma affecting the eye, the nervous system or airway function can have life-threatening or long-term effects.
- 31 CRANIOSACRAL ASPECT of head trauma** by Maureen Rogers
The horse's skull is like a giant jigsaw puzzle; a complex and intricate weaving of 26 individual plates of bone; its unique and amazing design protecting the brain and eyes from trauma and forming the airway and sinuses.
- 33 DOUBLE TROUBLE FOR HOOLIE- a reader's story** by Tara Hunter
Tara's show horse was still recovering from a kick to the head when he ran head first into a tree.
- 40 COUNTDOWN TO THIRTY YEARS - Volume 1 No 2**
Before computers! Magazine production in 1979 was certainly different to today!
- The GREEN HORSE - sustainable horsekeeping**
- 44 Information Exchange - Reader's Tips, Views and Questions**
- 45 Weed Watch - White Cedar** by Nicola Field
- 47 Growing Equine Herbs - Blue Flag Iris** by Fiona Adams
- Mail Order Menace** by Sandy Lloyd





d.i.y. tail bags
page 74



the mystery of the
chinese morgans
page 14



the inconvenient itch
page 56



photo by liz collarzo

birth trauma
page 67



the emerging
discipline of equine
science page 51

- 48 **Deeds, Steeds and Weeds**
- 49 **Growing Good Grass** by David Rogers
- 50 **Weed Frenzy Pt 1** by Chris Ferreira

51 THE EMERGING DISCIPLINE OF EQUINE SCIENCE

by Portland Jones

Still in its infancy, Equine Science is explained as "the measurement and interpretation of interactions between horses and their riders" and a discipline with great potential.

56 THE INCONVENIENT ITCH

by Kim Dawson

Certainly a nuisance, left untreated Lice can result in more than just an itchy horse.

58 BE PREPARED

by Carol Willcocks with Dr Joan Deetman

Planning ahead for the birth of a foal can make it a far more enjoyable experience than leaving it to chance.

64 Virbac QUESTIONS AND ANSWERS

Your questions are answered by experienced horsemen and women, professionals, trainers and riders. Dr Jennifer Stewart responds to an enquiry relating to caring for an old horse and Dr Shannon Lee defines Wolf Teeth. Products from Virbac are given for published letters.

67 BIRTH TRAUMA

by Wendy Elks with Dr Ian Bidstrup

Girth pain, rib-cage sensitivity, wither abnormality and one-sidedness in equines are just a few conditions that can be clinically linked to spinal problems resulting from the birth process.

72 PRODUCT NEWS

The news on what is new in the market place and where to find them.

74 D.I.Y. TAIL BAGS

How to make your own tailbag - step by step instructions for those wanting to save money and recycle.

84 READER'S SURVEY

Have your say to help shape the future direction of Hoofbeats and you could win one of three great prizes, plus a double pass to Equitana in the Early Bird prize draw.

88 HORSEFRONT

The latest in news, veterinary advances and horse happenings.

92 SUBSCRIBE TO WIN

Subscribe and enter the competition to win a pair of FITS jods plus a pair of Rosie Roo wellies. Subscribe online www.hoofbeats.com.au

* RRP inc GST **\$6.95**

EDITORIAL ISSN 0811-8698

Office News

Three students have recently temporarily joined the team as part of their work experience or professional placement. Rebecca Oborn, on a ten-week placement as part of her Agribusiness Degree with a Major in Equine Management at Muresk Institute, has been at the office during one of our busiest times and assisted in virtually every aspect of production. Also of great help during their time here have been Journalism student Laura Ludgate from Curtin University, and Megan Tidbury studying Equine Science at Charles Sturt University, both of whom have been put to great use! Adding to the sudden increase in in-house numbers has been Jacinta O'Callaghan, in for several months on a return to work programme and with office administration and accounting skills that have proven to be extremely useful. We consider it an enormous compliment that Hoofbeats is chosen by many students and consider it a win win situation for all, as while we hope that students leave with skills that may prove beneficial in their future, Hoofbeats benefits from fresh ideas and enthusiasm, and very willing workers!

Unfortunately at this stage there is no news on the appointment of the new Cyber Writer. The reason for this is simple, and explains in part why we needed two new writers in the first place! There has simply not been the time to finish going through the short list of applicants to make a final choice. This is top of the list of priorities however and the new member of the team will be introduced next issue.

Hoofbeats Survey. WIN Equitana Tickets

We are hoping that all readers can spare approximately ten minutes to complete the Readers Survey included in this issue. The results will provide us with a greater understanding of who Hoofbeats readers are, their specific equestrian interests and an indication of their expectations from the magazine. In addition to helping us shape the magazine to meet your future needs you could also win a choice of three terrific prizes plus an **'Early Bird' Prize** of a ticket to Equitana for those getting their survey in **before September 26th**. Surveys can be returned by post, fax, or scan and attach it to an email. It can also be downloaded from www.hoofbeats.com.au if you would rather not use the copy in your magazine.

Tickets to Equitana are certainly in demand as excitement builds up for this year's event in mid November after it was postponed in 2007 due to Equine Influenza. Our tickets are booked and we too are counting down the days to this fantastic event and our chance to meet as many readers as possible at our stand.

With the Olympics now only days away all eyes will be turned not only to Beijing, but to Hong Kong, which is the location for the equestrian events. The Australian equestrian team includes many first time Olympians and we wish all of them the very best of luck. We'll be glued to the TV watching the Australian horses and riders do their best after the culmination of years of training and very, very hard work. Good luck to you all!

COVER: The first of a three part series gives an insight into the importance of fitness and swimming is one form of training or conditioning to achieve optimum results. Larissa O'Connor (STC) photograph.

