

BIRTH

Trauma

by Wendy Elks with
Dr Ian Bidstrup

Photo by Carol Willcocks

Equine research has allowed the development of new concepts in the link between chest and pelvic trauma at birth, and pain, behavioural and performance problems of horses.

For humans, giving birth is a momentous occasion; for horses, it's a process mostly performed alone and unassisted, in their natural environment. The 'expectant' horse breeder may await the imminent arrival of a four-legged 'baby' with foaling stall and intercom at the ready, only to find that the mare has given birth in the paddock during the night. In the morning the foal, with extraordinary capability, stands beside its mother, drinking and sturdy, ready to embrace life. The brief trauma of birth is over. Or is it?

A growing body of clinical experience and scientific research indicates that the physical trauma of birth can sometimes profoundly affect a foal's physiological development and consequently its future performance. Horses suffering from the unresolved effects of birth trauma may be those often referred to as 'saddle shy', 'girthy' or 'cold-backed'. A horse may be considered piggy, difficult or nasty, when in fact the animal is responding to chronic pain and discomfort, which goes back to the birthing process. Many years of observation and successful treatment of spinal conditions by Dr Bidstrup and his colleagues indicate links between trauma suffered at birth with a complex range of conditions such as girthing and one-sidedness in riding horses.



Birth trauma, resulting in long term spinal dysfunction of humans, is well recognised by chiropractors, osteopaths, some medical practitioners and physiotherapists, and most of these practitioners advocate early intervention to rehabilitate babies from the damage birth can cause. Similar trauma can occur to equines during foaling. Most of the time, in humans and horses, the damage heals quickly. But reasonably frequent spinal dysfunction appears to remain, which if undetected and uncorrected can lead to chronic conditions that the body learns to accept as normal. Not life-threatening, they nevertheless set the horse up for problems and difficulty when it comes to being ridden.

Birth trauma occurs because of the enormous pressure exerted upon the foal as it passes through the birth canal. While the skeletal frame of an unborn foal is supple and designed to withstand the journey of birth, it is well-recognised that virtually all foals undergo some damage during transit through the birth canal. As protuberances such as the foal's rib-cage at the level of the shoulder and wither are subject to the greatest forces,

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Birth Trauma cont....

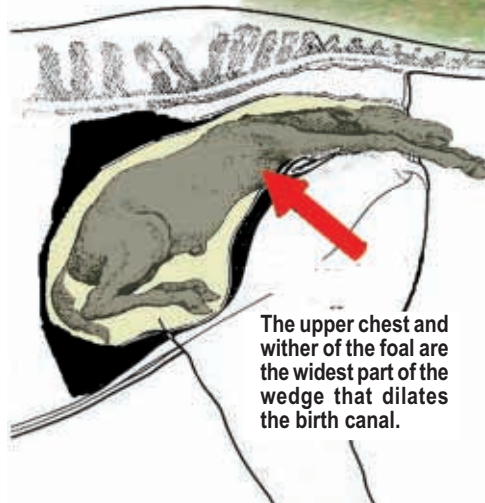
they are more likely to sustain injury. Abnormal rib/girth sensitivity occurs commonly in equines, including horses that have never been ridden or have not had a saddle on them for years. It is present in month old-foals through to aged stallions, and in all breeds, ridden and un-ridden, from miniature to draft. An extreme example is a very 'girthy' horse that became so distressed by being saddled that it would lie down. Its owners tried to de-sensitize it by leaving a surcingle on 24/7. After a couple of adjustment sessions the sensitivity was gone.

THE BIRTH PROCESS

The birth of a foal is an explosive event lasting from 10 to 20 minutes and involving huge forces exerted by the uterine and abdominal muscles of the mare. Anyone who has had to correct the presentation of a foal during its birth will testify to the intense pressures exerted on the foal by the mare's contractions. If the foal hasn't been born within a short 20 minutes from the start of the expulsive stage, it has a small chance of making it alive.

The foal's body must physically dilate the vaginal and pelvic canal of the mare in order to squeeze through; its body, acting as a wedge, literally stretching open the birth canal of the mare; firstly with its relatively

Right: In most cases, any rib or wither damage at birth heals within two to three weeks of birth. Many foals however appear to sustain damage to their nervous system programming that becomes part of life.



narrow head and forelegs, followed by the chest and then the abdomen and pelvis. The initial and widest part of the wedge comprises the front of the chest, or wither region and shoulders; the second widest part is the hip bones. Recent veterinary research has illuminated the severity and likely common nature of the considerable physical trauma that foals may suffer during birth. For instance, rib fractures, or at least disrupted junctions between the ribs and breastbone were found in over 20% of foals in one large study. (D.Jean et al, EVJ1999.)

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CHEST TRAUMA

Chest trauma in newborn foals has been documented since the 1930's. It is a well recognised cause of foal death at or close to birth. Recently significant research has been published which gives considerable support to the view that major chest trauma is far more common than one would expect. In 1999 research by Dr Daniel Jean and associates was published in the Equine Veterinary Journal, one of the most revered veterinary journals in the world.

The research involved investigation of chest trauma in a group of 263 'normal' Thoroughbred foals at one of Ireland's top Thoroughbred studs. In brief, the field study found that about 20% of the foals suffered major chest trauma. The most obvious trauma involved partial disruption of the junction between the ribs and breastbone, known as the costochondral junction. Further field x-ray examination of this 20% revealed rib fractures in nearly one quarter of these, giving an incidence of roughly 5% of the total with rib fractures. The damage was believed to have happened as the foal's chest was compressed as it passed through the birth canal of its mother. Most of the rib fractures were found in the ribs corresponding to the level of the wither. Damage was found to be worst in foals from maiden mares and where the births were assisted. Interestingly, despite the magnitude of the detected damage, the foals in the study group did not show obvious clinical complications. The high portion of foals exhibiting considerable chest trauma however corresponds well with Dr Bidstrup's views that a high percentage of foals are affected negatively by birth.

The clinical consequences of chest trauma looked for by Dr Bidstrup are quite different in character to that of regular veterinarians including Dr Jean and associates. All would agree that the rib fractures and damage to the junction of the ribs and breastbone would heal readily in the young, rapidly growing foal. It is the likely damage to the programming of the nervous system via damage to the spine which Dr Bidstrup believes causes alteration in stance, leg preference, tension of the wither and shoulder girdle, and later in life translates to decreased comfort with saddles and girths, leg lead preferences and many other issues.



It is the programming of the nervous system after birth trauma that can translate to decreased comfort for the performance horse.

Birth Trauma cont....

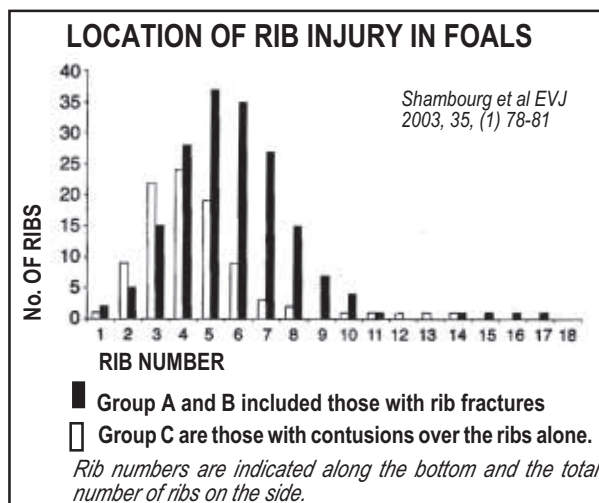
Body damage patterns seen every day in horses from foals onwards suggest that these two sections - the wither and pelvis - suffer long-term damage, which is caused during birth.

The pattern of spinal movement restriction associated with abnormal sensitivity of the girth and wither closely matches the outline of the wither. The higher the wither, the more commonly it is affected i.e. the 4th to 6th thoracic vertebrae are most often involved. These represent the widest part of the foal, which does the most work in expanding the birth canal. This mirrors the pattern of rib fractures found at post-mortem in Shambourg et al's research (*Shambourg et al 35, (1) 78-81 EVJ 2003*). Clinically most common, the right wither and right pelvis appear to fare worst, resulting in right canter lead trouble and the right hip dropping a little. This is possibly due to the way the horse lies within the womb and is forced up against the mare's pelvis during transit.



Once born, a foal's untrained brain has to undergo massive, rapid 'program' development to manage the co-ordination of limbs and body. By mistake, stiffness associated with damage to the foal's spine may be 'programmed' as normal.

70% are seen with predominantly right wither damage, right pelvic depression and damage to the left side of the rib/breast bone area. The reason for this skewing of results probably lies in the fact that the abdominal contents of the mare are not even in nature.



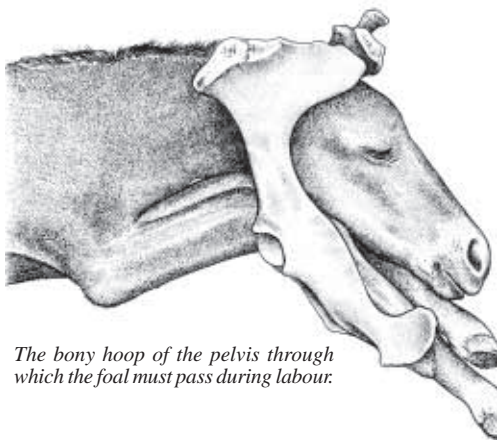
The right side of the mare's abdomen is dominated by the relatively firm caecum. It is very likely that during the mare's abdominal contractions the caecum is pushed onto the left side of the foal, causing the foal to be predominantly twisted onto the left diagonal, i.e. left side of the breastbone/rib junction being squashed against the bottom of the pelvis and right side of the wither spine being crushed up against the top of the pelvis.

What the studies do not examine is the damage to the nervous system which occurs

concurrently with rib and other chest trauma. Recognised physical damage such as rib fractures and disruption of the rib/breast bone junction are likely to heal within 2-3 weeks of birth; likewise, any physical damage to the wither and vertebrae. However, damage to the spinal column and ribcage is likely to have a lasting effect on the programming of the nervous system.

PROGRAMMING THE FOAL'S NERVOUS SYSTEM

The foal's nervous system makes a great deal of adjustment from activity within the womb to that of the outside world. Once born, a foal must quickly learn to stand, walk, nurse, prance etc, requiring its untrained brain to undergo massive, rapid 'program' development to manage the co-ordination of limbs and body. In the days to weeks after birth, the spinal muscles surrounding the damaged vertebrae of a wither/chest damaged foal would



The bony hoop of the pelvis through which the foal must pass during labour.

During birth foals are delivered through the pelvis on a diagonal, rather than with the foal's chest straight up and down. One would expect 50% of the foals to come out on the right diagonal and 50% to come out on the left diagonal. However 50/50 is not what we would expect from what clinical findings tell about birth trauma. Well over

necessarily be tightened, causing a stiffening of the spine - a natural measure which splints and protects the vertebrae and spinal cord while they are healing. An 'injury program' would be running within the nervous system for the affected area at this time. The downside of this is that the rapidly learning, naïve nervous system of the newborn foal is very likely to accept this spinal stiffness as normal, and thus maintain it - even when healing of physical damage is complete. As this region of the spinal column is splinted by the shoulder blades and associated muscles, the foal's stretching and frolicking is less likely to re-initiate truly normal vertebral movement, as would be expected to happen in most other spinal injuries.

The maintained 'injury' program is dysfunctional compared to the truly normal spinal program, and is likely to produce changes in the environment of the spinal nerves. Such changes could distort the transmission of feedback from the muscles and sensory nerves, resulting in abnormal sensitivity, muscle tone and trigger point irritability - symptoms commonly recognised in sore-withered, 'girthy' foals and horses.

Clinical evidence strongly suggests that birth trauma is a major factor in girth, wither and flank sensitivity, often causing fear and anxiety states in affected horses, and is a major factor in one-sidedness, sacro-iliac imbalance and problems with saddle fit, which can in turn add to saddle pain and dramatically affect rider balance.

PREVENTION

Although birth trauma cannot necessarily be prevented it can be minimised by a few simple changes to the way foaling mares are dealt with. Firstly, mares should be

allowed to foal with as little interference as is possible. Expectant mares need a quiet place to foal where they will not be disturbed by noise, lights and people around them. A mare that is not left alone will be much more likely to hold off foaling and then literally spit the foal out the moment she is left to herself. The quicker the birth, the more likely it is that the foal will be subjected to greater forces and hence greater damage. There is also likely to be greater chance that one of the foal's legs will be bent backwards. Certainly some mares need help but probably a lot less would were they left alone. (*Research on births in cattle has clearly shown this.*) Ideally, infra-red cameras should be used to watch and monitor from a distance. Secondly, if assisting a birth is necessary it should be done calmly, without being frantic about dragging the foal out as quickly as possible. The foal is less likely to die if pulled out in sync with the mare's abdominal contractions. It's also important to use plenty of lubricant and properly utilise the curves of the birth canal.

With the foaling season coming up, it's worthwhile for breeders to keep in mind the possibility of rib fractures, wither injuries and rib-sternum disruptions in newborn foals. Although most foals with birth trauma will not show any obvious symptoms, some will have trouble finding a comfortable position to suckle from the udder. It is also wise for the foals of first-time mares to be checked for birth trauma, due to the tightness and narrowness of the maiden birth canal.

TREATMENT

Symptoms associated with birth trauma in both foals and older horses can very often be partially or fully removed via the



Identifying and treating any birth injuries at an early stage may assist breeders in decreasing potential performance disadvantages.

rehabilitating effects of spinal therapies, and other appropriate measures such as good saddle fit. Veterinary chiropractic, veterinary osteopathy, veterinary acupuncture and a number of other spinal therapies are usually very effective in relieving foals and older horses from the effects of birth trauma.



Equitana Presenter

Ian Bidstrup will be presenting Birth Injury, Girthy Horses, One-sidedness and Saddle Fit at Equitana Melbourne between the 20th and 23rd November 2008.

Hoofbeats thanks Dr Ian Bidstrup for his help in compiling this article.

Ian Bidstrup, an equine vet, is one of only four veterinarians in the world with a Master's degree in animal chiropractic, and international qualifications in acupuncture. His clinic at Wangaratta in North-East Victoria specialises in spinal dysfunction, pain and arthritis in animals.



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