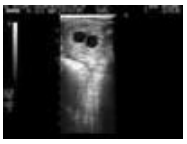
Double Trouble - The Twin Dilemma

By Jos Mottershead and Kathy St. Martin

You've read all the articles at *Equine-Reproduction.com*, your mare was in heat, you jumped through all the various hoops you needed to in order to get your mare bred, and now you're excitedly awaiting your veterinarian's verdict as to whether or not she is pregnant. The ultrasound screen shows a strange selection of white, grey and black blobs, and you anxiously await the veterinarian's explanation of what you are looking at...

But when the word comes, it's not what you wanted to hear... TWINS!!! Oh no! Now what?



This utrasound shows one pregnancy and one cyst

The very first thing to determine is whether what you are seeing is truly a twin pregnancy, or is one of those "pregnancies" perhaps a cyst? Especially during the early embryonic developmental stages from about day 10 to 16, an endometrial or uterine cyst can look remarkably like a conceptus. It is therefore essential that a pre-breeding ultrasonic evaluation of the uterus be performed. By mapping the position of any cysts before breeding your mare, it will make accurate identification of a pregnancy much easier. This is even more important if you are breeding an older mare, where there is a greater likelihood of the presence of cysts.

The next item on the agenda of elimination is to ensure that what you are looking at is not free fluid in the uterus. Again, especially during the early days of pregnancy, such fluid may well mimic a conceptus in appearance. However, usually there is a greater degree of mobility with the fluid (especially if pressure is applied with the ultrasound transducer), and fluid is also more likely to present an irregular shape - something that does not occur with the conceptus until day 17 post-ovulation or later.

If it is determined that what is present is truly twins, the next step will depend greatly upon what pregnancy stage the mare was at when this ultrasound was performed. Ideally, the mare is being checked prior to the stage at which the conceptus becomes "fixed" within the uterus. In most full-size horse-breed mares, this occurs 16 days post-ovulation, and in most pony mares 15 days post-ovulation ("fixation" generally occurs a day earlier in ponies than in horses). Checking prior to the fixation of the conceptus allows for easier manipulation of one (or both) of the twins in order to enable a manual reduction to a singleton pregnancy. In some circumstances, once fixation has occurred, such a reduction is made more difficult, and the success rate of maintaining even a single pregnancy is reduced.

Twins detected prior to conceptus fixation

Twins detected prior to conceptus fixation can usually be successfully reduced to a singleton pregnancy with reasonable ease. In the event they are situated immediately adjacent to each other, one can attempt to manipulate one, or return to the same mare about 15 minutes later, and often the conceptuses will have separated of their own accord. One of the twins can then be maneuvered towards the distal (tip) end of the uterine horn, and reduced by exerting pressure using either the thumb and forefinger, or more usually the ultrasound transducer against the pelvis.

One question that may arise is "which conceptus should be 'pinched', the larger or the smaller?" if there is a size difference. There are different schools of thought on this subject, with one suggesting that the larger conceptus will reduce more easily, thereby causing less irritation to the uterus. With less irritation, a higher pregnancy maintenance level may be result. The opposing school suggests that the smaller conceptus may already be in the process of reducing naturally, so reduction of the larger one may result in loss of both pregnancies. Other factors that require consideration include position of the conceptus' and the ease with which they can be reached by the manipulator.

Irritation of the uterine lining results in the release of a hormone called prostaglandin. This hormone is responsible for the destruction of the Corpus Luteum ("CL"), which is in turn responsible for the secretion of the essential pregnancy-supporting hormone, progesterone. Without progesterone, the pregnancy - twin or otherwise - is doomed. The use about 30-60 minutes prior to attempting twin pregnancy reduction of drugs such as flunixin meglumine ("Banamine") that inhibit the release of prostaglandin, may also be valuable in supporting pregnancy maintenance.

Twins detected after conceptus fixation

Twins detected after conceptus fixation must be treated differently from those identified prior to fixation. The position

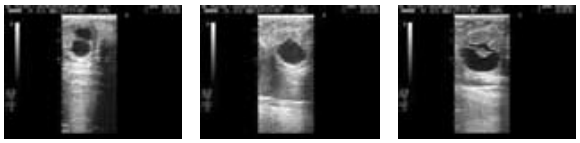
of the twins can have a significant impact on the likely outcome.

If the twins are the same size, and located in a non-adjacent position (e.g. opposite horns of the uterus), then the most convenient should be selected for reduction.

If the twins are of a different size, and located in a non-adjacent position, then as with same size conceptus, the most convenient and non-viable appearing conceptus should be selected for reduction.

If the twins are touching, it become a little more complicated...

If they are of the same size, one may elect to use a luteolytic dose of prostaglandin to reduce both twins, and rebreed the mare (i.e. start all over again). There is a significantly lower success rate in reduction to a singleton pregnancy in this situation. There is also a demonstrated maintenance of both pregnancies of up to 27%[1], which is considered too high a risk to contemplate attempting to preserve either pregnancy. Of course one may attempt a single reduction by pinching off one pregnancy. This however, can be difficult to achieve without damage to the second pregnancy resulting in loss of that conceptus also. If this latter rout is followed, it is essential that follow-up evaluations be performed no later than day 28 post-ovulation. If at that time, there are still 2 pregnancies remaining, it is advisable that prostaglandin be used immediately to terminate both pregnancies and cause the mare to return to estrus. A pregnancy that is continued beyond about day 30 and subsequently lost (prior to about day 120), may result in the mare not returning to estrus until 120-150 days after the ovulation that resulted in the pregnancy(ies) - a significant problem if you want to rebreed her the same season!



Natural reduction of different sized twin pregnancies from day 14 through to day 33

If the twins are of a different size and touching, one may elect to re-evaluate the pregnancy status no later than day 28 post-ovulation. In the majority of such cases, there is a natural reduction of the pregnancy to a singleton[1]. For the same reasons listed above, do not hesitate to use prostaglandin at day 28 in the event that you find no apparent reduction, and the presence of two healthy pregnancies!

It is worth noting that there is a higher incidence of twinning in older barren mares. Nature is attempting to promote the establishment of a pregnancy in these mares, who may - as a result of age-related changes - be sub-fertile. It is therefore very important to do a thorough check for twin pregnancies in such mares. It is equally noteworthy that mares that have once had a double ovulation (or twinned) are more likely to repeat this, and therefore also warrant a careful pregnancy examination. Post-foaling mares up to about 80 days after foaling are the least likely group to produce double ovulations, while maiden mares fall into the middle range. Ponies are less likely to produce multiple ovulations, while Thoroughbreds and Draught breeds are more likely to produce them.

In all mares, regardless of twinning history, it is advisable to perform 2 pregnancy checks using ultrasound. The first ultrasound should be performed prior to fixation at day 15/16 (pony/horse) post-ovulation (most ultrasonographers choose to check at the latest possible time - day 14/15 respectively - in order to allow for maximum conceptus growth and an easier identifiability), and then the second no later than day 28 post-ovulation. As there is always the possibility of asynchronous ovulations (ovulations that do not occur on the same day), doing two pregnancy checks will allow for the identification of twinning, should this occur. With such a situation, a second pregnancy may be established as late as 6 days after the first. Consequently, if the first ultrasound were performed at day 14 or 15, such a second pregnancy would only be 8 or 9 days old, and undetectable using ultrasound. It would be likely therefore that a "singleton pregnancy" diagnosis would be given, but in error. In this example, if a second ultrasound were performed at day 28, the second pregnancy would be at day 22, and easily identifiable with ultrasound.

It has been suggested that a mare that habitually produces multiple ovulations is an undesirable presence in the breeding herd. Quite the contrary! A singleton ovulation will result in a pregnancy about 58% of the time. On the other hand, a multiple ovulation will result in a pregnancy (single or multiple) about 86% of the time. As we have the ability to reduce multiple pregnancies at up to a 97% rate, this means that multiple-ovulator will end up with a singleton pregnancy (if managed correctly) about 83% of the time![2]

The suggestion has also been made that not breeding a mare that has multiple pre-ovulatory follicles present will prevent the occurrence of twinning, and while this is true, it will also produce an overall pregnancy rate of 0%! Not

breeding such a mare is therefore an inefficient management practice.

It is unfortunate that one of the leading causes of mid- to late-term abortion in the mare continues to be twinning. With ultrasound so readily available we have the technology and ability to prevent twin pregnancies from occurring! Few women would consider undergoing a pregnancy without multiple ultrasounds, so why does the mare not warrant the same attention to her welfare and the welfare of her foal?

References:

1: Ginther et. al.
2: Allen WR. 29th Asian Racing Conference
