Breeding the Problem Mare

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What is a problem mare?

A problem mare is one that: 1. Fails to conceive to a fertile stallion under good management conditions for 2 or more estrous cycles in one breeding season, 2. fails to maintain a pregnancy, or 3. displays abnormal reproductive behavior or estrous cycles.

A problem mare is one that fails to:
- ❖ Conceive after being bred for ≥ 2 estrous cycles
- ❖ Maintain a pregnancy
- ❖ Have normal reproductive behavior

Varying degrees of subfertility can cause significant economic losses to the equine industry. The cost of repeat breeding with multiple chute, semen shipping and veterinary fees, and mare board and transport is not recovered if a foal is not produced. A successful breeding depends on the mare's fertility, the stallion's fertility, and the breeding management. Veterinarians can help maximize the chances of producing foals from problem mares.

How do I improve the chances of producing a foal from my mare?

Theriogenologists are veterinarians that specialize in reproduction. A specialist can help you achieve your goal of producing healthy foals from your mares in the most cost- and time-efficient way. Identifying the cause of subfertility is the first step towards success. The second step is treating and managing the mares appropriately before, during and after breeding. Problem mares need intensive individualized management.

Step 1: Identifying the problem

It is recommended that problem mares have a reproductive examination, known as breeding soundness examination or BSE, performed by a veterinarian. A BSE is a series of diagnostic tests performed to identify the cause of subfertility, elaborate a treatment plan and/or give a prognosis for future fertility. Some of the components of the BSE allow veterinarians to predict the chances of a mare carrying a foal to term.

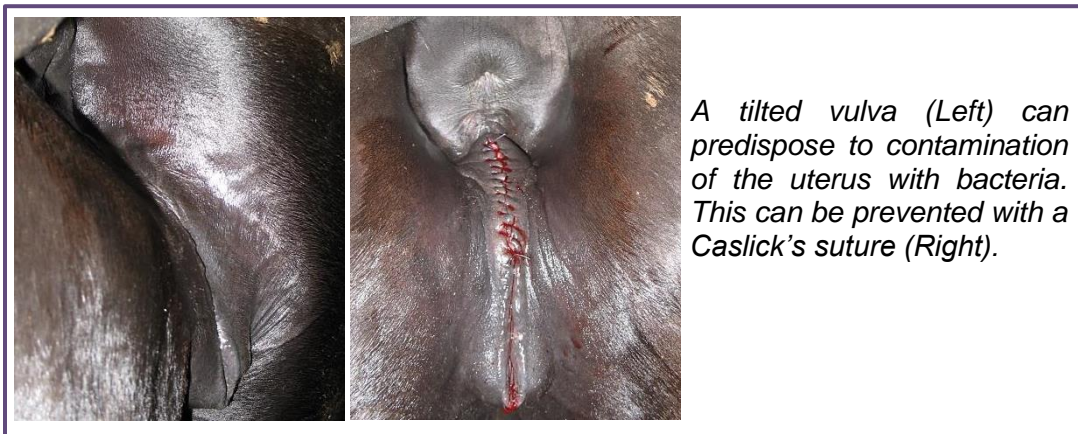A breeding soundness examination can help determine:
- ❖ The cause of subfertility
- ❖ The appropriate treatment plan
- ❖ The prognosis for fertility

BSEs are typically performed at the end of the breeding season. However, you may want to have your mare examined after the second unsuccessful breeding. This will allow you to resolve problems and hopefully get your mare pregnant within that breeding season. After a pregnancy loss, a BSE must be done as soon as possible to increase the chances of identifying the cause. Routinely, a mare BSE includes a reproductive history, physical exam, transrectal palpation and ultrasound, vaginal speculum exam, vaginal palpation, and uterine culture, cytology and biopsy.

A thorough history is essential. Management errors are a common cause of subfertility, and these can be detected by thorough evaluation of breeding and treatment records. Information about the age and reproductive status of the mare can help direct diagnostic tests towards a specific problem. Young fillies are more likely to have abnormal estrous cycles, especially if they are just retired from training. Old mares are more likely to suffer from uterine infections (endometritis) or degeneration (endometrosis). Old maiden mares can fail to dilate their cervix during estrus, leading to post-breeding fluid accumulation.

The uterus must remain a bacteriologically sterile environment to support embryonic and fetal development. However, bacteria from the skin, feces or environment can reach the uterus and cause endometritis. The vulva acts as a physical barrier to prevent uterine contamination. In mares with normal conformation, the vulva is perpendicular to the ground with > 70% or 2/3 of its opening below the pelvic brim.

A tilted vulva (Left) can predispose to contamination of the uterus with bacteria. This can be prevented with a Caslick's suture (Right).

Transrectal palpation and ultrasonography are performed to identify abnormalities of the reproductive tract and determine the stage of the estrous cycle. Vaginal speculum exam allows direct visualization of the vagina and cervix. The integrity of their lining, presence and origin of fluid, urine or air, and stage of the estrous cycle can be evaluated. In addition, vaginal palpation allows examination of the cervical canal to identify areas of thinning, tears or adhesions.

Uterine cultures are performed to screen for presence of sexually-transmitted diseases or bacterial infection. If bacterial infection is present, an antimicrobial susceptibility test can be done to determine the best antibiotic choice. Culture results are interpreted together with uterine cytology, which is an assessment of the different cell types present in the uterus. Presence of inflammatory cells indicates infection or inflammation, while other cell types are associated with chronic infection or aspiration of air or urine into the uterus. Finally, a small biopsy sample is collected from the internal lining of the uterus. Uterine biopsy aids in the diagnosis of infection and degeneration. Degenerative changes can be part of the normal aging process but can impair the ability of the uterus to support a pregnancy. Biopsies are assigned to a category based on the severity and distribution of the changes. The categories are correlated with the ability of the mare to carry a foal to term.

Additional diagnostic tests may be recommended. Endoscopy allows direct visualization of the interior lining of the uterus, and can help identify areas of adhesions, infectious foci, cysts or foreign bodies. Hormone tests can be performed to confirm the diagnosis of certain ovarian tumors or evaluate ovarian function. Occasionally, mares may have an abnormal number of chromosomes, which can result in sterility. A karyotype may be indicated to

confirm this diagnosis. Some mares may also develop problems in their oviducts or uterine tubes. A patency test can help rule out blockage of the oviducts.

Step 2: Treating and managing the problem mare for reproductive success

> To maximize the chances of success, it is important to:
> - ❖ Identify the cause of reproductive failure
> - ❖ Treat pre-existing conditions
> - ❖ Provide intensive individualized management at breeding

Any problems identified during the BSE should be corrected before breeding. Pre-existing uterine infections should be treated appropriately. Abnormal vulvar conformation can be corrected with a simple Caslick's surgery to prevent bacterial contamination of the uterus. The mare should be closely monitored with ultrasonography to determine the best time for breeding. Problem mares often develop post-breeding endometritis, identified as an accumulation of fluid in the uterus. Repeated breeding during a given estrous cycle leads to more severe and persistent inflammation. The problem mare should be bred only once. Use of good quality fresh semen, good insemination technique and strict hygiene is recommended. Cooled semen may also be appropriate, but pregnancy rates can be reduced dramatically with frozen semen in problem mares. The mare is then followed daily with ultrasonography to ensure ovulation occurs at the expected time and to determine if uterine fluid is present. Uterine fluid is treated aggressively until no longer present. Ultimately, if treatment fails to result in pregnancy, alternative or nontraditional therapies can be instituted. Many problem mares that fail to conceive or carry a pregnancy can successfully produce foals with assisted reproductive techniques such as embryo or oocyte transfer.
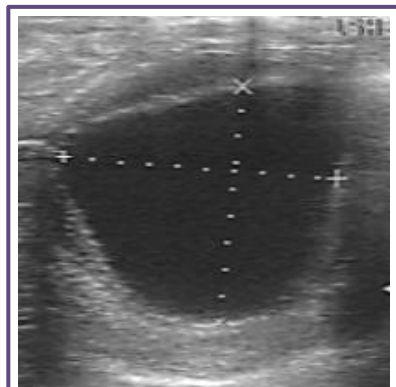
Close monitoring with ultrasound helps identify the best time for breeding and post-breeding fluid accumulations.

The diagnosis of the condition and recommendation for treatment and management of the mare should be performed by a veterinarian experienced in equine reproduction. An accurate diagnosis, development of the correct treatment plan and intensive management during breeding can improve pregnancy rates of problem mares. Each mare has its own characteristics and problems, and needs individualized attention. Following the appropriate steps will help to successfully breed a problem mare in the most cost-efficient way and preserve the welfare of the animal.

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