

## Vulval Conformation

In the normal mare the vulva provides the first effective barrier to protect the uterus from ascending infection. The "normal" mare has three functional genital seals forming a barrier between the external environment and the uterine lumen:

- The vulva
- The vulvo-vaginal constriction
  - Immediately in front of the external urethral opening is the vulvo-vaginal constriction or vestibular seal. In genitally healthy mares this forms the second line of defence against aspirated air and faecal material
- The cervix
  - the cervix forms the important third (and last) protective physical barrier to protect the uterus from the external environment. The cervix must also relax during oestrus to allow intrauterine ejaculation or insemination of semen and drainage of uterine fluid. An inflammation of the cervix is usually associated with endometritis and/or vaginitis.

During oestrus, the vulva and cervix relax, leaving the vulvo-vaginal constriction as the only seal.



*Figure* 1:  
Normal vulval conformation.



*Figure* 2:  
Abnormal vulval conformation.



*Figure* 3:  
Abnormal vulval conformation.

**The vulval lips should be full and firm and meet evenly in the midline with 80% or more of the vulval opening below the brim of the pelvis (Figure One).**

**If the vulval seal is high (more than 4 cm of length dorsal to the pelvic floor) in relation to the pelvic brim, the vestibular seal is incompetent and aspiration of air (pneumovagina) and the aspiration of bacteria and contaminated material into the vagina can occur (Figures Two and Three). The abnormal vulval conformation is most prominent in Figure Three.**

In Figure Two there is 6 cm of vulval length dorsal to the pelvic floor and the vulval lips are angled at 25 degrees to the vertical.

In Figure Three there is 6 cm of vulval length dorsal to the pelvic floor and the vulval lips are angled at 50 degrees to the vertical.

The significance of this conformation is that the normal vulval seal is compromised and there is the development of a pneumovagina and the aspiration of bacteria and contaminated material into the reproductive tract. The initial vaginitis may lead to cervicitis and acute endometritis resulting in subfertility. Contamination of the caudal reproductive tract with bacteria during pregnancy can result in embryonic death, and in late pregnancy can result in the development of placentitis and lead to abortion. Furthermore, the pneumovagina may lead to a urovagina (urine pooling within the vagina) when the vestibule and urethral opening are displaced cranially.



**Figure 4:** Severely abnormal vulval conformation with "vulval shelf" formation.



**Figure 5:** Severely abnormal vulval conformation with "vulval shelf" formation.

The more severe conformational abnormalities are more likely to result in failure of the vulval seal, and to increased faecal contamination since the vulva forms a shelf

on to which faeces may collect. The vulval lips may be angled at 25 degrees (Figure Four) or even 50 degrees (Figure Five) to the vertical in these cases.