Effect of Uterine Torsion on Mare and Foal Survival: A Retrospective Study 1985–2005

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1. Introduction
Uterine torsion in mares occurs from mid to late gestation, and most mares present with signs of colic or dystocia. Previous reports suggest that the prognosis for survival of mares and foals after uterine torsion is 60–70% and 30–70%, respectively.1–3 The purpose of this study was to determine the effect of duration of clinical signs, stage of gestation when uterine torsion occurred, parity, physical examination findings of the mare, and method of correction on the prognosis for survival of the mare and foal. Additionally, this study considered the future reproductive health of the mare.

2. Materials and Methods
Medical records of 63 mares from four referral hospitals were reviewed, and followup phone calls were made to complete the data collection. Data included mare signalment, gestational length at the time of uterine torsion, parity, duration of clinical signs, physical examination parameters of the mare at the time of admission, degree and direction of uterine torsion as viewed from the caudal aspect of the mare, method of correction (rolling, standing flank laparotomy, ventral midline celiotomy), fetal viability at time of detorsion, and survival of the mare and foal to hospital discharge. Data were
analyzed using a $\chi^2$ test for the discreet data and a t-test for the continuous data ($p < 0.05$).

3. Results

Stage of gestation when uterine torsion occurred was associated with survival of the mare and foal. Overall mare survival was 84% (53 of 63 mares): when uterine torsion occurred at <10 mo of gestation 97% (36 of 37 mares) survived, compared with 65% (17 of 26) survival when torsion occurred at >320 days gestation. The duration of clinical signs of uterine torsion was not significantly different for mares that survived (21.8 ± 10 h) compared with mares that died (23.4 ± 8 h). The degree of rotation, method of correction, and packed-cell volume at the time of admission to the hospital did not significantly affect survival of the mare.

Overall foal survival was 54% (29 of 54 foals). When uterine torsion occurred at <10 mo of gestation, 72% (21 of 29) of foals survived, compared to 32% (8 of 25 foals) survival when uterine torsion occurred at >320 days of gestation. Method of correction was associated with foal survival but not with mare survival. When uterine torsion occurred at <10 mo of gestation, foal survival was highest when the torsion was corrected by standing flank laparotomy. There were 30 mares that survived uterine torsion and were carrying a live fetus at the time of hospital discharge. Of these 30 mares, 25 foals lived beyond the neonatal period (83%). In this report, the neonatal period is defined as 7 days from the foaling date. Sixty-seven percent (24 of 36) of mares were successfully rebred after correction of uterine torsion.

4. Discussion

In this study, mare survival was 84%, which is higher than previously reported, and was significantly associated with stage of gestation. More mares survived when uterine torsion occurred at ≤10 mo of gestation compared with survival rates when uterine torsion occurred at >320 days of gestation. Increased fetal size and weight of the reproductive tract make correction of the uterine torsion more difficult at term gestation, especially when an indirect method like rolling the mare is used. In this study, three mares at >320 days of gestation were euthanized because of the inability to correct their torsions despite repeated rolling attempts; however, no mares succumbed to uterine rupture as has been previously reported. In mares at term gestation, correction of uterine torsion by standing flank laparotomy may also be problematic. Increased size of the foal requires more forceful manipulation for correction, which may cause intractable pain in the mare. In this study, two mares at term gestation were euthanized because of evisceration after collapse in the stocks during standing flank laparotomy. For these reasons, the authors feel that mare survival is optimized by correcting the uterine torsion under general anesthesia through ventral midline celiotomy when uterine torsion occurs at term gestation.

Foal survival after correction of uterine torsion was highest when uterine torsion occurred at ≤10 mo of gestation and was best when uterine torsion was corrected through standing flank laparotomy at this gestational age. In later gestation, blood flow to the uterus may be compromised during uterine torsion because of increased tension from greater weight of the fetus; this can cause decreased oxygenation and subsequent fetal demise. Exposure of the fetus to hypoxemia may lead to neonatal complications, such as periparturient asphyxia syndrome. In this study, two foals, born to mares suffering uterine torsion at term gestation, were euthanized within the neonatal period because of complications associated with periparturient asphyxia syndrome. Another mare, after correction of uterine torsion at term gestation, delivered a stillborn foal after hospital discharge.

In conclusion, stage of gestation when uterine torsion occurs should be considered when advising clients regarding the prognosis for survival of mares and foals. Survival rates are best for mares and foals when uterine torsion occurs at <10 mo of gestation and method of correction should be considered for optimal foal survival at <10 mo of gestation. There is a good prognosis for return to breeding soundness for mares after uterine torsion.

References