Reproductive emergencies in late gestation camelids are dominated by uterine torsion. This retrospective study was performed to evaluate clinical treatment and outcome, and to attempt to identify risk factors such as time to referral, laboratory abnormalities, parity, and gestational age. Survival of dams and crias was also calculated and compared to treatment modalities.

The cases included alpacas (n=56) and llamas (n=4). Mean (± SD) age of females was 5.88 ± 2.88 years (range 2-13). Maiden females represented 21.7% of animals, and 78.3% were multiparous. The mean gestational age at the time of presentation was 332.78 ± 26.3 days (range 246-376). Average time to referral was 24.9 ± 28.5 hours (range 0-158). Methods of correction included 3 treatment groups: rolling only (ROL) (60%, n=36), cesarean section only (CS) (23.3%, n=14), and rolling followed by cesarean section (RCS) (16.7%, n=10). There was no significant difference between mean gestational length and treatment method implemented (p=0.11).

The direction of the torsion was clockwise in 81.7% of cases and counterclockwise in 18.3% of the cases. Severity of torsion was categorized as 90° (14.3%), 180° (26.3%), 270° (10.7%), or 360° (48.2%). There was a significant effect of degree of torsion on method of correction, with 360° torsions more likely to undergo CS, either as a solitary treatment method or after rolling (p<0.05).

Survival data were available for all females (96.7%, n=58). Two females died, both after CS. Cria survival following correction was 78.3% and was significantly higher after ROL (100%, n=36) than following CS (71.4%, n=10) or RCS (70%, n=7) (p<0.05).

Laboratory assessment by complete blood count and serum chemistry were within established reference ranges in 65% of cases for which data were available. The most common abnormalities were toxemia (19.9%), hypocalcemia (< 9.0 mg/dL) (5%), toxemia plus hypocalcemia (5%), toxemia plus hepatic lipidosis (3.4%), and elevated creatine kinase (1.7%). All cases of toxemia had concurrent hyperglycemia. Toxic changes and blood biochemistry changes tended to be higher with a prolonged interval to referral.

This study demonstrates that more severe torsions are more likely to require surgical correction and result in death of the cria. More studies are underway regarding CS in camelids.

**Keywords:** Uterine torsion, cesarean section, camelid, toxemia