



## The Management of Dystocia in the West Africa Dwarf Doe

Omamegbe J.O.

Department of Surgery and Theriogenology, Michael Okpara University of Agriculture Umudike, Nigeria

Nwoha R. I. O.\*

Department of Veterinary Medicine, Michael Okpara University of Agriculture Umudike, Nigeria

**Abstract:** Dystocia is best treated by Caesarean section (CS) in the West African Dwarf (WAD) doe. However, this otherwise simple procedure is often associated with high mortalities of does and/or kids because certain simple and inexpensive measures are not taken in the handling of affected does during the period-operative period. This clinical discuss looks at these measures and how they may be effected in a routine farm/clinic practice.

**Keywords:** Management; Dystocia; Caesarean; Section; Goats.

### 1. Introduction

Most WAD does breed when they are immature. A high number of them tend to develop dystocia due mostly to foetal oversize and/or mal-positioning, simultaneous presentation of multiple fetuses at the birth canal, mummifications and monstrosities. [1-6]. The diagnosis of dystocia in WAD doe is usually easy and routine and is based on the history of prolonged and unproductive parturition efforts; the distended abdomen and the presence of parts of the foetus and/or foetal membranes extral-vulval [3]. The presentation, position, number and viability of fetus(es) may be ascertained through radiographic and/or ultrasonographic examinations [7];[5]. Affected does are best managed through CS especially where, as in most cases, manual or mechanical foetal extraction is impracticable. The standard surgical techniques for CS in ruminants are well documented in standard texts of Theriogenology to which the reader is respectfully referred [2, 8].

In most dystocic WAD does, mutation and traction or even fetotomy are impracticable due to the narrowness of the pelvic passage irrespective of parity [4, 7]. The use of these procedures is further precluded because of the ease with which the vulva develops tears due to its natural weakness in does at term [5]. Indeed, these procedures are usually unsuccessful and tend to exacerbate the shock and stress status of these patients [4].

Unfortunately however, even CS in the WAD doe is attended by rather unacceptably high mortality rates particularly in farm practices. The adoption of a variety of supportive measures which are discussed in this presentation during the peri-operative period were found by the authors to enhance the survival rates of both does and kids following CS.

### 2. Clinical Presentation

Generally, a large proportion of dystocic WAD does are presented for veterinary attention, often more than twenty four hours after the onset of parturition efforts and well after the end of stage II of parturition. The does are usually very weak, exhausted, moderately to severely dehydrated, are in a state of septicæmo-hypovolaemic shock and acidosis. Frequently, the fetal membranes and/or limbs protruding from the vulva show evidence of varying degrees of desiccation and putrefaction. The rectal temperature may be as low as 36 to 37.5<sup>0</sup>C.

### 3. Management

The vital parameters of such does should be up-graded before they are subjected to CS [9] if the doe and fetus (es) that are alive are to survive the procedure.

Dystocic does should be allowed time to stabilize physiologically, to some extent, especially if they have been moved long distances to the treatment site. They should not be subjected to additional stress or warmed-up yet. They should be kept in dry and drought-free environments while high loading doses of broad spectrum antibiotics (like a combination of penicillin and streptomycin) are administered parenterally to them.

Next, the doe's air-ways should be cleared of any exudates and the neck extended. The later should not be allowed to kink all through the CS procedure. Then the haemostatic status of the doe should be improved quickly and adequately with an appropriate type (Ringer's or Lactated Ringer's solution plus dextrose/glucose solution in equal amounts) and volume of physiological fluid(s) in order to correct the existing hypovolaemic hypotension, normalize the ionic imbalance and the metabolic acidosis usually associated with shock Hardaway [10] in such cases on the one hand and readily available energy on the other. Care should be taken not to over-hydrate the patient as this very easily results in fatal pulmonary oedema in dystocic does in which usually cardio-pulmonary functions have

\*Corresponding Author

been compromised and which tend to remain recumbent for long periods post operatively. The appropriate volume of fluid to be administered to such patients may be determined based on the existing body weight loss directly attributable to the existing dehydration, the texture and elasticity of the skin, the degrees of dryness of the mucous membranes, the sunkenness of the eye balls and the prolongation of the capillary refill time [11] (Table 2).

Alternatively, where it is possible to determine the patient's packed cell volume (PCV), the amount of fluid to be administered to reduce the usually elevated PCV to a desirable level ( e. g. 40% ) may be determined by using the formula.

Total amount of fluid (mls) required to replace existing fluid deficit = PCV of patient – 40 x Wt (kg) x 1.76 [12].

Unfortunately, most dystoic does are severely to moderately anaemic and therefore have very low PCV values due to other intercurrent clinical conditions. In practice, does with PCV values lower than 15.0% should be administered plasma expanders rather than crystalloids.

Most dystoic WAD does presented with say 7 percent body weight loss may require up to 2.0 liters of fluid for rehydration and replacement of continued fluid losses over a period of 24 hours administered intravenously. In the authors' experience, most does that survive up-to 12 hours post CS normally return to normal food and water intake shortly afterwards.

The passage of urine after the commencement of fluid administration is, in our experience, a reliable indication of a rehabilitated cardio-vascular system and a clinical indication that enough fluids have been administered.

---

\* One kilogram (kg) of fluid is equivalent to one litre of fluid.

When the hypotension has been corrected a dose of a gluco-corticoid (decadron<sup>+</sup> at a dose of 2 mg/kilogram body weight (kbw) or prednisolone -10mg/kbw) may be

administered intravenously or intramuscularly to the doe for their peripheral vascular dilatory and anti-stress effects. The doe should now be warmed up and the rectal temperature maintained at 38.0 to 39.0° Celsius with the aid of either heated pads or hot water bottles placed beneath or in its groin and/or axilla regions during the course of the CS and the immediate post- operative period.

The doe can now be safely anaesthetized for the CS using an inverted "L", line infiltration or para-vertebral nerve blocks of the left flank region [13]. A narrow strip of the skin surface of the anaesthetized flank region is then shaved and prepared aseptically, using warm water, for the CS procedure. This site should then be covered with dry sterile guaze until just before the skin incision is made.

Following full flank analgesia, the doe should be placed on a right lateral recumbency on an operating table covered with large dry drapes with its neck in normal extension.

The laparotomy procedure is routine and as described by Roberts [8] and Arthur, *et al.* [2] except for the following precautionary measures:

The mouth of the doe is kept open with the aid of an empty syringe barrel placed between the upper and lower jaws if the doe is agreeable. The incision site is isolated with drapes large enough

---

+Decadron ( Dexamethasone sodium phosphate. Merck , Sharp and Dohme, Ltd. Herts. U. K.)

to cover the entire doe except for the head and the laparotomy site. The skin and muscle incisions are made long enough to permit easy exteriorization of the gravid uterus with little or no tugging on it.

All peritoneal or uterine fluids exuding from the laparotomy and uterotomy incisions are promptly mopped-up so that they do not seep under the drapes or beneath the doe. Any further loss of blood must be avoided by effective haemostatic techniques and only loose placental membranes should be extracted from the uterus. This way, additional blood loss from bleeding caruncles is kept to a minimum. Tissue desiccation must be avoided by constantly moistening exposed viscerae with warm physiological fluid and, limiting the use of harsh operation lights. The uterotomies should be of adequate lengths for the delivery of the fetuses without the production of adventitious uterine lacerations as these usually cause unintended damages to blood vessels, hemorrhages and prolongation of the time required for the closure of uterotomies. Exteriorization of the uterus and fetal extraction from the uterus should be gradual but continual. The same antibiotics administered pre-operatively should be administered locally into the uterine lumen and into the peritoneal cavity particularly in cases attended by septicemia or contaminated surgical procedure.

Closure of the uterine, muscle and skin incisions is routine as described by Roberts [8] and Arthur, *et al.* [2] and Matthews [14].

---

Does and kids that survive the CS should be closely monitored and kept warm for at least 24 hours after the CS. Does and kids that survive the first 24 hours post operatively are highly likely to survive.

Live kid(s) should be allowed to suckle the doe as soon as the doe is agreeable and the doe should be encouraged to ambulate, eat or drink as soon as it is willing. The antibiotic and other supportive therapy should be continued for the next three to four days post-operatively. At this stage, most surviving does and kids are self supporting. In five cases treated between 2007 and 2010, the post operative management included the administration of some analgesics (keterolac - 2 cases and diclofenac - 3 cases for the control of post operative pain. Although no categorical statement can be made on the effects of these medications on the recovery rates of these few cases, all the does that received them survived and seemed to have resumed ambulation and return to normal appetite earlier than those not so treated.

#### 4. Discussion/Conclusion

The West African Dwarf Goat (WADG) is a livestock in its own right in the southern parts of Nigeria in view of its high population, economic, nutritional and traditional values. Small ruminants, of which the WADG forms a large proportion, serve as a source of income for most families, contribute up to fifty percent of the total protein requirement of the human population Anon [1] and plays an important role in the food security of the region.

Dystocia is the commonest and most important indication for surgery in the WAD doe [4, 7]. In most cases and for economic reasons, the diagnosis of dystocia in the WAD doe can and should be made without resort to expensive radiographic or ultrasonographic investigations [7].

The septicaemo-hypovolaemic and irreversible shock seen in does with dystocia is sequel to an acidemia, severe coagulopathy associated with depleted clotting factors, wide-spread intravascular clots, tissue necrosis and multiple organ failure [10]. In bovines, and possibly all ruminants, endotoxic vasculogenic shock tends to progress very rapidly to irreversibility probably because of the massive venous and capillary dilation caused by the endotoxaemia and the development of micro-thrombi in several organs [15, 16].

Adequate fluid replacement couples with specific anti clotting agents like fibrinolysin and peripheral vasodilators like hydralazine, prazosin, glycerine tri-nitrite, and dibenzylamine have been shown to be very effective in the reversal of shock in man and dogs [10, 17]. Specific vasodilators and anti-clotting agents are not routinely used in veterinary practice, but more readily available agents like gluco-corticoids which have peripheral vaso-dilatory effects and such as prescribed in his discuss could produce similar results especially after adequate fluid replacement.

Most deaths of does from CS occur during the terminal stages of the procedure or during the immediate (6 -12 hours) post operative period (personal observation). The direct causes of these fatalities are probably excessive handling of abdominal viscerae, intra-operative haemorrhage and sudden fall in intra-abdominal pressure by too rapid exteriorization of the gravid uterus or extraction of the foetus from the uterus [8].

The peri-operative measures suggested in this presentation are simple and non-expensive but very critical for the successful outcome of CS in most dystocic WAD does particularly given their small body size. These measures add very little extra costs (about one thousand Naira) on routine CSs in WAD does and do not require any specialized instrumentations.

A large number of does and their kids which are lost each year as a result of dystocia actually translate to total economic loss for small holder goat rearers. The loss of highly fecund (twins, triplets and quadruplets bearing does) results in huge long term financial losses and loss of useful genetic materials for the selection for such desirable traits. However, both does and kids can be saved if dystocic does are submitted early for professional veterinary care and if a comprehensive approach to the management of such cases, as suggested above, is adopted in most cases. Successful management of individual cases of dystocia may be relatively unimportant. However, given the large numbers of dystocic does seen in goat herds, caprine dystocia constitutes a considerable veterinary responsibility and its successful management could play an important part in increasing the population of the second most numerous livestock in the region.

#### References

- [1] Anon, 1979. "International livestock Centre for Africa (ILCA) Report. 1. 25."
- [2] Arthur, G. H., Noakes, D. E., and Pearson, H., 1983. *The caesarean operation. In: Veterinary reproduction & obstetrics*. 6th ed. Bailliere Tindall, Philadelphia: The English language book Society. pp. 308 -324.
- [3] Kene, R. O. C., 1991. "Radiographic investigation of dystocia in the West African Dwarf Goat." *Br. Vet. J.*, vol. 147, pp. 283-289.
- [4] Omamegbe, J. O., 1978. "Dystocia in small ruminants in the Nsukka area." *Journal of Nigerian Veterinary Medical Association*, vol. 6, pp. 51-59.
- [5] Purohit, G. N., 2006. "Dystocia in the sheep and goat – A review." *Indian Vet. Journ. Of Small Ruminants*, vol. 12, pp. 1-12.
- [6] Ogbu, E. O., Omamegbe, J. O., Ukaha, R., Njoku, U. N., Nnakwe, K., and Nwoha, R. I. O., 2012. "Dystocia and Foetal Mummification in a West African Dwarf Doe ( A Case Report)." *Nig. Vet. Journ.*, vol. 32, pp. 357-361.
- [7] Kene, R. O. C. and Sundaravadanan, V. K., 1990. "Dystocia in the West African Dwarf Goat." *Zariya Vet.*, vol. 5, pp. 98-103.
- [8] Roberts, S. J., 1971. *Veterinary obstetrics and genital diseases*. 2nd ed. U.S.A.: Edwards Brothers, Inc. Ann Arbor, Michigan. pp. 263 – 269.
- [9] Crane, S. W., 1990. *Principles of companion animal surgery: In Small Animal Surgery*. Harvey, C. E; Newton, C. D. and Schwartz, A. Edition. J.B. Philadelphia: Lippincott Comp. pp. 1-34.
- [10] Hardaway, R. M., 1979. "Cellular and metabolic effects of shock." *Journ. Amer. Vet. Med. Assoc.*, vol. 175, pp. 81-86.
- [11] Cornelius, L. M., 1980. "Fluid therapy in small animal practice." *Jour. Amer. Vet. Med. Assoc.*, vol. 176, pp. 110 -114.
- [12] Proctor, D. L. and Butler, H. C., 1981. *Postoperative recovery and care. In: Textbook of Large Animal Surgery*. Oehme, F. W. and Prier, J. E. Edition. London: Williams and Wilkins., pp. 584-593.
- [13] Hall, L. W. and Clark, K. W., 1991. *Veterinary anaesthesia*. 9th ed. London: Bailliere Tindall. pp. 260-274.

- [14] Matthews, J., 1999. *Diseases of the goat (Surgical. Techniques)*. 2nd ed. London WC IN 2BL: Blackwell Sciences Ltd. pp. 216-219.
- [15] Anderson, F. L., Kralois, A. C., and Tsagavis, T. T., 1973. "Hymodynamic effects of small amount of endotoxin in the bovine." *Proc. Soc. Exp. Biol. Med.*, vol. 143, pp. 1172 -1175.
- [16] Hassen, A., 1973. "Gram-negative bacteremic shock." *Med. Clin. North. Amer.*, vol. 57, pp. 1403-1415.
- [17] Hardaway, R. M. and Burns, J. W., 1963. "Mechanism of action of fibrinolysin in the prevention of "irreversible" haemorrhagic shock." *Ann. Surg.*, vol. 157, pp. 305-309.
- [18] Daramola, J. O., Adeloye, A. A., Fatoba, T. A., and Soladoye, A. O., 2005. "Haematological and Biochemical parameters of the West African Dwarf Goats." *Livestock Res. Rural Dev.*, vol. 17, pp. 1-10.

**Table-1.** Summary of the Clinical Presentation of 18 Cases of dystocia in West African Dwarf Goats

Duration of dystocia before presentation (hrs)	Number of goats	Essential clinical findings	Supportive therapy	Therapy	Outcome	Comment
Less than 12	4 (3≤9 months old)	Normal vital parameters, less than 5% dehydration protruding foetal limbs sensitive. Risk level=2. Prognosis is good.	Fluids therapy, antibiotics, steroids, vitamins.	Cs=4; underline infiltrative analgesia (30; under L1, L2, L3 Para vertebral block (1).	All 4 doses and four kids survived. 1 doe carried two mummified foetuses.	Excellent outcome due to short duration of dystocia before surgery and low risk status.
12-24	9 (6≤9 months old)	Elevated vital parameters; but cold extremities; dry mucous membranes; CRT ≥ 3 sec. foetal membranes and limbs putrefied in 5 cases; risk level 3; prognosis fair 5 cases; fair to grave 4 cases.	Fluids, warmth (5cases), antibiotics; steroids; vitamins.	3 died before CS; 6 by CS under inverted "L" block (5); and line infiltrative analgesia (1).	4 does survived 6 kids survived immediately after CS but only 2 does and one kids survived up to 18 hrs post CS.	Poor outcome due prolonged duration of dystocia, high risk status of patients and warmth only provided for 5/9 cases.
More than 24	5 (3≤9 months old)	Very weak (2) to comatose (3) hypothermia; elevated HR, RR; weak, thread pulse; putrefied foetal membranes and limbs of foetuses; risk level 4/5; prognosis poor.	Fluid therapy; warmth (3 cases); antibiotics; steroids; vitamins; low dose heparin (2 cases).	3 died before the CS procedure CS underline infiltrative lignocaine analgesia in 2 cases.	1 died before the course of CS; 1 survived for only 6 hours post CS.	Poor but not unexpected outcome. Need more work-up and maybe specific vasodilators and anti intravascular thrombolytic agents like fibrinolysin or low dose heparin.

CS= Cesarean Section LI, L2, L3= Number Of Lumber Vertebrae

**Table-2.** Degree of dehydration as a percentage of body weight loss

Body Weight loss	Physical findings					
	Skin elasticity	Capillary refill time*	Sunken eye Balls	Muscle twitching	Others	PCV % <sup>β</sup>
Less than 5	-	-	-	-	-	30-35
5	Slightly Doughy, Slightly inelastic	-	-	-	-	38-40
7	Moderately Inelastic	2-3 sec	Slightly sunken		Mildly Weak	40-45
10-12	Severely inelastic	More than 3 sec.	Markedly sunken	Involuntary twitching	Moderately weak; cold extremities	45-50
12-15	“	“	“	“	Severe shock; imminent death	Above 50

\*Normal capillary refill time 0-2sec. (adopted from [Cornelius \[11\]](#)).

β PCV values for WAD goats [Daramola, et al. \[18\]](#).