

An Innovative Strategy to Mitigate Fertility Risks Following Dystocia in Egyptian Buffaloes

Megahed G A*

Theriogenology Department, Faculty of Veterinary Medicine, Assiut University, Assiut, Egypt

***Corresponding Author:** Megahed G A, Theriogenology Department, Faculty of Veterinary Medicine, Assiut University, Assiut, Egypt.

Received: February 07, 2022; **Published:** March 25, 2022

Abstract

The strategic applied plan in this study includes:

Firstly, improve the specification of obstetrical courses that are learn to students in the last two years before graduation. It requires improving the learning outcomes of the obstetrical course by adding the teaching skill. Secondary, designing an educational program to raise the awareness of animal owners, farm animal owners, and owners of small animal wealth through educational and training courses. This activity is completed by defining a protocol with veterinary officials for each department in the governorate.

Thirdly, designing a training program to raise awareness of the professional skills of veterinarians. This activity is utilized by setting a protocol with General Veterinarians Syndicate.

Fourthly, designing a connect- map with newly graduated veterinarians and actual veterinarians to discuss the frequent clinical cases in terms of intensity, and rates of recovery as well as, the incidence of rare or abnormal cases.

After applying the strategic applied plan, the fertility index (calving to fertile estrus) of the animals after handling of their dystocia were improved as high rate of calving to estrus after 45 - 60 days (77.034% vs 27.758%) and a lower rate of calving to estrus after > 60 -100 days (1.435% vs 9.253%). Besides, there is a lower incidence (6.220% and 15.311%) of the anestrus and repeat breeding of the animals after handling of their dystocia than that in the previous years (24.199% and 39.597%).

Keywords: *Innovative Strategy; Mitigate Fertility Risks; Dystocia in Egyptian Buffaloes*

Introduction

The reproductive capacity and productivity of buffaloes and cows in Egypt play a good role in maintaining the sustainable food production system. Animal reproduction in Egypt is affected by several factors that include dealing with difficult situations in pregnancy, parturition, and postpartum problems in farm animals [1]. The main problems faced by buffalo's breeders in general and smallholder systems are poor reproductive efficiency and prolonged inter-calving intervals. All reproductive specialists know that there are many challenges to reproduction in farm animals. Now, there are many challenges affecting animal fertility. Which are microbial infections that affect the animal during pregnancy, during, or after parturition [2]. Under most smallholder production systems, the reproductive efficiency of buffalo is affected by factors related to climate, management, nutrition, and intervention of the owner for cases of dystocia that lead to postpartum problems. One of the most important factors is "how to deal with the dystocia in buffaloes by the owner before calling the veterinarian to solve the problem.

Dystocia is one of the most important problems that require immediate attention by veterinarians, for calving difficulty causes severe economic losses to the owners. Regarding the owner's behavior in the situation, he was not aware of the changes that occur within the animal, whether in the reproductive system, birth canal, or the fetus as it passes into the birth canal that leads to dystocia. In dealing with the condition before calling the veterinarian leads to harmful consequences that affect the fetus. It also increases the negative aspects of animal health conditions and sometimes the fertility postpartum [3,4].

Generally, in the practical field, we notice that the negative behavior of the owner which does not go to the veterinary clinic or calling to the veterinarians, unless he fails to deal with the case of dystocia and the animal suffers from health problems due to the owner's intervention without knowing how to intervene in this case. Megahed (2016) recorded that fetal dystocia was common in buffalo-cow at 60.957% of total cases presented, whereas maternal causes constituted 39.043% of all dystocia. Also, the attribution of this high rate of fetal dystocia is the intervention of the owner's handling at the beginning of birth (i.e., at the stage of opening the cervix).

The owner's interference leads to changes in the normal position of the fetus during parturition, which leads to a serious corruption of this dystocia. Atashi, *et al.* (2012) recorded that dystocia significantly decreased lactation performance, so in any economic evaluation of dystocia, not only the lost calf, veterinary costs, the reduced survival, and the increased days open should be considered, but also the decreased lactation performance. Severe dystocia was associated with the deaths of the fetus and subsequent impact on reproductive performance.

Improving the productivity of buffaloes requires an understanding of their potential under each breeding system. In addition, the development of intervention strategies to improve the disadvantages in management, nutrition, and healthcare. It is followed by the intelligent application of sustainable reproductive technologies with the resources available to buffalo breeders.

The present scientific study hypothesizes that educating the owner about dealing with dystocia before contacting the veterinarian. It leads to the ability of the veterinarian to make a correct decision to deal with dystocia, the condition of the case will be still fresh, which leads to improving and reducing the damage that she caught the animal after dealing with dystocia.

The main objective's study is to determine the effect of the intervention of the owner in dystocia cases that leads to the reproductive problems which occur during the postpartum period.

The strategic applied plan in this study includes the following

1. Improvement and change the concept of veterinary students before graduating for their job description when dealing with cases in the animal clinic. It is occurred by developing the specification of an obstetrical course. These courses educated students in the last two years before graduation. This development requires improving the learning outcomes of the obstetrical course by adding the teaching skill. The teaching skill acquiring students the skill of how to clarify and explain the causes of dystocia with appropriate to the animal owner's culture and the owner of the animal is advised first aid how to provide first aid to the affected animal before contacting the veterinarian.
2. Design an educational program to raise the awareness of animal owners, farm animal owners, and owners of small animal wealth. This program included education and training courses in dealing with difficulties related to animal fertility and problems of pregnancy and parturition. This protocol is implemented by defining a protocol with veterinary officials for each department in the governorate.
3. Design a training program to raise awareness of the professional skills of veterinarians through training courses aimed at dealing with cases professionally. This activity is implemented by setting a protocol with General Veterinarians Syndicate.

- We made a contact map with newly graduated vets and actual vets because the veterinary clinic’s cases should be discussed with them in terms of degree and rates of recovery and rare cases (if present).

Outcome’s analysis and discussion

A retrospective study was done on buffaloes (n = 210) presented at our Educational Veterinary Hospital, Faculty of Veterinary Medicine, Assiut University, Egypt in four years from October 2016 to September 2019. The age of the animals ranged from 4 to 8 years. In the present study, all cases suffered from dystocia (according to the owner’s complaint).

Treatment protocols in recent cases include

First, allow the animal to give birth on its own by leaving it for a limited time. It leads to an increase in the tone of uterine muscle contraction and dilation of the cervix, in addition to calcium injections, fluid therapy, and oxytocin.

The total cases were diagnosed depending on the case history and transvaginal examination. After determining the causes of dystocia, the selected proper method was done for handling and solving problems. The handling method adopted to correct the dystocia and fetal survival depends upon the time of presentation of the animal after the onset of the second stage of labor. The uncorrectable few cases of dystocia were handled by cesarean section. These cases treated by cesarean section were excluded from the numbers of buffaloes in this study. All cases were treated by correction of abnormal presentation, position, the posture of the fetus, then force extraction with obstetrical ropes or chains with lubricant materials after correction.

The parameters of reproductive performance which reflect the subsequent postpartum risks from dystocia are:

- The mortality rate of dams and calves
- Calving to estrus period (45 - 60 days, and to (> 60 - 100 days)
- Anestrus (more than 100 to 150 days)
- Repeat breeding cases.

After applying the strategic plan from 2016 to 2019, the obtained results (Table 1) in this study are compared with the obtained results of previous years from 2012 to 2015 at the same area and location (Table 2). The mortality rate of the dam was lowering (0.476%, 1/ 210 in Table 1) than in the previous years in table 2 (1.404%, 4/ 285). The mortality rate of calves is 22.381% (n = 47) and 49.123% (n = 140) respectively. After applying the strategic applied plan, the fertility index (calving to fertile estrus) of the animals after handling of their dystocia were improved as high rate of calving to estrus after 45 - 60 days (77.034% vs 27.758%) and a lower rate of calving to estrus after > 60 -100 days (1.435% vs 9.253%). The anestrus and repeat breeding were lower (6.220% and 15.311%) than in the previous years (24.199% and 39.597%).

Parameters of Reproductive performance	2016 (n = 45)	2017 (n = 50)	2018 (n = 60)	2019 (n = 55)	Total (n =210)
Mortality rate of mother	0.000% (n = 0)	0.000 % (n = 0)	1.667% (n = 1)	0.000 % (n = 0)	(1) 0.476 %
Mortality rate of calves	33.333% (n = 10)	28.000% (n = 14)	22.034% (n = 13)	27.273% (n = 10)	22.381% (n = 47)
Calving to estrus period (45-60 days)	64.444% (n = 29)	78.000% (n = 39)	81.356% (n = 48)	81.818% (n = 45)	77.034% (n = 161)
Calving to estrus period (>60 -100 days)	4.44% (n = 2)	0.000% (n = 0)	1.695% (n = 1)	0.000% (n = 0)	1.435% (n = 3)
Anestrus (>100 to 15o days)	13.333% (n = 6)	4.000% (n = 2)	3.389% (n = 2)	5.455% (n = 3)	6.220% (n = 13)
Repeat breeding cases	17.778% (n = 8)	18.000% (n = 9)	13.559% (n = 8)	12.727% (n = 7)	15.311% (n = 32)

Table 1: The improvement of reproductive parameters after applying the strategic protocol.

Parameters of Reproductive performance	2012 (n = 63)	2013 (n = 79)	2014 (n = 73)	2015 (n = 70)	Total (n = 285)
Mortality rate of mother	1.587 % (n = 1)	2.532 % (n = 2)	1.369 % (n = 1)	1.587 % (n = 0)	(4) 1.404 %
Mortality rate of calves	39.683% (n = 25)	53.165% (n = 42)	53.45% (n = 39)	48.571% (n = 34)	49.123% (n = 140)
Calving to estrus period (45-60 days)	25.806% (n = 16)	25.974% (n = 20)	27.778% (n = 20)	31.429% (n = 22)	27.758% (n = 78)
Calving to estrus period (>60 -100 days)	9.677% (n = 6)	10.389% (n = 8)	6.944% (n = 5)	10.000% (n = 7)	9.253% (n = 26)
Anestrus (>100 to 150 days)	29.032% (n = 18)	20.779% (n = 16)	16.667% (n = 12)	31.49% (n = 22)	24.199% (n = 68)
Repeat breeding cases	35.484% (n = 22)	42.857% (n = 33)	48.611% (n = 35)	28.571% (n = 20)	39.597% (n = 110)

Table 2: The reproductive parameters before applying the strategic protocol.

Some researchers have recorded results of postpartum anestrus that may be like the results of this study (before applying the protocol). From these results, the incidence of anestrus recorded between 9.18 - 82.50% [5 -11].

Dystocia considers an important possible risk factor that increases the calving-fertile estrus period (days open) and affects reproductive performance in dairy cows [12]. This report coincided with the obtained results which reported that the incidence of Calving to estrus period (> 60 -100 days) was 24.99% before the implementation of the improvement protocol, by applying this protocol, it became 6.22%.

When comparing the obtained results during the period from 2012 to 2015 (before applying the optimization protocol) and from 2016 to 2019 (after implementing the optimization protocol), it was found that higher fetal and maternal mortality rates could be explained by the intervention of the animal owner at the beginning of the cervical opening stage or a fault in the presentation, position, or position of the fetus during parturition). According to the owner’s beliefs, this intervention at the beginning of parturition helps the cow from the hypothesis of fear of suffocation of the fetus. This intervention creates a high risk for postpartum fertility.

The interpretation for the obtained results and give a strategic counsel

Dystocia is an unavoidable challenge in livestock, particularly with primiparous female animals. Prevention and appropriate management will decrease cow and calf morbidity and mortality, which will improve the economic income of livestock industries. Early identification, appropriate intervention, and the correct decision to deal with dystocia improve outcomes [13].

After studying this phenomenon, it was necessary to devise a strategic plan to improve and mitigate the subsequent risks of dystocia in the Egyptian buffalo. After applying the optimization protocol in this study,

It is evident from the results presented in this study that few cases are coming to the hospital with dystocia.

The interpretation and explanation for this are that the animal’s owner leaves the condition without intervention. Consequently, the parturition process for the animal will be normal without changing to dystocia. It is because the veterinarian educates the owner or the outcome of the education. After all, entering the owner without knowledge leads to changing the case into dystocia.

Also, we conclude from this study that

- The dangers resulting from dystocia are mitigated. The interpretation for this is that all cases that come to the hospital are without intervention of the owner and subsequently it is easy to work with them by the veterinarian, which leads to a reduction or stops the dangers that occur postpartum.
- In addition, the veterinarian deals with the case with scientific skills that he acquired and trained during his studies at the college, which qualifies the veterinarian to solve the problem of dystocia without subsequent risks.
- Training through an educational program for owners and breeders is significant and has a positive effect on rates of dystocia as well as postpartum fertility indicators in buffaloes. This program includes:
 - Information on the method of normal parturition.
 - How to deal with a case of dystocia.
- The need to call the veterinarian in cases of dystocia without interference in these cases.

Bibliography

1. Megahed GA. "A Strategic Plan to Deal with the Uterine Torsion in the Egyptian Buffalo". *Journal of Dairy and Veterinary Sciences* 7.1 (2018): 555702.
2. Megahed GA. "Invitation to the Innovative Research in Egyptian Buffalo's Reproduction". *Approaches in Poultry, Dairy and Veterinary Sciences* 7.3 (2020): APDV.000663.
3. Megahed GA. "Retrospective study on the fetal maldispositions as a cause of dystocia in Egyptian buffalo-cows: strategic plan to improve". *Journal of Dairy, Veterinary and Animal Research* 3.5 (2016): 161-162.
4. Atashi Hadi., *et al.* "Prevalence, Risk Factors and Consequent Effect of Dystocia in Holstein Dairy Cows in Iran". *Asian-Australasian Journal of Animal Sciences* 25.4 (2012): 447-451.
5. Kumar S and Kumar H. "Reproductive disorders in rural buffaloes". *Livestock Advisor* 20 (1995): 9-16.
6. Tomar KPS., *et al.* "Seasonal variations in reproductive problems of buffaloes under field condition". *The Indian Journal of Animal Reproduction* 23 (2002): 18-20.
7. Nanda AS., *et al.* "Enhancing reproductive performance in dairy buffalo: major constraints and achievements". *Reproduction* 61 (2003): 27-36.
8. Prajapati SB., *et al.* "Etiopathological study of endometritis in repeat breeder buffaloes". *The Journal of Buffalo* 2 (2005): 145-165.
9. Khan HM., *et al.* "Peripartum Reproductive Disorders in Buffaloes – An overview". *Veterinary Medical Journal* 4.2 (2009): 38.
10. Kumar PR., *et al.* "Incidence of postpartum anestrus among buffaloes in and around Jabalpur, Veterinary World 6.9 (2013): 716-719.
11. Thakor D and Patel D. "Incidence of Infertility Problems in Cattle and Buffaloes.

12. OKAWA Hiroaki, *et al.* "Risk factors associated with reproductive performance in Japanese dairy cows: Vaginal discharge with flecks of pus or calving abnormality extend time to pregnancy". *Journal of Veterinary Medical Science* 81.1 (2019): 95-99.
13. Funnell BJ and Hilton WM. "Management and Prevention of Dystocia". *Veterinary Clinics of North America: Food Animal Practice* 32.2 (2016): 511-522.

Volume 7 Issue 4 April 2022

©All rights reserved by Megahed G A.