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# THE EFFECT OF OVARIAN CYST ASPIRATION ON THE DAIRY COW PREGNANCY RATE

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**Abstract**: In dairy cows' reproduction, ovarian cysts are one of the most significant contributors to infertility, leading to considerable economic losses. Over the years, there has been some debate regarding the diagnosis and treatment of ovarian cysts. While the OvSynch protocol is commonly used, the pregnancy rates following this treatment tend to be relatively low. The approach to treating ovarian cysts can vary depending on the type of cyst. For follicular cysts, the recommended treatment is the administration of GnRH. In contrast, luteal cysts are typically treated with PGF2 $\alpha$ . If it is not possible to distinguish between follicular and luteal cysts, the suggested treatment is also GnRH. An alternative method for treating follicular cysts is cyst puncture. Thus, this study aims to evaluate the effects of ovarian cyst aspiration on reproduction of dairy cows. For this study, twenty repeat-breeding dairy cows diagnosed with follicular cysts were divided into two groups, each consisting of 10 cows: the OCE group (n = 10) and the OCP group (n = 10). In the OCP group, the ovarian cyst aspiration was performed on the day of cyst diagnosis, while the cows in the OCE group did not receive any treatment for 21 days. Compared to the OCE group, in which 20% registered a spontaneous recoveryin the OCP group, 60% of the cows recovered from the first aspiration, 40% required a second ovarian cyst aspiration. Finally, the pr, equancy rate was 40% in the OCP group and 10% in the OCE group. This preliminary result provides the premises for future studies regarding ovarian cysts ultrasound-guided transvaginal aspiration.

### Introduction

✓ Over time, the increase in milk production among dairy cows has been associated with a rise in reproductive disorders. One of the most significant of these is cystic ovarian disease, which has considerable economic implications. While most experts recommend treating this reproductive disorder using the OvSynch protocol, some argue that accurately diagnosing the type of cyst is crucial for selecting the appropriate treatment.

✓ Recently, we defined ovarian cysts—either follicular or luteal—as anovulatory ovarian structures with a cavity larger than 20 mm in diameter, occurring in the absence of a corpus luteum. The distinction between follicular and luteal cysts lies in the thickness of their walls: follicular cysts have walls that measure less than 3 mm, while luteal cysts have walls thicker than 3 mm.

✓ Although various therapeutic approaches have been explored, there have been limited studies assessing the impact of ultrasound-guided transvaginal cyst aspiration on the reproductive performance of dairy cows. This study aims to evaluate the effects of this treatment on the pregnancy rate of dairy cows.

# **Results and discussions**

- $\checkmark$  From the total of 10 cases in which ultrasound-guided transvaginal aspiration was performed, four of them (40%) showed recurrence of ovarian cysts and required a new ultrasound-guided transvaginal cyst aspiration. Six cows (60%) from the OCP group showed estrus after approximately 10 days from the first ultrasound-guided transvaginal aspiration, being artificially inseminated 12 hours after the end of estrus.
- ✓ Of the total cases used for ultrasound-guided transvaginal cyst aspiration, four of them were diagnosed as pregnant at 30 and 90 days after artificial insemination (pregnancy rate = 40%). In the OCE group, two cows showed spontaneous recovery (20%) after ovarian cyst diagnosis, and after artificial insemination procedures, one cow was diagnosed pregnant at first pregnancy check (pregnancy rate = 10%).



# Material and method

✓ For this study the 20 repeat-breeding dairy cows with follicular cysts were divided into two groups of 10 cows each: the OCE group (n = 10) and the OCP group (n = 10);

 $\checkmark$  The OCE group didn't receive any treatment for a period of 21 days. In contrast, the OCP group, which also included cows diagnosed with ovarian cysts, underwent an unconventional therapy: ultrasoundguided transvaginal aspiration of the cysts was performed to drain their contents;

✓ The ovarian cyst aspiration was performed using an OPU device (Minitube GmBH, Germany) attached to an ultrasound machine (Aloka Prosound 2, Hitachi, Tokyo, Japan) and an aspiration pump (Rocket medical, Watford, England);

✓ During the study, cows were balanced between pens by (days in milk) DIM and parity. Calving dates, breeding dates, and DIM were obtained from the AfiMilk management software (AfiMilk, Kibbutz Afikim, Israel).

✓ Estrous cows were identified through the AfiMilk (AfiMilk, Kibbutz) Afikim, Israel) daily estrus report and SenseHub (MSD Animal Health, USA), and each cow was examined by an experienced veterinarian;

✓ Blood samples were collected from both groups of animals to determine serum progesterone levels. After the serum was collected, it was stored at -80°C until the progesterone concentration was measured using the ELISA immunoenzymatic system (Tecan, model Sunrise RC, Männedorf, Switzerland) along with the Bovine ELISA kit.

**Figure 1.** Representative images of luteal (A) and follicular (B) cysts which were aspirated by the OPU procedure. Image C represents the ovary on day 5 after cyst aspiration



Figure 2. Representative image showing the activity trend in cystic cows after ovarian cyst aspiration. It can be observed that around day 10 after the procedure, most cows exhibit a high activity trend, indicating that the cows are in estrus. Day 0 represent the day of ovarian cyst aspiration.

## Conclusions

> According to this study, it can be concluded that ovarian cyst treatment by ultrasound-guided transvaginal cyst aspiration can be considered an unconventional therapy for ovarian cysts or cases in which ovulation of the dominant follicle does not occur after the end of estrus.



