

A RETROSPECTIVE STUDY ON TWINNING AND LIVE FOALING RATES AFTER MANUAL REDUCTION IN THOROUGHBRED MARES

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ABSTRACT

Twinning is an important cause of pregnancy loss in mares, which is often associated with the economic loss to the thoroughbred industry. The rate of twinning was documented as 9% (84/890), while the live foal rate was 77% (65/84) after manual reduction. Influence of mare's age, reproductive status, ovarian activity, number of ovulations, month of covering and mare's repetition on twinning rates were also studied. The present study was undertaken to record the twinning rate and live foal rates in thoroughbreds as there are no recent publications.

Key words: Live foal rates, manual reduction, multiple ovulations, thoroughbred mares, twinning.

INTRODUCTION

Greater incidence of multiple ovulations in thoroughbred mares leads to higher twinning percentage (19%) (Ginther, 1982) and is one of the most important causes of pregnancy loss during early gestation (Hodder et al., 2008). Various measures were taken to reduce the incidence of twinning, which included breeding in the presence of >one mature graafian follicles on the ovary and also eliminating the breeding of old aged mares etc (Pascoe, 1983 and Deskur, 1985). Abortion due to twinning has declined because of the routine use of ultrasonography for early identification of twins (Hodder et al., 2008) and reduction of one of the embryos is possible when performed before its implantation (Day 16) since the embryos are small, uterine wall is thin and little pressure is needed to rupture the vesicle (Ginther, 1984). The present study was aimed to record the twin pregnancy rates and live foaling rates in thoroughbred mare as meager number of publications were available on perusal of literature especially in thoroughbreds.

Breeding records from 2010 to 2019 were evaluated in a thoroughbred stud farm to identify twin pregnancies and live foaling rates after taking few points like manual reduction and influence of mare's age, reproductive status, ovarian activity, month of covering and repeatability of mares that had twins in to consideration. Mares were divided into five groups based on age as young (3-7 years), young middle (8-12), mid-teens (13-16), older teens (17-20) and over 20 years (Schnobrich et al., 2013).

Transrectal probe (7.5 MHz) was used to examine the mares at 14 days post ovulation for pregnancy verification and evaluation of twin pregnancy. After

confirmation of twinning (figure. 1), the smaller embryonic vesicle was chosen for twin reduction as early as day 14 post ovulation. But on some occasions both the embryonic vesicles were adjacent and manual rupture of embryonic vesicle was not possible. In such situations, twinning reduction was attempted on next day or after two days. In the present study, maximum number of twins was manually reduced between day 14-16 post ovulation while only one embryo was manually ruptured on 19th day post ovulation. Immediately after manual rupture each mare was treated with Inj. Flunixin meglumine 500mg intravenously since there could be increase in endogenous PGF2a release in response to uterine manipulation (Schnobrich et al., 2013) without exogenous progesterone supplementation.

In the present study, a total of 84 twins (9%) out of 870 pregnancies were recorded over a period of 10 years. Deskur (1985) and Wolfsdorf et al., (2009) have recorded 3.3% and 1-2% twinning rates, respectively which is lower when compared to the current study.

As the present study was conducted at one farm, breeding characteristic of the individual mares were studied effectively. Thirty twin pregnancies (37%) had occurred in 12 mares which had twin pregnancies in the previous gestations. One mare had twins for 6 times in her breeding life. These results indicated that some mares had hereditary predisposition for twinning.

Twins were identified among all age groups but not in the mares aged above 20 years. Young and young middle age groups had higher twin percentage (63%) than mid-teens and old teens (37%) groups (Table. 1). But Deskur (1985) had suggested that removal of older

mares in view of more twins recorded in mares above 16 years of age.

After manual reduction, 77% (65/84) of the mares produced live foals while 23% (19/84) of the conceptus had mortality. Young age (3-7), young middle age (8-12) and mid-teen (13-16) had equal incidence (32%) of resorption or abortion. Only one older teen (17-20) out of 9 had resorption at 18 days of pregnancy. Schnobrich et al., (2013) observed that higher pregnancy losses occurred in older mares.

Mares with foal had a higher incidence of twins (56%) than barren (32%) and maiden (12%) mares. On the contrary, Ginther (1983) and Allen et al., (2007) have reported that the barren and maiden mares had more multiple ovulations resulting in twins. Merkt and Jochle (1993) concluded that mares with foal at foot were less likely to carry twins due to high nutrient requirements and also opined that well fed mares had a better chance to carry twin pregnancies. The percentage of twinning in mares bred during foal heat and during first cycle, second cycle and third cycle after foal heat was 15.0, 49.0, 23.0 and 15.0, respectively. Further, Pregnancy losses were more due to early embryonic mortality (52%) than late term abortions. Foal at foot mares had higher pregnancy losses of 68% (13/19). Three foal heat pregnancies were terminated out of the seven foal heat twin pregnancies.

The twin pregnancies were recorded as 83 per cent during in March, April and May months while during February (5%), June (8%) and July (4%) months the incidence of twins was lower. This might be due to the active breeding season in the geographical region during March, April and May months.

It was recorded that out of 890 ovulations, about 96% of ovulations were multiple ovulations. Maximum twin pregnancies were preceded by multiple ovulations (96%) except in three pregnancies which occurred due to single ovulation. During the study period, out of a total of 360 multiple ovulations, only 23% of the mares (84/360) had twins at 14 days post ovulation examination. The lower incidence of twinning might be due to fertilization of one or resorption of one among the twin fetuses before 14 days examination. Ovulations occurred from both the ovaries in 49% of the mares while 51% of the mares had multiple ovulations from one ovary with 30% of ovulations from right and 21% of ovulations from left ovary. These findings are contradictory with the observations of Squires et al., (1987) and Riera et al., (2006) who have reported ovulations from both the ovaries in twin pregnancies.

The present study concludes that age is not an influencing factor for twinning in mares as all the age groups under study had twins at the same time pregnancy losses could occur at any age unlike the earlier reports which cited higher incidence in olden mares. Mares with a history of twin pregnancies must be checked carefully in the subsequent pregnancy examination. Most of the twins occurred following multiple ovulations from either ovaries or single ovary. Foal at foot mares from organized stud farms might result in multiple ovulations and twin pregnancies as the nutritional status of these mares was good.

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Table.1 Influence of age on the twinning

Age	Number of twins	Twinning percentage
Young (3-7)	28/84	33%
Young middle age (8-12)	25/84	30%
Mid-teens (13-16)	22/84	26%
Old teens (17-20)	9/84	11%



Figure. 1 Adjacent embryonic vesicle at 14 days post ovulation.