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Evaluation of gender, sire and dam as a predisposing factor for umbilical hernia and its surgical management in thoroughbred foals: A retrospective study (2002-2020)

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Abstract

The present study was carried out in an organized stud farm to evaluate the factors involved in umbilical hernia of foals in South India (Karnataka) from 2002 to 2020. A total of 1067 live foals were included in the study. Seventy nine foals were diagnosed with umbilical hernia either at birth or developed later in few weeks which accounted to an average occurrence rate of 7.3%. Gender wise analysis revealed that fillies (10.1%) carried highly significant risk for umbilical hernia than colts (4.5%). As this study was confined to a single stud farm, involvement of dams and sires were also considered which revealed that sires had significant risk of producing foals with hernia ranging from 3.7% to 13.1%. Further analysis revealed that twenty mares had more than two foals affected with umbilical hernia and even two mares individually produced three foals which had hernia out of eight foals in their lifetime. All the umbilical hernias were managed with open method of herniorrhaphy without any complications and recurrence.

Keywords: umbilical hernia, thoroughbreds, females, heredity, open method herniorrhaphy

Introduction

Hernia is defined as a protrusion of an organ or a tissue through an abnormal opening. Umbilicus is the last part of body wall to close during the development of the fetus. The incomplete closure will result in umbilical hernia [1]. Umbilical hernias are the second most common congenital defect in foals [2] and females were at high risk of developing this condition [3, 4]. It is common in young foals and estimated to occur in 0.5% to 2% of the population [4, 6]. Hernias which are smaller than three to four fingers will resolve on their own by 12-14 months of age [1] and umbilical hernias have been corrected by several methods including surgical and non-surgical methods. Complicated hernias require correction by surgical method and uncomplicated hernias can be managed with either surgical or non-surgical method depending upon the facility available. Every method has its own advantages and disadvantages. Ultimately, even if it is uncomplicated hernia, it is important to maintain the cosmetic appearance in show horses or yearlings which may otherwise affect the sales value of the young horses.

Materials and Methods

This study was done in an organized thoroughbred stud farm located at Kunigal, South India from 2002 to 2020. The data was collected from every year foaling report and medical report from stud health records. It was found that a total of 1067 thoroughbred foals had born from 2003 to 2021 which included 513 colts and 554 fillies. Out of it, 79 foals had umbilical hernia which included 23 colts (29%) and 56 fillies (71%). These foals were produced by nine breeding stallions. The lowest producer was with 23 foals and the highest producer with 450 foals. As this study was carried out at single place, a complete study on each sire and dam was possible. Out of 79 foals, 42 foals were born to 20 mares which is indicative that 20 mares produced two or more affected foals in their life time.

Surgical Management of Umbilical Hernia

Open method of herniorrhaphy was followed in all the foals without any recurrence. Foals were operated from 2 to 4 months of age. Foals were fasted for 3 hours prior to surgery. Premedication was done with Xylazine Hydrochloride (XYLAXIL-100 1.1mg/kg bwt i.v) and

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after five minutes, induction was done with Ketamine Hydrochloride (Aneket® 2.2mg/kg bwt i.v) and Diazepam (Calmpose® 0.05mg/kg bwt i.v). Maintenance was done with Xylazine Hydrochloride and Ketamine Hydrochloride at half the dose rate.

Foal was placed in dorsal recumbency and surgical site was aseptically prepared in a routine manner. An elliptical shaped incision was made around the umbilicus. Fascia was separated by blunt dissection and hernial sac was identified. The weak hernial sac was cut and strong margins were made for suturing. Linea alba and sub-cutis were closed with no. 1 absorbable suture Polyglactin 910 (VICRYL) in simple continuous pattern. Skin was either stapled or sutured with no.1 non-absorbable suture material braided polyamide (supramid) in cross mattress. Post-operatively soft abdominal bandage was done for 2 days to prevent edema formation and post-operatively Benzylpenicillin (BENZYL PENICILLIN 22000IU/kg bwt i.v), Gentamicin (GENTABIOTIC 6.6mg/kg bwt i.v) and Phenylbutazone (Artizone -S 4.4mg/kg bwt i.v) were given for five days. Tetanus toxoid (TETANUS VACCINE ~20Lf i.m) was also given on the day of surgery. The foals were kept in stall rest for first 15 days. Then they were sent out to smaller rings for one week and later to smaller paddocks for another week. After four weeks of surgery, foals were allowed to go back to regular lots and exercise. All the foals recovered without any complications and recurrence.

Results and Discussion

Out of 1067 live foals studied for the occurrence of umbilical hernia, 79 foals were diagnosed with umbilical hernia which constituted to 7.4% of foal's population (Table. 1). This is relatively high when compared to earlier reports which had about 0.5 to 2% of foal's population. Mainly fillies constituted high with 71% and colts constituted 29%. Out of 513 colts born, 23 colts had umbilical hernia with 4.4% and out of 554 fillies born, 56 fillies had umbilical hernia with 10.1%. This shows that fillies have more risk for getting umbilical hernia. This is in accordance with Hayes, 1974; Freeman and Spencer, 1991 [3,4].

A total of nine stallions were used for breeding in this farm from 2003 to 2021. The details of the foals produced by each stallion are given in Table. 2. Umbilical hernia was recorded from all the stallions used for breeding. The total number of foals produced by each stallion was variable from 23 to 450. As per the data, occurrence of umbilical hernia to various stallions was also variable from 3.7% to 13.1%. Out of nine sires, 2 sires showed higher occurrence (greater than 10%) and 7 sires showed lesser than 10% occurrence.

Out of 79 umbilical hernias, 42 hernias were produced by 20 dams. In this 18 dams produced two affected foals each and two dams produced three affected foals each in their life time. All of these 20 mares have produced approximately from 6 to 11 foals in their life time and they produced foals with hernia to different stallions. This study shows that some mares are prone to produce foals that get umbilical hernia in their life.

Even though, lots of methods are available for the management of umbilical hernia, open method of herniorrhaphy was resorted and no any conservative method was followed. As there is always a possibility of intestinal strangulation in the hernial sac and as the farm has good infrastructure and faculty with surgical expertise surgery was done as and when umbilical hernia was identified. In addition to the meager medicine costs, it is relatively easy to operate

the young foals. Hence without a wait and see policy all foals identified with umbilical hernia were operated at the earliest considering the criteria that maintaining the cosmetic appearance of the young horses is highly inevitable and all the foals have to go for show at yearling's sale.

Table 1: Distribution of umbilical hernia by year wise

Year	Total foals	Total hernia	% Affected
2002	46	3	6.5
2003	59	10	16.9
2004	46	4	8.6
2005	59	2	3.38
2006	49	3	6.1
2007	47	3	6.3
2008	55	3	5.4
2009	63	3	4.7
2010	54	2	3.7
2011	73	4	5.4
2012	53	2	3.7
2013	55	6	10.9
2014	67	5	7.4
2015	60	3	5
2016	55	5	9
2017	45	2	4.4
2018	63	6	9.5
2019	58	5	8.6
2020	60	8	13.3
Total	1067	79	7.4

Table 2: Distribution of umbilical hernia by sire wise

Sire	Total foals	Total hernia	% affected
Sire 1	450	27	6
Sire 2	53	3	5.6
Sire 3	121	15	12.4
Sire 4	53	2	3.7
Sire 5	29	2	6.8
Sire 6	210	15	7.1
Sire 7	64	6	9.3
Sire 8	64	6	9.6
Sire 9	23	3	13.1

Conclusion

Open method of herniorrhaphy is preferably an ideal method to consider while attempting a surgical procedure in foal as the intestinal contents are safe while suturing. This study confirms that fillies have more chances of getting umbilical hernia and few dams have more chances to produce foals with umbilical hernia. Though the involvement of the stallion's heredity is questionable as all the stallions produced foals with hernia with varying range in the study, further genetic research with more sample population will help to identify the heredity factors for umbilical hernia in the future.

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References

1. Michael Ball. Umbilical hernia. <https://thehorse.com/14616/umbilical-hernia/1998>.
2. Priester WA, Glass AG, Waggoner NS. Congenital defects in domesticated animals: general considerations.

- Am J Vet Res 1970;31:1871-1879.
3. Hayes HM. Congenital umbilical and inguinal hernias in cattle, horses, swine, dogs and cats: risk by breed and sex among hospital patients. Am J Vet Res 1974;35:839-842.
 4. Freeman DE, Spenser PA. Evaluation of age, breed, and gender as risk factor for umbilical hernia in horses of a hospital population. Am J Vet Res 1991;52:637-639.
 5. Fretz PB, Hamilton GF, Barber SM, Ferguson JG. Management of umbilical hernias in cattle and horses. J Am Vet Med Assoc 1983;183:550-552.
 6. Greenwood RES, Dugdale Dj. Treatment of umbilical hernias in foals with elastrator rings. Equine Vet Edu 1993;5:113-115.