

# THE OCCURRENCE OF UMBILICAL HERNIAS IN KARAKUL SHEEP

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## ABSTRACT

The occurrence of umbilical hernias in Karakul sheep can be as high as 71% of the progeny of a ram if all the hernias are taken into account. 25.7% of all the lambs born at the Hardap Karakul Centre were born with hernias though only 5% had hernias measuring 13mm and larger. There is a tendency for umbilical hernias smaller than 14 mm to cicatrize within a period of 3 months.

The heritability of umbilical hernias was found to be 0.12 by the regression of offspring on midparent value (n = 74).

## INTRODUCTION

The Karakul is one of the few breeds of sheep, if not the only known, where attention is given to umbilical hernias. This attributed to the fact that Karakul lambs are described when they are a day old and that umbilical hernias are then easy to determine.

As early as 1962 the Karakul Breeders' Society (KBS) had already drawn the attention of breeders to the occurrence of umbilical hernias, especially breeders who sold rams. It was, however, only in 1987, after the KBS was computerised that the recording of umbilical hernias actually started.

The breeders are forced through the "notice of births" to determine and record umbilical hernias. This is only applicable to stud breeders and is probably not very accurate especially in the case of lambs that are slaughtered and also the fact that in some cases all the umbilical hernias are mentioned and in others only the larger sizes.

At the Karakul Centre, where all the lambs are tested for umbilical hernias, the percentage of lambs with hernias is as high as 71% of the progeny of a ram. This percentage includes hernias of all sizes and this led to the investigation of the occurrence of umbilical hernias.

Up to date no reference of umbilical hernias has been found in literature and several talks with livestock experts and veterinary surgeons also produced little information.

## MATERIAL AND METHODS

The investigation comprised the following:

- \* The quantification of umbilical hernias
- \* The cicatrization of umbilical hernias
- \* The occurrence of umbilical hernias in Namibia

### The quantification of umbilical hernias.

Hernias occur in various sizes and in order to determine if all the sizes are undesirable, it was necessary to first quantify it.

A board with holes of different sizes was used to determine the size of the hernias. Five different sizes were used: 11, 12, 13, 14 and 15 mm holes.

The following method was applied:

The lamb was hung by its front legs and slightly supported under the tail. The size of the hernia was determined by using the index finger. In some cases the umbilical cord impedes the evaluation of the size of the hernia.

### The cicatrization of umbilical hernias.

This was determined by applying the following two methods:

\* 42 Lambs with different sized hernias were identified at birth. The hernias of these lambs were then measured on a weekly basis up to the age of 12 weeks.

\* The hernias of all the ewe lambs, which were kept at the Karakul Centre as future test flock ewes, were measured at day-old and then again at 13 months.

### The occurrence of umbilical hernias in Namibia.

This was done in the following manner:

\* 13 Farms which were representative of most of the small stock areas were identified. A sample comprising of 100 ewes per farm as well as the rams that were available, were measured. The hernias of these animals were measured while they were in a standing position. Their age were determined by the number of permanent teeth. These hernias were classified under the following three sizes:

- Large (15 mm and larger)
- Medium (11 - 14 mm)
- Small (10 mm and smaller)

\* During the 1990 lambing season the birth notices of 10 of the above-mentioned breeders were used to determine the percentage of hernias. The other three breeders did not forward any birth notices to the KBS during that season. This information were provided by the KBS.

## RESULTS AND DISCUSSION

### The quantification of umbilical hernias.

During 1989 and 1990 the umbilical hernias of 1890 lambs were measured. The results are displayed in Table 1.

YEAR	SIZE (mm)						TOTAL
	NONE	11	12	13	14	15	
1989	706	106	55	21	10	3	901
1990	699	155	80	49	1	5	989
TOTAL	1 405	261	135	70	11	8	1 890
%	74.3	13.8	7.1	3.7	0.58	0.42	

Table 1. The occurrence of different sized hernias measured at the Karakul Centre.

Table 1 indicates that 25.7% of the lambs were born with hernias though only 5% had hernias measuring 13mm and larger.

### The cicatrization of umbilical hernias.

Cicatrization till 12 weeks of age.

66 Lambs with hernias were identified at birth and the sizes were:

11 mm - 25 lambs  
 12 mm - 13 lambs  
 13 mm - 6 lambs  
 14 mm - 13 lambs  
 15 mm - 9 lambs

The hernias of these lambs were measured on a weekly basis over a period of 12 weeks or until the hernias cicatrised.

After 3 weeks 72% of the hernias cicatrised and only 18 lambs with hernias remained. After 12 weeks only 11 lambs with hernias remained of which 8 (73%) had hernias measuring 14 mm and larger at birth. It therefore seems that there is a tendency for umbilical hernias smaller than 14 mm to cicatrise within a period of 3 months.

### Cicatrization till 13 months

The hernias of 150 ewe lambs, which were kept for the test flock during 1989, were measured at birth and again at the age of approximately 13 months (Table 2).

The percentage of hernias decreased from 22% to 6.7% and the decrease occurred in the 11mm and 12mm groups (Table 2). From this it is possible to deduct, as in the case of 3.2.1, that the smaller hernias tend to cicatrise. The 11mm hernias that did not cicatrise can possibly be attributed to the umbilical cord which sometimes impedes the measurement of the size of the hernia.

Table 2. The occurrence of umbilical hernias in day-old lambs compared to at the age of 13 months.

SIZE (mm)	DAY-OLD NUMBER	DAY-OLD %	13 MONTHS NUMBER	13 MONTHS %	% OF HERNIAS AT 13 MONTHS
NONE	117	78	140	93.3	
11	17	11.3	4	2.7	40
12	10	6.7	-	-	0
13	1	0.7	1	0.7	10
14	5	3.3	5	3.3	50
TOTAL	150		150		

### The occurrence of umbilical hernias in Namibia.

Departmental investigation:

A total of 13 farms were visited and a random sample of 100 ewes per farm were measured. The results are shown in Tables 3 and 4.

Table 3. The occurrence of umbilical hernias in ewes of different age groups.

AGE	n	NUMBER OF HERNIAS	%
Full-toothed	519	33	6.4
Six-toothed	180	9	5
Four-toothed	206	12	5.8
Two-toothed	171	12	7
Uncut	224	17	7.6
TOTAL	1 300	83	6.4

n = Number of ewes

Table 4: The different sizes of umbilical hernias which occurred in Table 3

SIZE	n	% OF EWES	% HERNIAS
Large	12	0.9	14.5
Medium	9	0.7	10.8
Small	62	4.8	74.7
None	1 217	93.6	
TOTAL	1 300		

n = Number of ewes

According to Table 3 the average occurrence of hernias during the investigation was 6.4%. The difference between the age groups was not large, although the occurrence of hernias tend to be higher in young sheep.

Some of the breeders' rams were also measured and only 2 out of 113 rams had hernias. This represents 1.76% which indicates that the breeders possibly pay more attention to the occurrence of hernias in their rams.

The number of ewes without hernias (Table 4) concurs with the percentage in Table 2 (78% vs 93.6%). The percentage of large hernias are, however, considerable higher in Table 2 than in Table 4 (50% vs 14.5%). The reason for this may possibly be that the breeders slaughter the lambs with large hernias and do not retain them for breeding purposes.

### Karakul Breeders' Society analysis

A total of 4786 lambs from 10 of the 13 breeders mentioned in paragraph 3.3.1 were analysed by the KBS. The results are displayed in Table 5.

Table 5: A comparison of the occurrence of umbilical hernias on farms where the birth notices of lambs were forwarded to the KBS and the Departmental investigation on those farms

BREEDER	KBS ANALYSIS			DEPARTMENTAL ANALYSIS		
	n	Hernias	%	n	Hernias	%
1	603	55	9.1	100	11	11
2	461	15	3.3	100	15	15
3	467	5	1.1	100	11	11
4	124	38	30.6	100	9	9
5	583	4	0.7	100	1	1
6	734	7	1	100	6	6
7	385	13	3.4	100	0	0
8	325	62	19.1	100	6	6
9	428	10	2.3	100	5	5
10	676	58	8.6	100	0	0
AV.			5.58			6.4

Although the KBS analysed lambs while the Department investigated mature sheep, the difference in average is not much. It is, however, possibly the reason for the big difference between the two investigations in the case of some of the breeders.

### The occurrence of hernias in the progeny of rams that were tested at the Karakul Centre.

With the introduction of progeny testing at the Karakul Centre, hernias of all sizes were originally recorded and this

led to some rams being recorded as having a large percentage of lambs with hernias. After the cicatrization of hernias was investigated, this procedure was changed and only hernias of 13mm and larger are recorded (Table 6).

Table 6: A comparison between rams where all the umbilical hernias were recorded and those where hernias of only 13 mm and larger were recorded

SIZE	n	PERCENTAGE UMBILICAL HERNIAS		
		LOWEST	HIGHEST	AVERAGE
All sizes	72	9	71	33.5
13 mm and larger	30	0	18,5	6.4

n = number of rams

There is a noticeable difference between the two average percentages. The 6.4% also concurs with the 5.58% in Table 5.

### CONCLUSION

The occurrence of umbilical hernias over the whole of Namibia is low and not prevalent in any specific flocks. The environment, pre- and postpartum, could be a causal factor of hernias.

Most of the small hernias do cicatrize and can be ignored. It is recommended that rams with large umbilical hernias should not be retained for breeding purposes.

### REFERENCE

GENETIKA 343, 1980. Lectures presented at the University of the Orange Free State (RSA).