



RESEARCH ARTICLE

Surgical management of some congenital anomalies in ruminants

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Özet

**Hussein K.** Bazı konjenital anomalili ruminantların cerrahi tedavisi. *Eurasian J Vet Sci*, 2011, 27, 4, 245-249

**Amaç:** Veteriner Fakültesi hastanesine kojenital anomalili getirilen ruminantların anket niteliğinde analizini yapmaktır.

**Gereç ve Yöntem:** Toplamda 58 adet (21 atresia ani, 11 atresia rekti, 5 atresia ani et rekti, 11 uretral dilatasyon, 2 kontrakte tendo, 1 hipospadias, 1 çok sayıda ayak, 3 dermoid kist, 1 siklopiya, 2 kalıcı urakus) konjenital anomali değerlendirildi.

**Bulgular:** Toplam 56 adet konjenital anomalili vaka opere edildi.

**Öneri:** Gelişen konjenital anomalilerin hayvanları hayatı üzerindeki etkileri ve farklı cerrahi müdahaleler tartışıldı.

Abstract

**Hussein K.** Surgical management of some congenital anomalies in ruminants. *Eurasian J Vet Sci*, 2011, 27, 4, 245-249

**Aim:** A survey was undertaken to analyze the congenital anomalies in ruminants recorded at in the veterinary college teaching hospital.

**Materials and Methods:** A total of 58 cases (21 atresia ani, 11 atresia recti, 5 atresia ani et rekti, 11 urethral dilatation, 2 contracted tendon, 1 hypospadias, 1 supernumerary limb, 3 dermoid cyst, 1 cyclopiya, 2 persistent urachus) of congenital malformations were evaluated.

**Results:** A total of 56 congenital malformation cases were operated.

**Conclusion:** The development of these congenital malformations, their effect on the animal life and the different surgical interventions were discussed.

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Received: 16.05.2011, Accepted: 29.06.2011

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Anahtar kelimeler: Malformasyon, anomali, ruminant

Keywords: Malformation, anomaly, ruminant

## ► Introduction

Congenital defects are defined as abnormalities of structures or function that present at birth (Johnson et al 1985). These anomalies are caused by genetic factors (recessive gene) or environmental factors that include infectious diseases, toxic plants, radiation, drugs, chemicals, nutritional deficiencies and extreme temperature during pregnancy (Roberts 1971), or combination of factors (Rousseaux and Ribble 1988, Newman et al 1999).

Atresia ani (imperforated anus) is characterized by persistence of the anal membrane resulting a thin membrane covering the normal anal canal. If the rectum ends blindly as a cul-de sac a short distance cranial to the anal membrane, the condition is called atresia recti (Noden and Lahunta 1985). Urethral dilation is a congenital condition frequently observed in bucks and bulls. The dilatation appears as swelling at the ventral surface of the penile urethra in bucks while in bulls, the swelling is seen in the perineal region starting just below the ischial arch and extends to the base of the scrotum (Misk 2008). Supernumerary ectopic limb (SEL) is a congenital anomaly which characterized by the presence of accessory limb(s) attached to various body regions (Hiraga et al 1989, Fourie 1990). Hypospadias is a defect of the external genitalia characterized by an incomplete development of the prepuce with a ventral opening in the urethra at some point along the penis or the perineum due to lack of partial fusing of the urethral fold (Dennis 1965, Dennis and Leipold 1979). Contracted flexor tendon is a common abnormality of the musculoskeletal system in ruminant especially calves and caused by an autosomal recessive gene. Congenital flexural deformities are seen within 1 or 2 weeks of birth. Flexural deformity ranges in severity from mild knuckling at

the fetlock to being unable to walk, stand, and suckle (Fubini and Ducharme 2004). Patent or persistent urachus is a congenital defect that results when the embryonic connection between the bladder and allantoic sac fails to close after birth (Jubb and Kennedy 1970, Radostits et al 1994). This condition is occasionally diagnosed in calves (Hunt and Allen 1989). Dermoid is a skin or skin-like appendage usually arising on the limbus, conjunctivae, and cornea (Gelatt 1981). It can be unilateral or bilateral and may be associated with other ocular manifestations (Saunders 1968). Cyclopia is a rare deformity that commonly divided into true cyclopia and synophthalmia. In true cyclopia, the two eyes are completely fused (Garzosi and Barkay 1985) while in synophthalmia the two eyes are fused by varying degrees (Zheng and Zhang 1991).

Aim of this study was to analyze the congenital anomalies in ruminants recorded at in the veterinary college teaching hospital, Assiut University.

## ► Materials and Methods

This study was conducted in the veterinary college teaching hospital, during two-year periods from May 2009 to May 2011. Fifty-eight congenital malformations, including 21 atresia ani, 11 atresia recti, 5 atresia ani et recti, 11 urethral dilatation, 2 contracted tendon, 1 hypospadias, 1 supernumerary limb, 3 dermoid, 1 cyclopia and 2 persistent urachus were examined in ruminants.

All operations were performed under local infiltration analgesia using lidocaine HCl 1%. Atresia ani was treated by excision of a circular piece of skin over the anal site (bulge). The blind end of the rectum was sutured to the skin in a simple interrupted manner before the rectum was opened. For treatment of atresia recti or atresia ani et recti, upper right flank



Figure 1. a-The presence of an underdeveloped accessory limb in the perineal region lateral to the vagina. b-The SEL after the removal and suturing of the skin by horizontal mattress pattern.

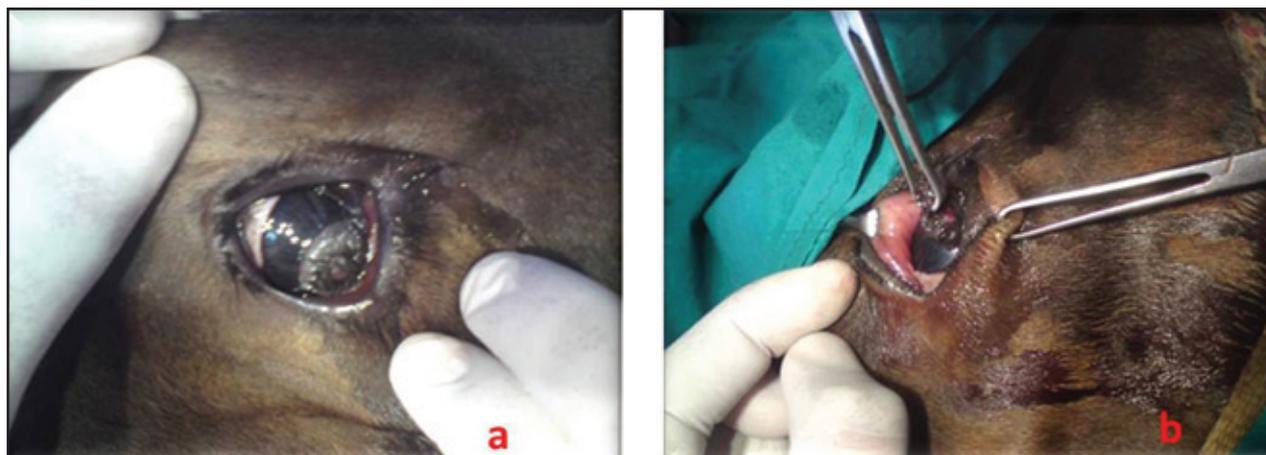


Figure 2. a-Corneal dermoid in a calf. b-During the removal of the dermoid.

laparotomy was done and the caecum was sutured circumferentially to the abdominal muscles by catgut in simple interrupted pattern. Then opening of the caecum was done with suturing of the edges to the skin using silk in simple interrupted pattern. One of the most important points that should be taken in mind is the correction of acid-base imbalance in addition to antihistaminic administration. Urethral dilatation was diagnosed by exploratory puncture; which reveals the presence of fluid has a uriniferous odor, contrast radiography (Urographin 5%, 3 mL/100 kg, IV) and the clinical signs (presence of swelling, straining during urination and dysuria). In calves, urethral dilatation was treated by making an elliptical incision at the lower part of the swelling then making an incision in the urethra. The edges of the urethra were sutured to the skin in simple interrupted pattern using silk, while urethral dilatation in kids was treated by linear incision at the ventral aspect of the urethra. The SEL (Figure 1) was removed by making an elliptical incision around the base of the ectopic limb, the muscles were carefully and bluntly dissected till reaching the origin of the SEL. Large blood vessels were doubly ligated and severed. The ectopic limb was then separated from the surrounding tissues. The muscles and subcutaneous tissue were sutured with polyglactin 910 using a simple continuous pattern. The skin was closed with silk in interrupted horizontal mattress

pattern. Contracted flexor tendons were treated by tenectomy of the superficial and deep flexor tendons then application of plaster Paris was performed. Patent urachus was surgically rejected from the tip of the bladder to the umbilicus through a ventral midline approach. The urinary bladder was closed with inverting pattern using catgut and then the laparotomy incision was closed in standard fashion. In dermoid cyst cases (Figure 2), the auriculopalpebral nerve block was done in addition to instillation of analgesic agent on the eye. Then with a blade, the cyst was peeled off as close as possible to the cornea by superficial keratectomy. Third eyelid flap was performed for protection of the eye. No treatment was performed in cases of cyclopia (Figure 3) and hypospadias.

Cases were evaluated by chi-square test.  $p < 0.05$  was accepted statistically significant.

► Results

Fifty-eight congenital malformation cases are recorded in Table 1.

► Discussion

The most common congenital malformation recorded was atresia ani. Atresia ani was most frequent in males. Affected calves initially will stand and suckle normally after birth. The onset of the clinical signs

Table 1. Congenital malformations in the ruminants.

Affection	Calves Male	Female	Lambs Male	Female	Kids Male	Female	Total
Atresia ani	11	6	2	1	1	-	21 <sup>a</sup>
Atresia recti	6	3	1	-	-	1	11 <sup>b</sup>
Atresia ani et recti	2	2	-	1	-	-	5 <sup>bc</sup>
Supranumerary ectopic limb	-	1	-	-	-	-	1 <sup>c</sup>
Dermoid cyst	1	2	-	-	-	-	3 <sup>c</sup>
Contracted flexor tendon	2	-	-	-	-	-	2 <sup>c</sup>
Persistent urachus	-	2	-	-	-	-	2 <sup>c</sup>
Urethral dilatation	9	-	-	-	2	-	11 <sup>b</sup>
Hypospadias	-	-	-	-	1	-	1 <sup>c</sup>
Cyclopia	-	-	-	-	-	1	1 <sup>c</sup>

<sup>a-c</sup>; different letters in the same column are statistically significant (Chi-Square test,  $p < 0.05$ ).

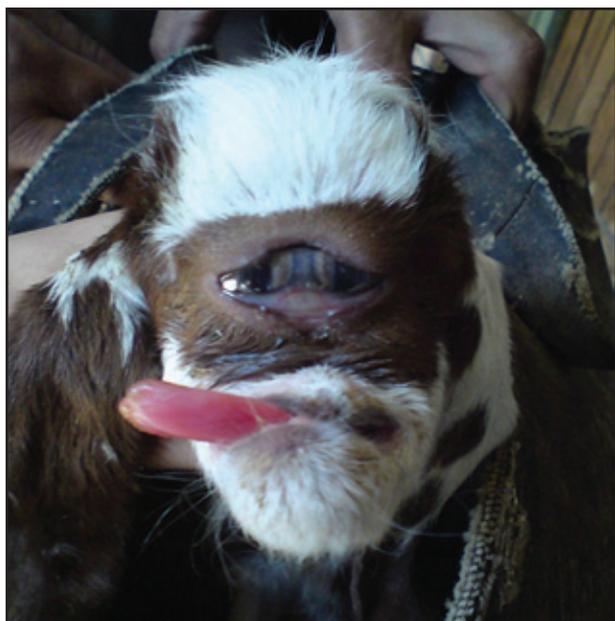


Figure 3. A kid with cyclopia in addition to brachygnathism.

may vary from 1 to 3 days. The main clinical signs are depression, anorexia, abdominal distension and not passing meconium. Calves suffered from atresia ani or/and recti needed immediate surgical interference otherwise it will die due to disruption of the alimentary physiology (Alan et al 2006). In this study we have a case of atresia ani et recti that admitted to the hospital after 18 days from birth and suffering from severe abdominal distension. Plain x-ray film showed a large bag like caecum. There were no complications in all cases except narrowing of the anal opening in a lamb after 4 months follow up period.

In moderate contracted flexor tendons cases, a splint might be applied to force the animal to bear weight on its toes (Shiju et al 2010). Severe cases require tenectomy of one or both flexor tendons with application of the splint (Fubini and Ducharme 2004). In the present study, two calves were submitted to tenectomy followed by application of plaster of Paris, which leads to excellent results.

The author's opinion is that the elliptical skin excision technique with suture of the urethral edges to the skin is a successful procedure in the surgical management of urethral dilatation in calves while in kids, a linear incision in the ventral aspect of the swelling is sufficient. In case of SEL, surgical excision of the SEL resulted in normal locomotion and better quality of life without any postoperative complications during 8 months follow up period. Surgical intervention is the preferred method in treatment of the patent urachus, although cauterizing agents (tincture of iodine or silver nitrate) have been used (Radostits et al 1994). Magda and Youssif (2009) consider cauterization is an unsuitable approach.

Dermoid is islands of skin that are histologically normal but misplaced to an abnormal location. It is caused

by heritable autosomal recessive and polygenic traits (Roberts and Lipton 1975). Histological examination of the dermoid revealed presence of keratinized squamous epithelial cells, hair follicles and sweat glands. Dermoid should be removed surgically as hair from the lesions is responsible for the associated irritation resulting in chronic inflammation of the conjunctivae and cornea and may cause visual impairment (Gelatt 1981).

### ► Conclusions

Many of congenital anomalies in ruminants could be successfully treated through the surgical intervention that could lead to better aesthesis, increasing the marketability and improving of the cosmetic appearance of the animal.

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