SURGICAL CORRECTION OF SOME CONGENITAL ANOMALIES IN NEWLY BORN CALVES

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ABSTRACT

Twenty one newly born calves suffering from eleven different congenital anomalies were dealt with. Surgical intervention was helpful to prolong the life span of calves affected with some anomalies as atresia ani, atresia ani and recti and atresia ani associated with vulvar agenesis. Cases of taillessness, double-head monster (diprosopus), anophthalmia and cataract were recorded and no surgical intervention could be performed. It was found that perineal anomalies including; atresia ani, atresia recti, rectovaginal fistula, taillessness, urethral ectazia and vulvar agenesis, were predominant. Meanwhile, ocular and appendicular anomalies were uncommon. Different techniques of surgical management to correct these anomalies were described and the results were satisfied in most cases.

INTRODUCTION

Congenital defects may involve a single or several structures or functions of an animal (*Singh et al., 1982*). They may be lethal , semi-lethal or non-lethal (*Dennis, 1980*). Congenital anomalies in calves could be attributed to genetic and environmental factors including toxicity, viral infection, nutritional deficiencies and trauma (*Amstutz, 1978*). Approximately 10 % of all known malformations are caused by environmental factors and another 10 % by genetic and chromosomal factors. The remaining 80 % are presumably caused by the intricate interplay of several genetic and environmental factors (*Sadler, 1990*). The most frequently encountered congenital defects in cattle involve skeletal, muscular, central nervous system, ocular system and skin (*Misk et al., 1982; Nigam et al., 1984; Ali et al., 1986*; *Kenawy, 1988; Misk and Hifny, 1988; Ahmed and Misk , 1990; El-Sheikh, 1996 and Misk, 1996*). The present study was designed to describe the suitable techniques of surgical management to correct some congenital anomalies of newly born calves.

MATERIAL AND METHODS

The study under investigation comprised 21 cases of newly born calves and buffalo calves aging from one day to 24 days old (table, 1). They were admitted to the clinic of Fac. Vet. Med., Alex. Univ. in addition to some other sporadic cases. All cases were subjected to clinical examination. Each affection (anomaly) was typed depending on the history and clinical observation of the case. Surgical correction was carried out (when possible) under the effect of good restraint with epidural anesthesia or local

infiltration analgesia using 2% xylocaine Hcl. Pre-operative technique and post-operative care were performed to obtain aseptic successful surgery.

RESULTS

Eleven congenital anomalies affecting 21 calves were met with in the present study (table, 1).

Out of the 21 involved calves, 5 cases proved to be atresia ani alone, 2 cases atresia ani et recti, 2 cases atresia ani with rectovaginal fistula, 2 cases atresia ani with taillessness, one case of atresia ani et vulvi (vulvar agenesis) and one case of urethral dilatation (table, 1).

Creation of anal opening was performed without complications in cases of atresia ani alone (fig., 1), atresia ani et recti and with rectovaginal fistula. Healing occurred by first intention within 10 days. Evacuation of urine and feces was done easily.

The case of atresia ani et vulvi (vulvar agenesis) was admited with the history of a 2 days old calf having passed neither meconium nor urine since birth. A large fluctuating cystic swelling was noticed in the perineum (fig., 2 & 3). Careful examination revealed absence of anal opening and external genital organs. It was firstly diagnosed as combined post rectal and vaginal cystic swelling. Exploratory puncture revealed that the cystic swelling occupied with watery meconium. A longitudinal incision was done throughout the swelling. After complete evacuation of the cyst, two openings were noticed, the upper opening proved to be the continuation of the rectal canal (as a large amount of meconium was passed through it) and the distal opening was then proved to be the vaginal passage (fig., 4). Plastic surgery was performed to create a septum in the mucous membrane extending between the two openings using chromic catgut (No. 2/0). Skin and mucous membrane were trimmed in a circular manner dorsally to resemble the anal opening and ventrally in a longitudinal manner to resemble the vulvar fissure. The skin was then sutured with the mucous membrane using silk (No. 1) as in figure (5). Follow up of the case (28 days later) indicated that the calf was normal and the feces and urine were excreted normally from the new anal and vulvar openings respectively (fig., 6).

24 days old calf with a history of dysurea with congenital fluctuating perineal swelling was met with. Clinical examination of the case indicated that the swelling involves the course of the proximal part of penile urethra (fig., 7) with stricture of the preputeal opening. Exploratory puncture revealed a fluid, by chemical analysis, it proved to be "urine". It was then diagnosed as congenital urethral ectazia. Surgical exposure of the dilated urethra was carried out and a circular wide incision was performed. Skin, subcutis and the urethral mucosa were then sutured together to create a permanent urethral fistula (fig., 8). Follow up of the case revealed that the animal urinate well from the fistual opening till being slaughtered three months later.

Four cases of umbilical hernia in calves (two cases) and buffalo calves (two cases) aging 9-15 days (table, 1) were recorded. The hernial content was easily reduced into the abdomen. The hernial swelling varied in size between the chicken and geese eggs. The hernial ring was oval in shape and of about two fingers diameter. The four cases were allowed till 45 days old before operation to give a chance for self cure.

Treatment by open reduction was carried out and healing was obtained 10 days following operation without complications.

An eleven days old polydactyly calf was recorded. Examination of the case revealed that the extra digit was pendulous, hanging from the trunk near the normal right fore limb. Its length was just up to the level of the carpal joint (fig., 9& 10). Amputation of the extra digit was performed easily in standing position (fig., 11). Radiographic examination and skinning of this limb showed presence of abnormal long bone (diminished in size) with other rudimentary bone structures. Phalanges were also found to be abnormal (fig., 12).

Two cases of ocular anomalies were encountered. One day old calf with anophthalmia associated with taillessness and atresia ani. Abdominal exploration revealed severe visceral adhesions. There was no available treatment to be performed. The second case was eleven days old calf suffering from bilateral cataract with microphthalmia. Slaughtering of the calf was advised .

The last recorded case was a double-head monster of undifferentiated sex. It was delivered with normal size and death occurred few hours later.

DISCUSSION

Congenital anomalies usually result in economic losses in cattle. Control measures may require expensive adjustments of breeding programs, if the defects are genetic. In the present study, surgical correction of some anomalies was helpful to save and prolong the life span of the affected calves. Congenital calf anomalies varied between the ano-rectal, uro-genital, umbilical, appendicular and ocular anomalies. Perineal lesions particularly the ano-rectal anomalies were the predominant representing 13 cases out of 21 cases. Meanwhile, *Holt (1985)* reported that the congenital perineal problems are rare in small animals. But we are in agreement with the author in reporting that the atresia ani were the commonest perineal anomalies. A similar findings were recorded by *Misk et al. (1982); Nigam et al. (1984); Kenawy (1988) and Misk (1996).* It is also interesting to point about atresia ani in our findings, that it was encountered alone, with atresia recti, with taillessness or with rectovaginal fistula. It was recorded as an isolated defect or associated with anomalies of the genito-urinary system (*Nairs, 1972; Singh et al., 1982 and Holt, 1985);* with taillessness (*Shu, 1972; Misk et al., 1982 and Samad & Hoque, 1986)* or associated with polymelia *(Shu, 1972).* Rectostomy was performed successfully without complications for the cases of atresia ani alone, atresia ani et recti and recto-vaginal fistula. A similar findings were obtained by *Venugopalan (1982)* and *Misk et al. (1982).* Atresia ani could be attributed to failure of separation of the endodermal hind gut from ectodermal membrane, while, the recto-vaginal fistula may develop due to deviation of the uro-rectal septum *(Dennis and Leipold, 1972; Leipold et al., 1976; Holt, 1985 and Sadler, 1990).*

We are in agreement with *Lakshmipathy et al. (1983)* in reporting that atresia ani associated with vulvar agenesis is rare. In the present study, The case of atresia ani et vulvi (atresia ani associated with vulvar agenesis) is suspected to be the first case

recorded in calf. Reconstruction of the case was simply performed by the described plastic operation after we found both of the rectal and vaginal openings in the incised combined post rectal and vaginal cystic swelling. *Lakshmipathy et al. (1983)* reconstructed a case of vulvar agenesis in a lamb by 1 cm V-shaped incision starting from the nodular perineal projection. The author found the patent vaginal passage after incising and dissecting the connective tissues at the perineal region.

Induction of urethral fistula in this study was the only available method to treat the case of urethral ectazia and preputeal stricture. On another findings, *Noice and Schipper (1958)* observed a normal ram urinating from an orifice ventral to the anus in a manner typical of an ewe, due to lack of normal urethral opening in the tip of the penis which protruded from the normal prepuce. They regarded the urethral fistula as a result of congenital or acquired causes.

Along our presented cases, umbilical hernia in calves were recorded. Radical treatment of the hernia described fully *by Wintzer (1962)* was easily carried out and their results were satisfied.

The case of polydactyly recorded in the present study was attached to the trunk near the normal fore limb and projected laterally up to the level of the carpal joint. A similar findings were recorded by *Rao (1984); Johnston (1985); Ali and Hossain (1986)* and *Kenawy (1988)* with the variation that polydactyly in their cases originated from the sacral region and of variable lengths. A case of polydactyly associated with atresia ani was recorded by *Hossain et al., (1980).* We are in agreement with *Johnston (1985)* in reporting that bones of the extra digit were diminished in size and replaced by rudimentary bone structures. It also lacks its proper anatomical connections *(Sadler, 1990).*

Regarding the ocular anomalies in the present work, the two cases of anophthalmia and congenital cataract were regarded as a hopeless cases depending up on the findings of *Gelatt (1981)* and *Ali et al. (1986)* who reported that cataract in calves may be associated with microphthalmia, retinal detachment and optic nerve hypoplasia. We are in agreement with *Sadler (1990)* in his findings that the other related adnexal structures could not be detected grossly except by histological means.

There were many literatures discussed the double-head monster (diprosopus). It was reported in cattle *(Saperstein, 1981 and Deore, 1984)*; in buffalo-calf (*Misk and Hifny*, 1988); in sheep (*Dennis, 1975)* and in cat (*Sekeles et al., 1985).* We are in agreement *with Misk and Hifny (1988)* in attributing such disruption to incomplete attempt at separation into two individuals.

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Table (1): Showing the recorded numbers of congenital calf anomalies in relation to their ages and sex.

Affections	Animal		Age (days)	Sex		Total
	Calf	B.calf		Male	Female	
Atresia ani alone	3	2	1,2,2,1,2	3	2	5
Atresia ani et recti	2	-	1,2	1	1	2
Atresia ani et vulvi (vulvar agenesis)	1	-	2	-	1	1
Atresia ani with rectovaginal fistula	2	-	4,3	-	2	2
Atresia ani with taillessness	2	-	1,1	2	-	2
Urethral ectazia	1	-	24	1	-	1
Umbilical hernia	2	2	9,11,14,15	1	3	4
Polydactyly	1	-	11	1	-	1
Anophthalmia	1	-	1	1	-	1
Cataract	1	-	11	1	-	1
Double-head monster (diprosopus)	1	-	Few hours	Undifferentiated		1
Total	17	4	1 to 24	11	9	21

LEGENDS :
Fig. (1) : showing a case of atresia ani after creation of an anal opening.
Fig. (2) : showing a two days old calf with combined post rectal and Vaginal cystic swelling (atresia ani et vulvi, posterior view).
Fig. (3) : showing the same case (lateral view).
Fig. (4): showing the same previous case after opening and evacuation of the cyst. Note the upper (rectal) and lower (vaginal) openings (arrows).
Fig. (5) : showing the same previous case after plastic operation to create anal opening (dorsally) and vulvar fissure (ventrally).
Fig. (6) : showing the same case 28 days following the operation.
Fig. (7) : showing perineal swelling in male calf due to penile urethral ectazia (arrows).
Fig. (8) :showing the same previous case after induction of a permanent urethral fistula (two days after the operation).
Fig. (9) : showing a case of polydactyly in an eleven days old calf (anterior view).
Fig. (10) : showing the same case (posterior view).
Fig. (11) : showing the same calf after amputation of the extra digit.
Fig.(12) :showing the rudimentary bone structures of the extra digit after being skinned.

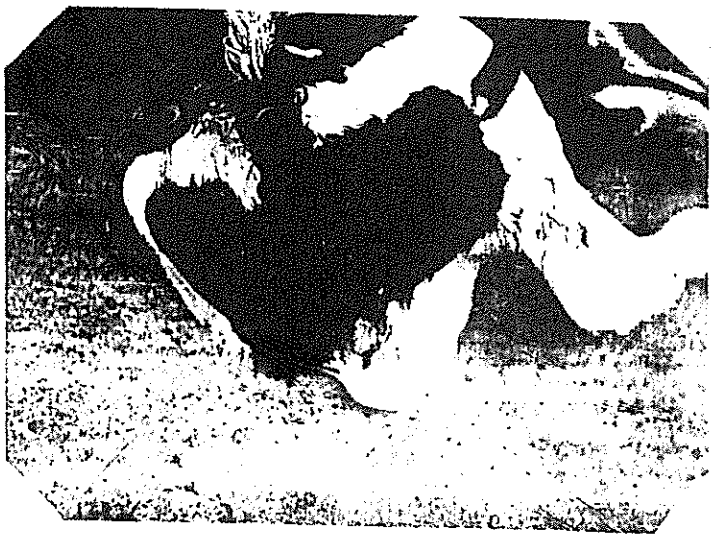

Figure (1)

Figure (2)

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Figure (4)

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Figure (9)

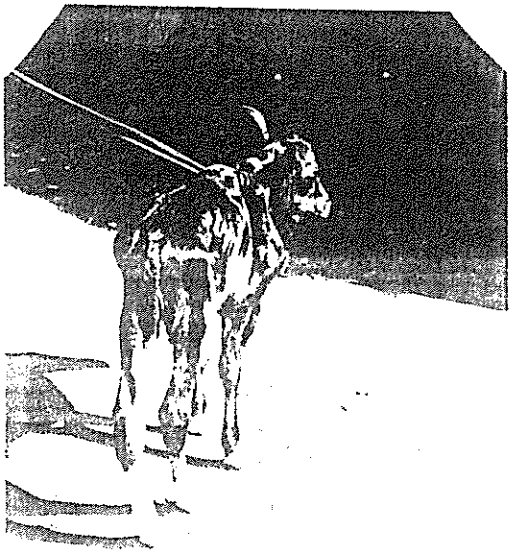

Figure (10)

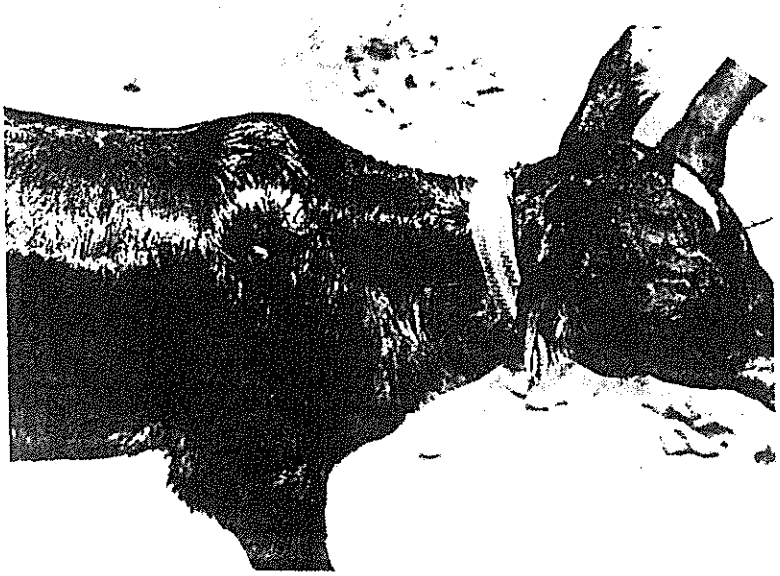

Figure (11)

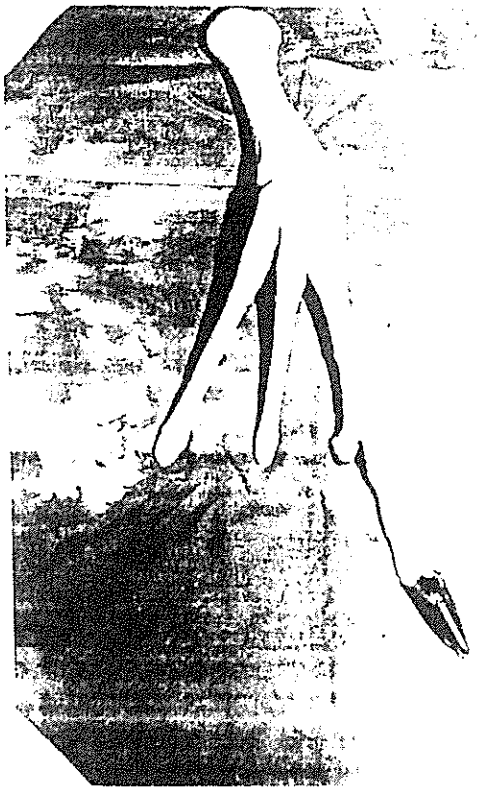

Figure (12)

الملخص العربى

التعديل الجراحي لبعض العيوب الخلقية في العجول حديثي الولادة

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كثير من الإصابات و العيوب الخلقية يتم التعرض لها في الحيوانات حديثي الولادة و التي قد تودى بحياتها أو تؤثر على مستقبلها الإنتاجي. لذلك فقد تم إجراء هذه الدراسة لإلقاء الضوء على بعض الطرق الجراحية المقترحة و المناسبة لعلاج مثل هذه الإصابات. تم دراسة إحدى عشرة إصابة في إحدى وعشرين عجلا حديثي الولادة. لوحظ من الدراسة أن العيوب الخلقية كانت أكثر شيوعا في منطقة العجان بالمقارنة بعيوب القوائم و الأعين. كما كانت نتائج العلاج الجراحي جيدة جدا للحفاظ على عمر الحيوان في بعض الإصابات مثل غياب فتحة الشرج, وغياب المستقيم و الشرج معا, وكذلك غياب فتحة الشرج والفتحة التناسلية معا. إلا أنها كانت دون جدوى في البعض الأخر مثل غياب الذيل و العين و كذلك المياه البيضاء. تم عرض ومناقشة الطرق الجراحية المختلفة لتعديل وعلاج مثل هذه الإصابات وتم الحصول على نتائج طيبة.