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Surgical Correction of Imperforate Hymen in a Dromedary Heifer: A Case Report

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Abstract

A 5-year-old, adult dromedary heifer with imperforate hymen and hydrocolpos was surgically treated. Complete hymenectomy was performed and the cut margins of the vaginal mucosa were sutured with interrupted horizontal mattress sutures. The animal was bred three months after hymenectomy and got conceived. In the light of our experience and the review of literature on the topic, it is concluded that surgical correction of imperforate hymen is the best choice to return such animals to breeding soundness.

Keywords: Camel; Imperforate hymen; Hydrocolpos; Transverse vaginal septum

Introduction

The hymen is an area of tissue that represents the opening to the vagina. It is a 360 degrees fibro-elastic ring-shaped tissue which makes vaginal examination difficult in the young animal. At puberty, it most probably becomes relaxed under hormonal influences and offers no resistance to intromission at the time of first mating. Imperforate hymen is a vaginal anomaly which completely obstructs the vaginal introitus and is at the extreme of a spectrum of variations in the embryologic development of the hymen in the form of fenestrations, septa, bands, micro-perforations, and differences in rigidity and/or elasticity of the hymenal tissue [1]. Imperforate hymen differs from transverse vaginal septum in that the former occurs at the vestibular-vulvar junction just cranial to the meatus urinary whereas the latter occurs at the vestibular-vaginal junction or anywhere in the vaginal canal cranial to it [2]. Hematocolpos secondary to imperforate hymen is common in the human females after they attain the age of puberty and the condition may manifest by abdominal pain, discomfort and absence of menstrual discharge [3]. In contrast, hydrocolpos develops in the animals represented by accumulation of variable quantity of milky white opaque fluid cranial to the imperforate hymen [4]. A case of pyocolpos has been reported in a Pinscher bitch by Marinho et al. 2013 [5]. Two cases of genital abnormalities associated with lack of uterine adenogenesis or endometrial gland dysgenesis of female dromedary camels (*Camelus dromedarius*) have recently been reported by Diallel et al. [6]. An unusual case of urinary retention in a 14-year-old girl with imperforate hymen has been reported which was due to stretching of the urethra as a result of distention of vagina due to colpomenorrhea [7]. Complete hymenectomy is the classic surgical treatment of imperforate hymen which is carried out through a cruciate incision in the center of the hymenal membrane, its total resection and suturing of the cut ends of vaginal mucosa [8]. However, to preserve the normal hymenal architecture under consideration of the social norms of the society; corrective surgery of imperforate hymen in 65 human patients was performed using a central oval incision to perforate hymenal membrane followed by introduction of 16-F Foley catheter and balloon insufflations for two weeks to avoid cicatricial narrowing of the vaginal introitus during the healing process [9]. In animals this point carries no significance and complete hymenectomy is the standard procedure. Laparoscopically assisted hysteroscopic resection of the septum in the human patients is also reported [10]. Infertility due to imperforate hymen with the development of hydrocolpos in an alpaca and a llama has been reported by Rachel and Jhon [11]. Vaginal atresia with transverse septum in a cat [12], segmental aplasia of the Mullerian duct system and vaginal septum in the dog with their possible surgical correction has been previously reported [13,14]. Transverse vaginal septum is also documented in a laboratory animal (specific-pathogen-free Wist rat) by DeSchaepdrijvr et al. [15]. Human females can conceive with incomplete transvaginal septum, but may experience problems at the time of delivery [16]. A successful resectoscopic treatment of

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complete longitudinal vaginal septum in a human female is reported by Montevecchi and Valle [17].

Case Presentation

A 5-year-old dromedary heifer of local "Arabian" breed weighing about 400 kg was brought to the Central Veterinary Hospital, Al-Wathba, United Arab Emirates with the complaint of failure of intromission by the male. The animal was quite healthy having normal defecation and urination and with no other complaints. The animal was controlled in the sternal position for a detailed examination which revealed a complete septum just cranial to the meatus urinary with a very prominent bulge protruding through the external genitalia (Figure 1). Ultrasonographic examination of the reproductive tract with 7.0 MHz rectal probe was indicative of hypo-echoic uterine and vaginal cavity with normal ovaries. Exploratory puncture of the hymenal wall with a sterile 16-gauge hypodermic needle attached to a syringe revealed milky white opaque fluid, which confirmed the condition and the resultant hydrocolpos (Figure 2).

Operative details and postoperative care

The animal was controlled in the sternal recumbency and was sedated with an intravenous injection of a mixture of 2% Xylazine hydrochloride (Xyla-ject; Adwia Co. S.A.E. Egypt) and 10% Ketamine hydrochloride (Ketamine; Alfasan, Woerden, Holland) at the dose rate of 0.4 mg/kg of body weight of each drug [18]. The operative field was desensitized with 20 ml of 2% aqueous solution of Lidocaine monohydrate (Lurocaine; Vetoquinol S.A. France) given epidurally in the sacrococcygeal space. The tail was wrapped in a bandage and held up by an assistant. The operative and perioperative field was thoroughly washed with Povidine Iodine scrub solution and clean dried.

A small stab incision was given in the center of the hymenal membrane with the scalpel blade. As soon as the incision was given, a good quantity of milky white opaque fluid gushed out of the vaginal cavity (Figure 3). After complete evacuation of the fluid, whole of the hymenal wall was resected 3600 at the base. The cut margins of the vaginal mucosa were sutured with interrupted horizontal mattress sutures using USP-2/0 Polyglycolic acid (Safil, B BRAUN, Aesculap AG & Co. Germany) suture material swaged on an atraumatic needle (Figure 4). A well lubricated gloved hand was introduced into the vagina to check the vaginal canal and the cervix. The index finger could be easily introduced into the os-cervix which was an indication of normal vagino-uterine passage.

Figure 1: Imperforate hymen in the dromedary heifer. Note the prominent bulge of the hymenal membrane.

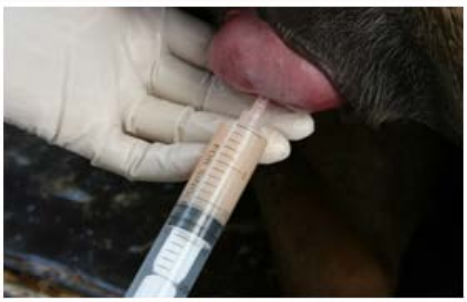

Figure 2: Aspiration of milky white opaque fluid with a sterile hypodermic needle attached to a syringe.

Figure 3: Rush of milky white opaque fluid through a small incision in the center of hymenal membrane.

Figure 4: Suturing of the cut margins of the vaginal mucosa with interrupted horizontal mattress sutures using USP-1 Polyglycolic acid suture material.

The animal was hospitalized for two weeks after surgery. The operation site was digitally dilated on alternate days with well lubricated gloved hand to avoid cicatricial narrowing of the vaginal introitus. No antibiotic cover was given to the animal. On the day the animal was discharged from the hospital, the owner was advised not to breed the animal for at least two months. Follow-up of the case for 2 months revealed no problems with the animal. Vaginal cavity could be very well examined manually with well lubricated gloved hand. Three months after correction of the problem, the animal was mated and got conceived.

Discussion

Hymenectomy is not an elaborated surgical procedure and can be easily carried out by a practicing veterinarian. Previous reports on the use of sigmoidoscope and incremental dilatation using cylindrical instruments for correction of persistent hymen in an alpaca and a llama had variable results [11]. This procedure was successful in llama but the results were not encouraging in alpaca. In the human patients, partial hymenectomy through central oval incision was done under compulsion of the social norms of the society, but a catheter was kept inside for two weeks to prevent cicatricial narrowing or closure of the vaginal introitus [9]. In our opinion, as this point carries no

importance in the animals, complete hymenectomy should be done, as it offers better prognosis as seen in the case under report. This animal returned to breeding soundness after complete hymenectomy and this finding agrees with the previously reported results in a case of transverse vaginal septum in a camel [2]. Surgical correction of imperforate hymen has also given good results in the dogs [4,13,14] and vaginal atresia with transverse septum in a cat [12]. In our view, complete hymenectomy is the only choice to correct this condition as is the standard procedure in the human patients [8]. No narrowing of the vaginal introitus was noted in the case under report which is thought to be due to repeated digital dilatation of the operation site in the postoperative period. This finding agrees with the earlier report where an insufflated catheter was kept inside for two weeks after partial hymenectomy in the human patients to prevent closure of the hymenal membrane [9]. No reports on retention of urine in the animals due to imperforate hymen appear in the literature as has been reported in a human female [7]. This most likely seems to be due to difference in the standing posture, the position of the urethra and meatus urinary in the human and animal females.

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