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Surgical Repair of Agenesis of Prepuce in a Dog

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Abstract : An 10-day-old, male Jindo puppy was presented with anuria. This puppy was diagnosed as agenesis of prepuce and preputial orifice. To treat anuria exploratory operation was performed and the penis was found in situ under the skin. The penis was protruded outside of the skin. Because of strangulation and dryness of the penis by growing up, the artificial prepuce was made by making the subcutaneous tunnel. After that this puppy showed normal urination and had no complication. In case of the agenesis of the prepuce with the penis in situ, artificial prepuce by subcutaneous tunnel would be an alternative choice for saving the puppy.

Key words **:** dog, male, agenesis, prepuce, orifice.

Introduction

Deformity of prepuce occurred by congenital and acquired development. External urogenital deformity was diagnosed by physical examination. Most deformity of male urogenital system may cause urinary disorder. Therefore, reconstruction of male urogenital deformity focused on normal urinary function rather than reproductive function (4).

Prepuce is luminal epithelial tissue and enclose the body of penis. The preputial orifice permits the protrusion and contraction of the penis (5). Agenesis of the prepuce may not permit to urinate, so clinical signs shows the same signs with urethral obstruction. Postrenal acute renal failure by urethral obstruction threaten the animal's life. Urethral obstruction caused by urethral calculi and tumors in dogs. Eventually elevated intracystic pressure by urinary accumulation caused obstructive nephropathy and acute renal failure. Azotemia and hyperkalemia caused by excretory disorder of nitrogen metabolites and potassium. Severe hyperkalemia may cause bradycardia, cardiac arrest and death (7).

The aims of this study were to describe the agenesis of prepuce occurring with anuria and reconstruction of the prepuce and preputial orifice in a dog.

Case

An 10-day-old Jindo puppy who showed anuria referred to Veterinary Teaching Hospital, Jeju National University. Urinary bladder puncture was performed once before referring. This puppy was born by inbreeding by history taking. The prepuce, penis and the orifice of prepuce did not observed by physical examination but the trace of puncture site was observed (Fig 1). Resulted by CBC and blood chemistry, WBC, fibrinogen, BUN and phosphate levels were slightly increased, whereas RBC, PCV and total protein were slightly decreased. In order to assist for urination exploratory operation was performed.

The puppy was positioned by dorsal recumbency. The median skin incision was performed in the one thirds of lower abdomen. The penis was found under the skin. The shape of the penis was normal. Urethral catheter was inserted into urinary bladder and the urine was removed.

The penis was exposed externally. The circumferential subcutical tissue was sutured by 3-0 polyglyconate and the skin was sutured by 3-0 nylon. The puppy showed normal urination and behavior after operation (Fig 2).

The penis was strangulated gradually by growing up and penile tissue was congested sometimes. The operation for the reconstruction of the orifice of the prepuce was performed to release the strangulation of the penis.

The puppy was positioned by dorsal recumbency. In order to make artificial prepuce subcutaneous tunnel was made by Metzenbaum scissors and electric cautery. And the penis was located into artificial prepuce. The orifice of prepuce sutured by simple interrupted suture with the circumferential skin (Fig 3). This puppy showed normal urination and exercise after the operation. The suture of the orifice was stitch out 2 weeks after the operation.

Discussion

The congenital deformity of the penis and prepuce was caused by genetic etiology (4). In this case this deformity would be caused by inbreeding with history taking. The congenital disorder of the prepuce is not common in dogs (2).

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Fig 1. The puppy was positioned by dorsal recumbency. The umbilicus was observed but the prepuce and preputial orifice was not observed.

Especially, the stenosis or agenesis of the orifice of prepuce is not very common (3). In this case, the prepuce as well as the preputial orifice was not formed.

The operation would not be better in neonatal puppy, because the level of coagulation factor and the concentration of antithrombin is low within 1 week after birth (6). In this case platelet count showed normal value, whereas fibrinogen value was slightly elevated. The elevation of fibrinogen value would be related with the local or systemic inflammation (8). Low PCV shows in neonatal puppy compared with adults (6).

In this case the anuria appeared with congenital deformity of urogenital system. The patient had no preputial orifice and did not urinate completely. Clinical signs showed the same with urethral obstruction. The urethral obstruction results in postrenal acute renal failure and threaten the life (7).

Before referral this patient has been punctured for removal of urine once. Potassium and creatinine values were within normal range because previous cystic puncture.

In oder to save the puppy, surgical treatment was focused not to restore of the reproductive system but to restore of the urinary system (4). In order to make external urinary tract, we performed exploratory operation. And we found the penis in situ under the skin. So the penis was protruded out of the skin.

Sometimes the penis has been strangulated by growing up. And dryness of the penis was common because of having not prepuce. The possibility of the inflammation was increased by the dryness (1).

To diminish the strangulation and dryness of the penis we made the orifice and artificial prepuce as a subcutaneous tunnel. The stenosis was not formed between artificial prepuce and the penis. We presumed the urination and persistent small amount of urine did not make stenosis. In case of the agenesis of the prepuce with the penis in situ, artificial prepuce by subcutaneous tunnel would be an alternative choice for saving the puppy.

Fig 2. After exploring the urogenital system, the penis exposed out of skin.

Fig 3. The artificial prepuce was made by making the subcutaneous tunnel and the preputial orifice was made by circumferential skin incision.

Conclusion

In order to repair the congenital agenesis of prepuce in puppy exploratory operation was performed in the midline of the distal one third of abdominal wall. The penis was found in situ, and the penis was protruded out of skin. Because of strangulation and dryness of the penis by growing up, the artificial prepuce was made by making the subcutaneous tunnel. After that this puppy showed normal urination and had no complication. In case of the agenesis of the prepuce with the penis *in situ*, artificial prepuce by subcutaneous tunnel would be an alternative choice for saving the puppy.

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개의 포피무형성의 수술적 교정 1례

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요 약 : 생후 10일령 수컷 진도견이 무뇨증을 주 증상으로 하여 내원하였다. 신체검사를 통하여 포피 및 포피구멍이 존재하지 않아 선천적인 비뇨생식기 기형으로 진단하였다. 무뇨증을 치료하기 위하여 요도 탐색술을 실시하였다. 정중 하복부의 피하에서 음경을 확인하고 음경을 외부로 노출시킨 후 피부를 봉합하였다. 환축이 성장함에 따라 음경이 주변 피부조직에 교약 및 건조되며 울혈이 발생하였다. 이에 대한 수술적인 치료로써 파하직에 터널을 만들어 인공적으로 포피와 포피구멍을 만드는 재건술을 실시하고, 이 부위로 음경을 환납하였다. 이후 합병증 없이 정상적인 배뇨를 보였다. 포피의 무형성이 있으나 음경이 정상적인 위치에 존재한다면 포피 및 포피구멍 재건술을 통하여 정상적인 배뇨를 할 수 있을 것으로 사료된다.

주요어 : 개, 수컷, 기형, 포피, 구멍