

Dept. of Surgery
Fac of Vet. Med. Assiut University
Head of Dept. Prof. Dr. F.M. Makady.

OS PENIS IN DOGS (With 6 Figures)

By

N.A. MISK; I.H. AHMED* S.F. ISMAIL**

* : Dept. of Surgery, Fac. Vet. Med., Suez Canal University, Egypt.

** : Dept. of Surgery, Fac. Vet. Med., Moshtohor, Benha, Zagazig, Egypt
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عظمة القضيب في الكلاب

نبيل مسك ، إبراهيم حسين ، سامي فرغلي

تم في هذا البحث دراسة التركيب التشريحي لعظمة القضيب في عدد ١٨ كلب وكذلك تم توصيف الصورة الاشعاعية لهذه العظمة.

SUMMARY

18 adult male dogs were used in the present study. Radiography was performed for the caudal part of the animal body including os penis. Contrast urethrography was performed using urographine 75% solution. Bones were collected and prepared for anatomical, morphometric and radiographic studies.

Key words: Os penis-Dog.

INTRODUCTION

The visceral skeleton is extremely variable in animals. It consists of bones that are developed in the soft tissues of the body. Among the domestic animals only a few species possess a visceral skeleton. The bones generally

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conceded to belong to the visceral skeleton are the os cordis and os penis. The os rostri of the pig is open to question as it is apparently derived from the nasal septum (BONE, 1979). Os cordis located around the origin of the aorta and pulmonary artery at the base of the heart in all members of the bovine family. Os penis is located within the penis in all members of dog family (canidae), members of the mink family (mustellidae) and some rodent species (rodentia) as seal, walruses and raccoons (MILLER, 1962 and BONE, 1979).

The aim of the present work is to study the os penis from the surgical point of view concerning its shape, length, width, relation to penile urethra and its radiographic appearance in mature dogs.

MATERIAL and METHODS

18 adult male Mongrel dogs, 2-8 years old were used in this study. Body weight ranged from 9-16 Kg. Animals were taken from postmortum examination room. Radiography was performed in lateral view for the caudal part of the animal body taking in consideration the position of os penis. Contrast urethrography was performed in some animals using either urethral catheter filled with urographine (75% solution) or by direct retrograde injection of contrast material into the urethral orifice. After radiography, the penile portions of penis were collected from all animals and os penis were extracted and prepared for anatomical and morphometric studies. In addition, cross sections were prepared at 3 levels (apex, body and base).

RESULTS

Surgical anatomy of os penis (Fig. 1-4):

A prominent feature of the glans penis in dog is the presence of a grooved tapering bone, the os penis, lying dorsally and laterally to the penile urethra. The os penis extends from the distal part of the body of the penis just cranial to the level of the scrotum to near the tip of the glans, where it curves slightly, becomes fibrocartilagenous, and ends just dorsal to the urethral meatus.

For description, os penis may be divided into 3 parts; base, body and apex. The base or root is the enlarged caudal end of the bone. It is nearly 3 sided. The lateral surfaces are rough, convex and converge as they go dorsal to form a distinct but roughened crest. Double crest is observed in some

specimens. It is grooved ventrally. The depth of the groove decreased craniad.

The body of the os penis continues craniad having the main features of the base. It is three sided with a distinct crest dorsally and urethral groove ventrally. The groove is deepest at the junction of the root and body and gradually decreased in depth towards the apex. The end of the urethral groove marks the end of the body. The length of the grooved segment of the bone is about 7 cm. The lateral surfaces are convex ventrally, then concave dorsally and meet together to form a distinct crest. The lateral borders of the body at its middle partially or completely converge to enclose the ventral aspect of the urethra in some specimens.

The apex is approximately 3 cm in length. It is slightly conical in shape and nearly flat at its ventral surface without forming a urethral groove. The cranial end is roughened indicates its continuation with fibrocartilagenous extension.

Radiographic appearance of the os penis (Fig. 5 & 6):

The os penis appears radiographically as a long triangle with a narrow oblique base caudally and taper apex cranially. The base is situated in front of the scrotum while the apex is 3-5 cm caudal to the cranial end of the glans penis. The lateral borders of the urethral groove appear as two radiopaque lines extend craniad until reach the apex where they form the outer boundary of the bone itself.

The following table illustrate the average morphometric measurements of the os penis in dogs.

Total length	9.56 cm
Length of grooved portion	6.8 cm
Length of the free portion from the groove (apex)	2.8 cm
Width of the groove at the base	4.2 mm
Depth of the groove at the base	4.8 mm
Width of the groove at the body	2.9 mm
Depth of the groove at the body	3.3 mm
Weight of the bone	3.61 grams

Contrast radiography of the penile urethra revealed that the bone enclose the urethra along its caudal two third from the dorsal and lateral aspects. As the urethra reaches the apex of the bone, it lies ventral to it and sometimes the apex of the bone diverge slightly dorsad away from it. In many specimens

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the lateral borders of the bone converge medially to cover partially the ventral surface of the urethra specially at the middle part of the body.

DISCUSSION

The study of the surgical anatomy and radiology of the os penis in dogs is important in many aspects. Owing to the rigidity of the groove and the urethra's firm anchorage in it, urinary calculi frequently lodge at the beginning of the groove (*MILLER, 1962 and VENUGOPALAN, 1982*). Our study added that at the middle of the os penis body the bone not only envelop the urethra dorsally and laterally but also to a great extent ventrally, the condition which may interfere with ventral dilatation of the urethra in case of urethral calculi resulting in urethral obstruction. In addition, the groove reduced in width and depth towards the middle of os penis body.

The author of the present work suggest the removal of one or both sides of the groove if necessary to facillitate urethral dilatation specially at the middle part of the os penis body. Moreover, surgical incision into the urethra to remove calculi should be directly on the ventral median plane, where the retractor penis muscle can be displaced and only the corpus spongiosum covers the urethra (*LAHUNTA and HABEL, 1986*).

Amputation of the penis may be indicated in certain congenital, traumatic or neoplastic conditions. Amputation of the penis at the level of the os penis may require severing of the os penis as well as salvaging of enough urethra distal to the severed os penis to create a urethral flap to anastomose the penile mucosa (*BOJRAB et al., 1983*). Knowledge about the length, depth and width of the groove may be of important in dissecting the urethra from it. In addition, the cranial 3 cm of the os penis (apex) is free from the groove and the urethra is present just beneath it.

Fracture of the os penis may occur in any size or breed of dog and often follows penile trauma when the animal attempts to jump a barrier. Diagnosis is made by survey radiography and urethral involvement can be justified by passage of a urinary catheter and retrograde urethrography if necessary (*BLOOM, 1954; JOHNSTON, 1965; STEAD, 1972 and FELDMAN & NELSON, 1987*). Radiographic description is important in diagnosis of os penis fracture as well as urethral involvement.

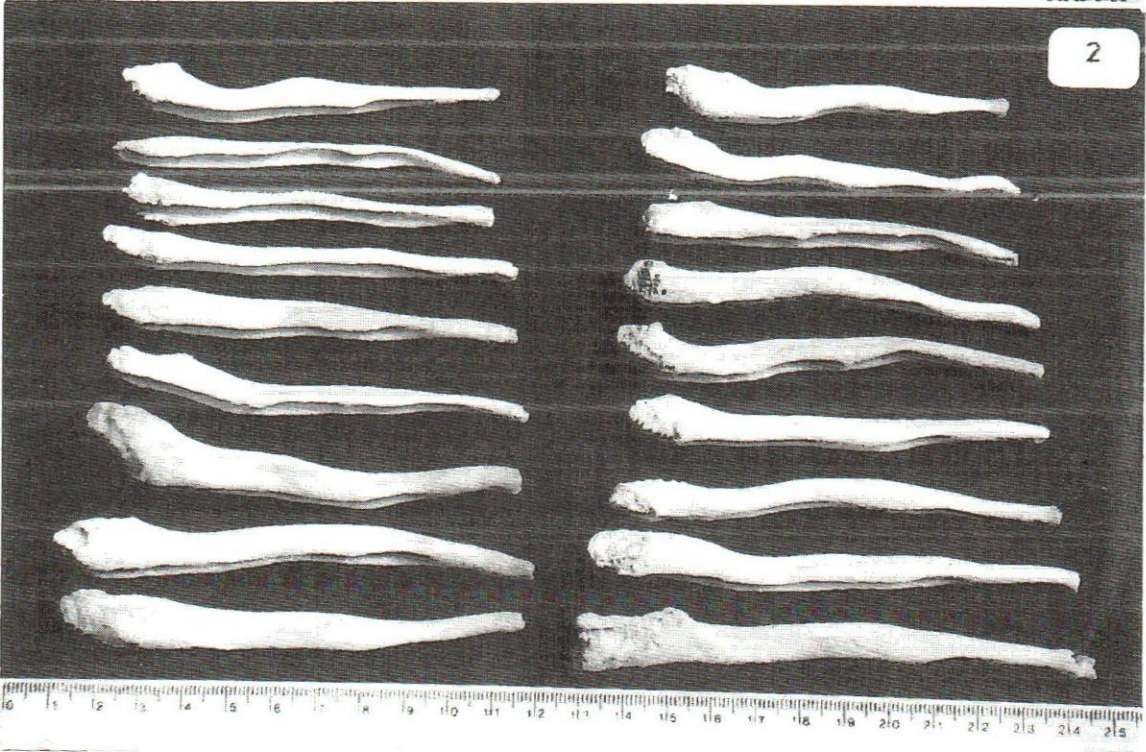
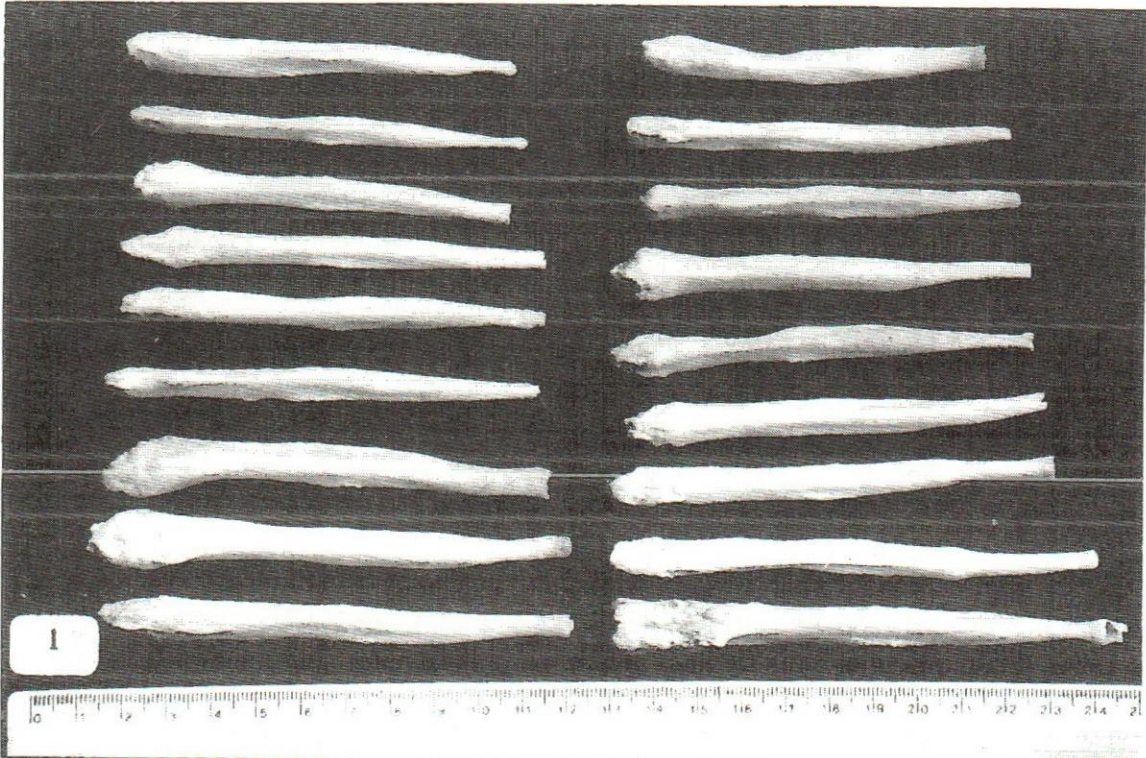
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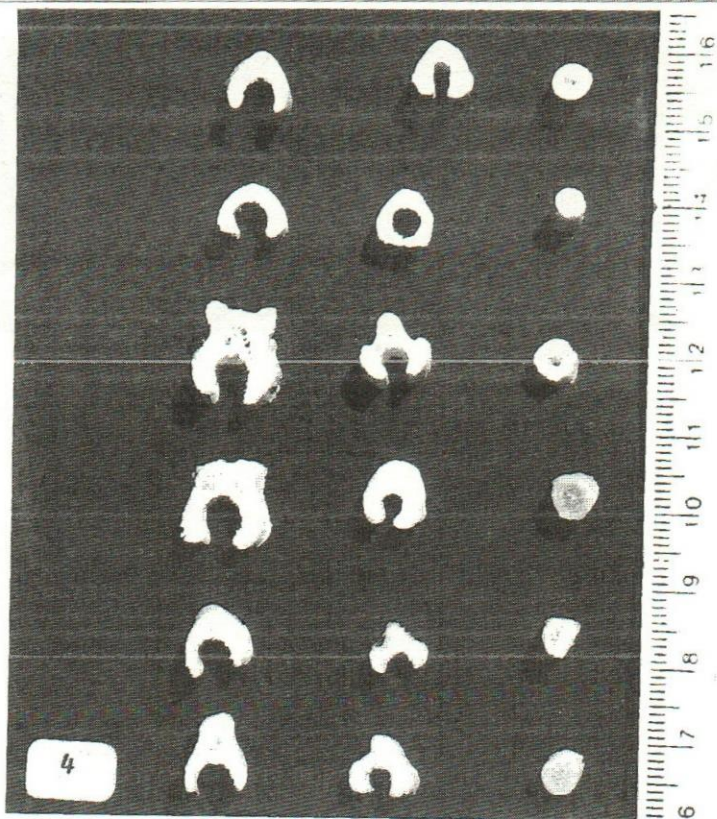
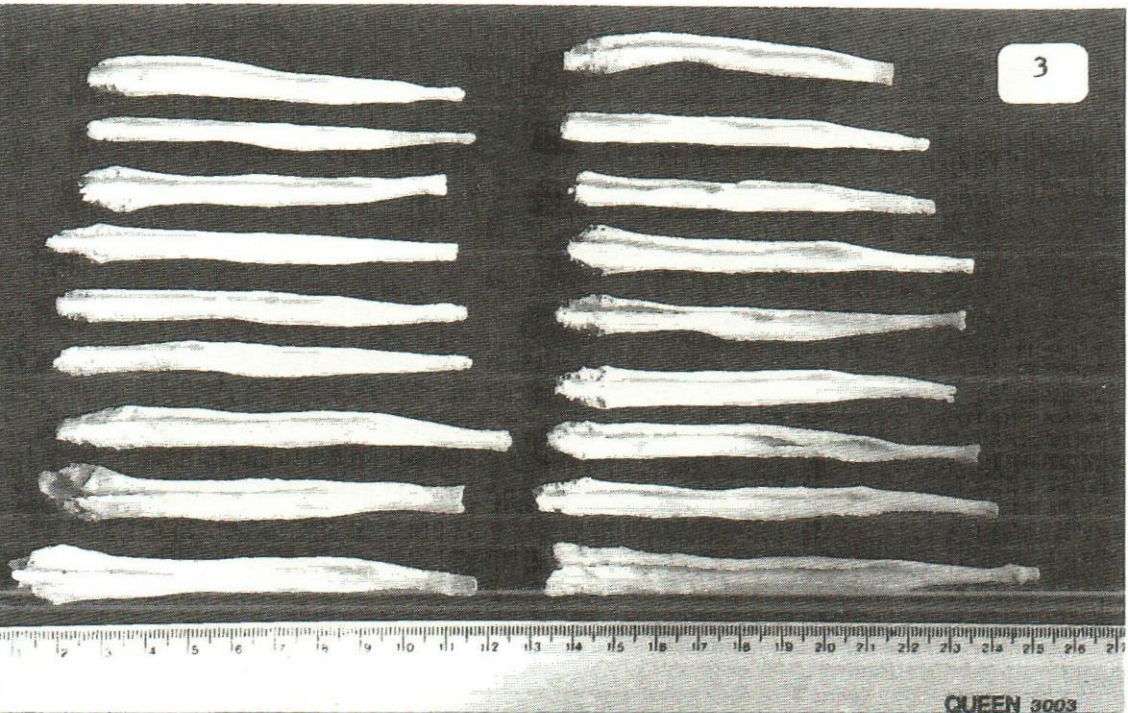
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LEGENDS OF FIGURES

- Fig. 1-3:** Show the dorsal, lateral and ventral views of the os penis in 18 dogs.
- Fig. 4:** Shows a cross section of the os penis at 3 levels; base (A), body (B) and apex (c) in 6 specimens.
- Fig. 5:** Shows the radiographic appearance of the os penis in dogs.
- Fig. 6:** Shows the relationship between the penile urethra (contrast urethrography) and os penis in dogs.

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