

Radiographic study of the penis in adult Indigenous Gazelle (*Gazella subgutturosa*)

Ali Abdulkareem Jabbar AL- Ramahy (1), Mahdi Abdul-kareem Atyia (2)

(1) Kufa university –College of Veterinary Medicine, (2) Baghdad university – College of Veterinary Medicine

(1)Ali.kareem1976@yahoo.com , 07808025515 (2)dr-mahdi55@yahoo.com, 07903192445

Abstract

Five specimens of adult Gazelle of (2-3) years old were used to study the internal pattern of the movement of blood inside the C.C.P. during erection, this was done by injected contrast media from the root of penis and photographed radio- graphically. The results showed that the penis of Gazelle has one dorsal canal on the dorsal part of the C.C.P., this canal extended from the root to the beginning of glans. From this canal the cavernous spaces of C.C.P. will be filled during erection by interconnecting canals.

Key words: radiograph, study, penis, corpus cavernous, contrast media, dorsal canal, ventral canal, interconnecting canals, blood pattern.

دراسة شعاعية لقضيب الغزال المحلي البالغ *Gazella subgutturosa*

*علي عبد الكريم جبار الرماحي *مهدي عبدالكريم عطية

*كلية الطب البيطري / جامعة الكوف

**كلية الطب البيطري / جامعة بغداد

Ali.kareem1976@yahoo.com, dr-mahdi55@yahoo.com

الخلاصة

استخدمت خمسة قضبان لحيوانات بالغة بعمر 2-3 سنة لغرض اظهار النظام او النموذج الداخلي لحركة الدم لمليء الجسم المتكفف خلال عملية النعوض وذلك من خلال حقن المادة المتباينة من جذر القضيب وتصويرها شعاعيا . واطهرت هذه الدراسة ان جسم قضيب الغزال يملك قناة ظهرية واحدة تقع الى اليسار قليلا من المنصف الوسطي للجسم المتكفف وانها تمتد من الجذر حتى منطقة الحشفة ومن خلالها يتسرب الدم الى احياز الجسم المتكفف لغرض ملئه في حالة النعوض من خلال قنوات تربط القناة الظهرية باحياز الجسم المتكفف

Introduction

The contrast radiography used for many purpose in penis as a diagnostic method , may allow visualized of urethral abnormalities such as space-occupying masses (e.g., calculi), ulcerations, fistulas , rupture or laceration of the tunica albuginea and other conditions (1).Also it used for

studies the venous drainage of corpus cavernosum and corpus spongiosum of penis (2). There are few radiographic studies of the normal pattern of blood flow of domestic animals and there is no radiographic study in the corpus cavernous penis of the wild animals.

The blood circulation in the corpus cavernosum in penis of bull studied by (3) by using of manual a single shot radiograph , the radiographs demonstrate that one dorsal canal stop at the proximal portion of sigmoid flexure while two ventral canal arrive at the proximal extremity of the penis. (4) Used radiography technique to study of blood

provider of CCP of pony stallion penis, the contrast medium injected after erection, it was enter the bulb of penis and constants inside C.S.P. to arrive at the glans and outlet by dorsal veins of the penis. By radiograph the penis after injection of contrast medium (5) found that there are 3 pairs of longitudinal canals in sigmoid flexure of the penis of camel , set as 2 dorsal canals expand from crura to the mid length of sigmoid flexure and tow middle plus tow ventral canals were arrived at the free parts of the penis , there were network of dens ducts joining between these canals . The x-ray used by (6) to depict the internal anatomical composition of the buffalo penis, and by (7) to investigate the normal internal pattern of blood flow in the C.C.P.in the penis of Ram. In both species there are three longitudinal canals are present, one dorsal and two ventral canals , dorsal canal begins after crura of root penis extended to distal end of the sigmoid flexure . The ventral canals started from the distal end of the sigmoid flexure and extend to the free part without arrived at the tip of penis. Interconnecting duct was observed arise from left and right sides of the dorsal canal. The pattern of C.C.P in the penis of Buck is studied by (7), there are pair of dorsal canals and pair of ventral canals. The dorsal canals begin from the proximal part of penis undergo the length of the C.C.P. to arrive at the base of glans. The pair of ventral canals,

which begin at the middle of the proximal portion of body and undergo the length of C.C.P. to arrive at the base of glans. The aim of this study is created on the indigenous Goitered Gazelle (*gazella subguttrosa*) in order to reach to radiographic appearance of normal internal pattern of blood flow in corpus cavernous penis (C.C.P.) of the penis.

Materials and methods

Two types of contrast media were used

a- Con ray 480 (sodium lothalamate 80 % w/v cy (mob) A2 .

b- Iopamic 370 (iopaidal 18.5 g of iodine by Bracco.s.p.a Millano Italia) **Fig.(2).**

The fluoroscope machine (**Fig.1**) in Al-Sadder education hospital in the Najaf governorate (Chimatzo, made in Japan) was set at the parameters which used {150 KV, 150 mAs and focus film distance of 14*17 cm}. Five animals of adult male gazelle (*Gazella Subguttaroza*) aged (2-3) years, healthy and normally appearance in nature were obtained from captive population in Kusaybah, five penises were removed and preserved by frozen. The refrozen specimens were used in the radiographical study, after left them overnight in a room temperature to melt slowly. The penis was maintained in an extended position by means of adhesive straps attached to the table over the site of cassette of film . Intra venous pediatric cannula was inserted in the root of penis and fixed with hose clip . The contrast medium was injected by using syringe of 50 ml calibrated in (0.5 - 1 ml) .

Injection of the contrast medium was done by hand . The amount of the contrast medium was injected in dosage of (1 cc) Five injection respectively and single radiographic image was taken in dorso-ventral view for each injection (exposer) .



Fig. (1) : Shows the Fluoroscope apparatus which used in this research with its digital printer and monitor



Fig. (2) : Injectable material (contrast media) showing two types which used in this research

Results

The intra penile duct system was clearly visualized radio graphically . Five specimens were radio graphed dorsoventrally , the present study was done to show that :

At starting of injection of contrast medium (1 ml) was move distally (cranially) through the dorsal canal reaching the

proximal end of the sigmoid flexure . (Fig. 3)

As injection was progressive at second dosage of contrast medium 1 ml (to become total 2 ml) the contrast medium pass more progressively in the dorsal canal to reach the middle of segmoid flexure , at this stage the C.C.P. of the root was fill with contrast medium . (Fig 4). As the injection increase (

third dosage of 1 ml) to become total 3 ml . The contrast medium pass forward in the dorsal canal reaching the proximal end of the free part of penis , the C.C.P. of sigmoid flexure was filled with contrast medium through small left and right collateral (ventrolateral) (interconnecting) canals . (Fig. 5 and Fig. 6). At the Fourth dosage of contrast medium of 1 ml (to become total 4 ml) . The contrast medium move cranially through the dorsal canal along the length of the free part . More collateral canals were clearly appear on left and right side of the dorsal canal . In this stage the dorsal canal shifted slightly on the left side of median plane of the C.C.P. of sigmoid flexure which completely filled with contrast medium . (Fig.7).

When more contrast medium (Fifth dosage of 1 ml) was injected to become 5 ml . The contrast medium pass progressively through the dorsal canal to reach the base of glans , the C.C.P. of the previous parts of penis were start to fill with contrast medium . (Fig . 8 -A). Injected Two dosage of contrast medium of 0.5 ml respectively lead to move contrast medium progressively inside the glans . (Fig.8 - B &C)

From the previous results of radio graphical study showed that the penis of gazelle has only one dorsal canal longitudinal canal starting from the root of penis passing along the entire length of penis until the glans , there is several small left and right collateral (interconnecting) canal branched from dorsal canal to enter the small spaces of the C.C.P. to fill them with contrast medium .

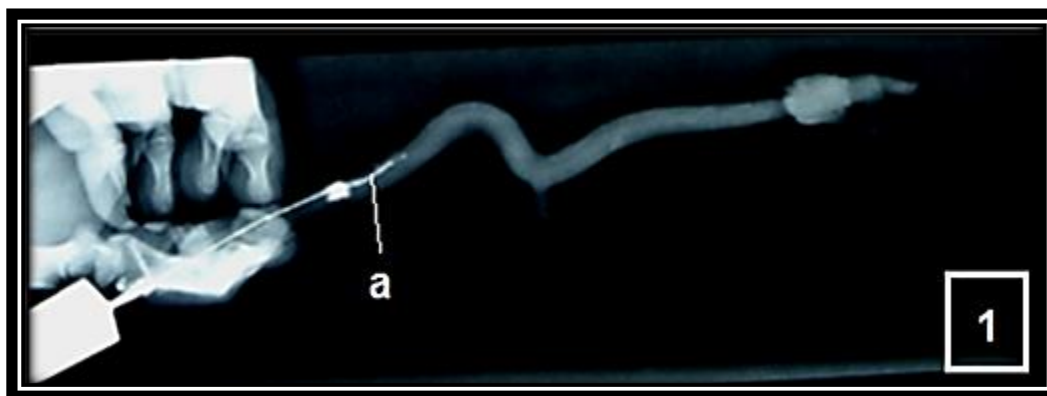


Fig. 3 : Radiographic image shows : a . Dorsal canal

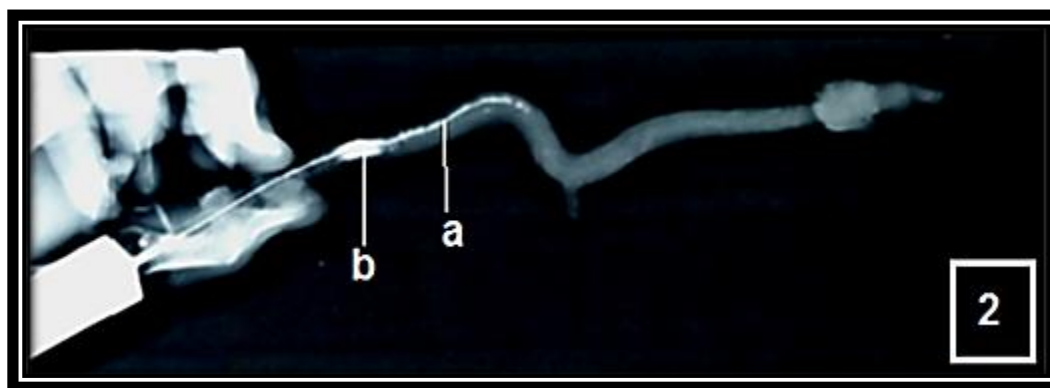


Fig. 4 : Radiographic image shows:a . Dorsal canal, b .Filled space of C.C.P.

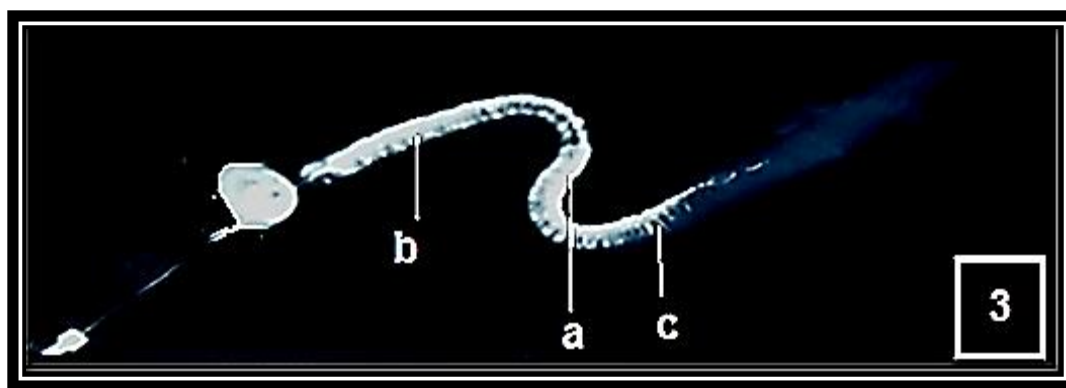


Fig. 5: Radiographic image shows : a . Dorsal canal ,b . Filled space of C.C.P. c . Collateral canal (interconnecting canal)

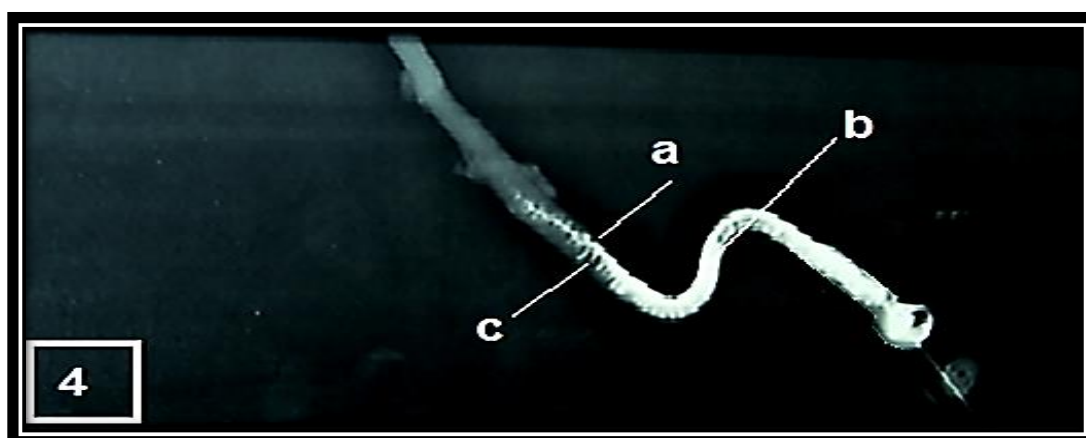


Fig. 6: Radiographic image shows : a . Dorsal canal, b . Filled space of C.C.P., c . Collateral canal (interconnecting canal)

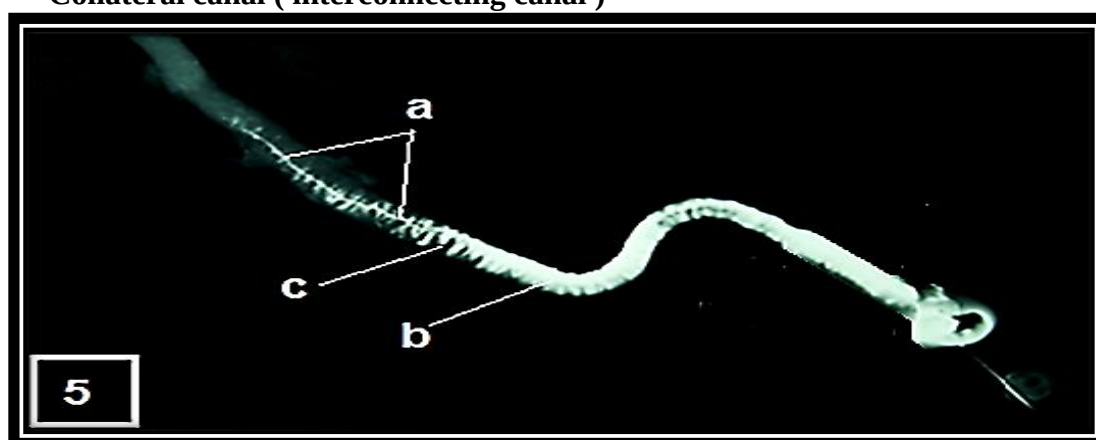


Fig. 7 : Radiographic image shows : a . Dorsal canal, b . Filled space of C.C.P., c . Collateral canal (interconnecting canal)

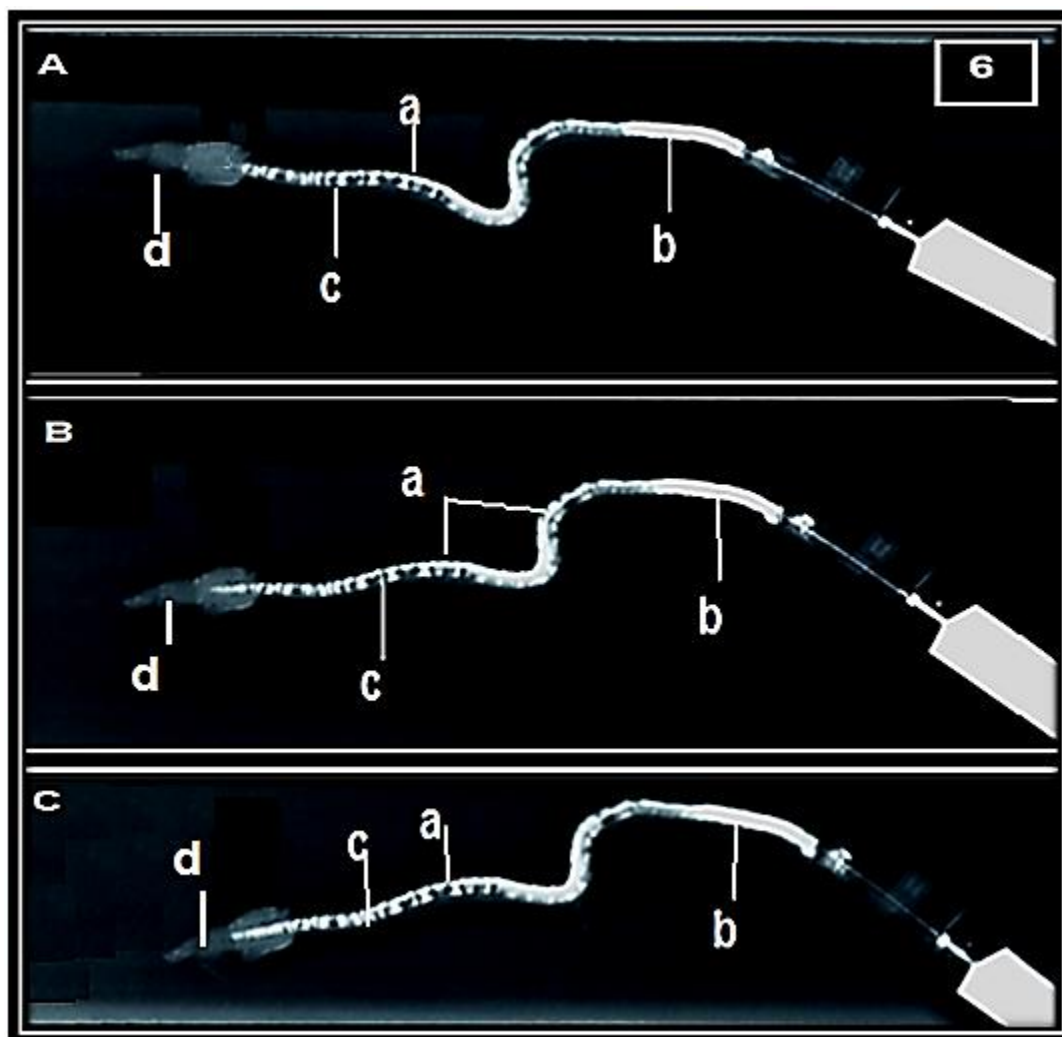


Fig. 8 (A-B-C) : Radiographic image shows : a. Dorsal canal, b . Filled space of C.C.P. , c . Collateral canal (interconnecting canal) ,d . Glans

Discussion

The radio graphical study on the penis of gazelle showed that it has only dorsal canal running from the root extremely to the glans extremity, the space of the C.C.P. filled with blood through several small collateral (interconnecting) canals originated from left and right side of dorsal canal to enter the C.C.P.

The filling of C.C.P. usually due to increase pressure inside dorsal canal leading to push the contrast medium through the collateral canal to enter the C.C.P. , the early filling of C.C.P. starting from distal root extremity

and spread evenly along the entire length of penis passing to glans extremity .

Our results in duct system of gazelle penis was greatly differ from the results of the authors which study the duct system in different animals (3) in Bull ,(6) in Buffalo and (7) in sheep penis has one dorsal canal starting from root to the distal end of sigmoid flexure , while (5) in Camel found that the penis of camel has 3 paired of canal (dorsal , middle and ventral) starting from root to glans .

The present of one dorsal canal in the penis of gazelle responsible to filling of C.C.P. need more time to complete filling when

compare with that animals mentioned above having 3 or more canals so our belief that the gazelle need more time to reach the full erection .

References

1. **Dascanio, J. J. and Patrick, M. M. (2014).** Radiographic Examination of the Penis 2014. <http://onlinelibrary.wiley.com/doi/10.1002/9781118904398.ch143/summary>.
2. **Amiri, A. A.; Gilanpour, H. and Veshkini, A. (2014).** Contrast radiographic study of venous drainage of the corpus cavernosum and the corpus spongiosum of the cat penis. I.J.A.E. Vol . 119, n . 3: 193-200
3. **Majeed, Z.Z. (1976).** Biometrical & functional studies on the penis in Ruminants Ph.D. thesis, University of London.
4. **Bartels, J. E. ; Beckett, S. D. and Brown, B. G. (1984)** . Angiography of the corpus cavernosum penis in the pony stallion during erection and quiescence . Am.J.Vet .Res . 45 (7) , pp: 1464-1468
5. **Atyia, M. A. (1986).** Anatomical and Histological studies on the penis of the one Humped camel . Msc. Thesis , Veterinary Medicine college , University of Baghdad –Iraqi .
6. **Hasso, A.A.(2005)** .Anatomical and Histological studies on the penis of the Native Buffalo (Bubalus Babalis) . Msc. Thesis , Veterinary Medicine College ,University of Mosul –Iraqi.
7. **Alkelaby, W. J. A. (2010).** Comparative Study of the Anatomy , Histology and Radiology of Ram and Buck penises . Msc. Thesis , Veterinary Medicine College ,University of Baghdad-Iraqi .