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RADIOGRAPHIC ANATOMY OF THE URETHRAL DIVERTICULUM IN MALE BOVINE.

(With 3 Figures)

By

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التشريح الأشعاعي لردب المبال في الثور

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تم إجراء هذا البحث عللا ثلاث ثيران حيه وقد تم حقن مبال هذه الحيوانات بمادة اليوروجرافين ثم أخذت صور أشعة لها. بالإضافة إلى ذلك تم تجميع أربعة عينات لمبال الثيران حقنت عينتين بمادة اليوروجرافين وعينتين بمادة اللاتكس وتم دراسة هذه العينات تشريحيًا وإشعاعيًا. تم تحديد ردب المبال عند الالتقاء المبال القشبي والمبال الحوضي على هيئة كيس طوله ٢ سم وعرضه ٠.٥ سم.

SUMMARY

The present study was carried out on 3 living mature male of bovine. Urografin 76% injected retrogradely through the urethra of these animals and subjected to radiography. In addition 4 specimens of male bovine urethra were collected, two of them injected by urografin and the other 2 specimens injected by latex. Anatomical and radiographic findings were described. Urethral diverticulum was detected at the Junction of penile and pelvic urethra as cul-de-sac, 2 cm in length and 0.5 cm in diameter.

Keywords: Radiographic anatomy of the urethral diverticulum in maile bovine.

INTRODUCTION

Urolithiasis is the most common cause of urethral obstruction in the bovine male and directly affect on the animal life. Although the stones form in the bladder, they are insignificant until they pass and lodge in the urethra. The majority of calculi found in the urethra of steers and bulls are lodged in the re-

gion of the sigmoid flexure and less commonly, the calculi are found lodged just caudal to the gland penis. Surgical correction of urolithiasis performed mainly either by urothrotomy or urothrostomy. The urethra of the bovine male has urethral diverticulum which situated dorsal and posterior to the urethra and about 3 cm in length and

1.5 cm in diameter. It serves as a secondary reservoir for temporary urine collection (JENNINGS 1984).

An additional anatomic barrier to catheterization in the form of a dorsal diverticulum of the pelvic urethra just proximal to the point when the bulbourethral gland ducts open into it, has been described. This, however, apparently does not interfere with easy passage of a catheter directly into the bladder after urethrotomy (SHOKRY and AL-SAADY 1980). However JENNINGS (1984) stated that presence of diverticulum present problems in catheterization.

Positive contrast retrograde urethrography is a radiographic technique used for evaluation of urethra. The procedure is indicated in patient with dysuria, stranguria, investigation of caudal abdominal or pelvic masses and for evaluation of patients after pelvic trauma when urinary tract injury is suspected (ACKERMAN 1980).

The aim of the present study is to describe the position, shape and dimensions of the urethral diverticulum in male bovine.

MATERIAL and METHODS

The present study was carried out on 3 living mature bovine males. Animals were Tranquilized using rompun in a dose rate of 0.05 - 0.1 mg/kg B.W. (HALL, 1978). Catheter was inserted into the external urethral orifice followed by retrograde injection of urografin 76% in a dose of 10 ml. The re-
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gion of the urethra was radiographed in a lateral projection.

In addition, 4 specimens of mature male bovine urethra with the surrounding tissues were collected - two specimens were injected by urografin 76% by a dose of 10 ml, then radiographed, the other two specimens were infected by latex, then exposed to longitudinal sections. Studies of urethral diverticulum was performed concerning anatomical and radiographical findings.

RESULTS

Anatomical finding:

The urethral diverticulum is found situated at the junction of the penile and pelvic urethra ventral to the dorsal extremity of the bulbospongiosus muscle. At this point it appears as a cul-de-sac, 2cm in length and 0.5 cm in diameter. It represents the normal continuation of the penile urethra. The pelvic urethra starts by the urethral valve which is composed of two leaf-like longitudinal folds. The pelvic urethra increased gradually in diameter toward the bladder until it reaches 1.5 cm. (Fig. 1).

Radiographic finding:

Lateral radiographic projection showing that the urethral diverticulum is situated 2 cm from the perineal region, 3-5 cm below the level of tuber ischii and at the curvature connecting the penile and pelvic urethra. It appears as radiopaque blind sac (2 cm in length and 0.5 cm in diameter) in positive contrast urethrography. (Fig. 2 & 3).

DISCUSSION

The normal anatomical and radiographic appearance of the urethral diverticulum is important and must be taken in consideration during surgical approach of the urethra.

As the urethral diverticulum is situated 3 - 5 cm below the level of tuber ischii, the ischial approach for urethrotomy or urethrostomy operation must be performed at a level lower than that of urethral diverticulum to avoid its exposure.

The introduction of urethral catheter through urethrotomy or urethrostomy wound toward the bladder mostly find its way to the urethral diverticulum.

Forcible trials for introduction of the catheter may leads to its rupture. It is recommended that, before suturing of a ruptured urinary bladder, to pass a catheter from it toward the urethrotomy wound to remove any calculi in pelvic urethra and at the same time to keep the urethral diverticulum without interference and the urethral valve without destruction.

The available literatures stated that retrograde catheterization is contraindicated in male bovine due to presence of sigmoid flexure. Our present study stated that the presence of urethral diverticulum added another barrier for such technique.

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LEGENDS OF FIGURES

Fig. 1: Longitudinal section at the urethra of male bovine specimens with Latex (A) and without Latex (B) Note the following:

- | | |
|--------------------------|-----------------------------|
| A) urethral diverticulum | B) urethral valve |
| C) Bubo spongiosis penis | D) Bulbo spongiosis muscle. |



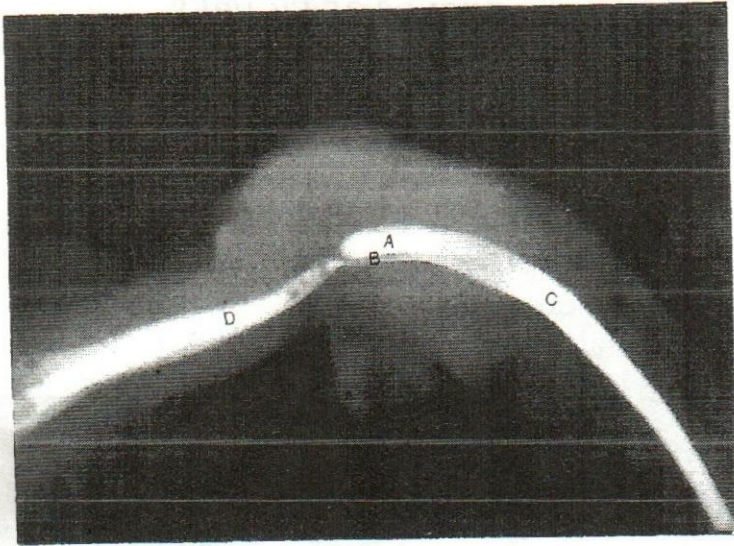


Fig. 2: Lateral positive urethrography at the Junction between the pelvic and penile urethra of a male bovine specimen.

Note the following:

- | | |
|---|--------------------|
| A) The urethral diverticulum as cul-de-sac. | B) urethral valve. |
| C) penile urethra. | D) Pelvic urethra. |



Fig. 3: Lateral positive urethrography in a mature male bovine.
Note the seat of urethral diverticulum in relation to the perineal region.