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PERINEAL URETHROTOMY IN DONKEY A COMPARISON OF FIRST AND SECOND INTENTION HEALING

(With 8 Figuers and One Table)

By

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فتح المبال فى العجاجى فى الحمير

مقارنه بين الإلتئام بالقصد الأول والثانى

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إجريت عمليات فتح مجرى البول فى قضيب (١٢) حمار عند قاعدته أسفل فتحة الشرج بقليل. وقد تم قطب الجرح فى المجموعة الأولى المكونة من (٦) حمير ولم يقطب فى الثانية (٦ حمير) وذلك بغرض مقارنة الإلتئام بالغرض الاول والثانى فى المجموعتين. وأعدمت الحمير على فترات مختلفة (٢ أسبوع , ٤ أسبوع ثم ١٢ أسبوع) بعد العملية. وقد تم دراسة وجود تعرجات فى الغشاء المخاطى وأيضا إختناق مجرى البول فى مكان العملية فى صور الأشعه. ولوحظ وجود تعرجات بدرجات متفاوته ومتقاربه فى المجموعتين. أما الإختناقات فقد لوحظ وجودها وأستمرت حتى نهاية التجربه فى المجموعه الأولى مع إختفائها فى المجموعه الثانيه. وقد أوضحت الدراسة بأن قطب الجرح بعد فتح المبال العجاجى فى الحمير أفضل من تركه بدون قطب.

SUMMARY

Urethrotomy was performed on 12 male donkeys at the base of the penis in the perineal region. Suture closure of the urethra, subcuticular tissue and skin was performed in six donkeys, and the surgical site was allowed to heal by second intention in another six donkeys. Two donkeys from each group were euthanised at 2,4 and 12 weeks postoperatively. Urethral mucosal irregularity was seen on urethrograms performed in all opereted donkeys in different degrees, which were nearly similar in both groups. Urethral stricture was observed in the sutured group in severe and mild degrees at 2 and 4 weeks respectively, and in slight form at 12 week postoperatively while the stricture was present in the second intention group only at 4 weeks and decreased after that. As a conclusion, it should be emphasized that suturing of the urethrotomy wound in donkeys is preferable than keeping it without suture.

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INTRODUCTION

Partial or complete urinary obstruction may occur in male horses when calculi lodge in the urethra. The most common location of obstructing urethral calculi is distal to tuber ischii, i.e. at the junction of the wide pelvic urethra. Occasionally the calculi lodge in the pelvic part of the urethra or in the bladder (*BERGE & WESTHUS, 1966; WALKER & VAUGHAN, 1980; LUNDVALL, 1981; ROBERTSON, 1984 and DEBOWES, 1992).*

In some cases, expulsion of a calculus can be achieved by administering a central acting muscle relaxant, otherwise urethrotomy is indicated *(SCHAEFER, 1984).*

The ischial urethrotomy is the ideal approach for the diffe-rent locations of the calculi. Most authors recommended either first or second intention healing of the urethra following urethrotomy without clear differentation between the two types.

The purpose of the present study was to examine and compare first and second intention healing of the equine urethra in normal donkeys following perineal urethrotomy.

MATERIALS and METHODS

Twelve healthy male donkeys (90-120 kg body weight) were used in this experiment Each donkey was premedicated with i.v. promazine hydrochloride (1mg/kg B.wt) before general anaesthesia using i.v. deep chloral hydrate narcosis (6gm/50kg b.wt.) and thiopental sodium (8mg/kg.b.wt.). The operations were performed in the dorsal recumbent position. The perineal region was surgically prepared. A rubber urinary catheter is advanced proximally through the urethra to aid in identification of the urethra.

About 5 cm long median skin incision was made, 5 cm behind the scrotal sacs (base of the scrotal approach). The subcutaneous tissues were divided and the longitudinal incision was continued deep to devide the bulbocavernosus muscle and then corpus cavernosum. Intraoperative palpation of the urethra was facilitated by the preoperative placement of a urethral catheter.

Simple mattress sutures in the deeper layer around the urethra were applied to control active bleeding from the cavernous spaces of the corpus spongiosus. A longitudinal incision (about 2 cm) was made along the caudal surface of the urethra and the mucosa is reflected abaxially to expose the intraluminal placed catheter.

The urethral wound was sutured in 6 donkeys (Group A) using simple interrupted 3/0 catgut on atrumatic needle. The

subcutaneous tissues were then sutured in the same manner. Skin was closed with simple interrupted non-absorbable sutures of silk size 1. In the other 6 donkeys (Group B) no sutures were placed in neither urethra nor skin. The wound was managed with local care during process of second intention wound healing.

After euthanasia of 2 animals from each group at 2,4 and 12 weeks postoperatively, positive contrast urethrograms were performed. Barium sulfate suspension was infused into the urethra before or after complete amputation of the penis from its root, in all operated donkeys. Radiographic interpretation mucosal irregularity and internal stricture were recorded at the surgical site on the urethrograms. In addition, postmortem examination for the presence of haematomas, fistulae, abscess, suture material or ulcer were observed.

RESULTS

Clinical observation:-

First intention healing occured in all six donkeys in group A, within 7-10 days postoperatively after removal of suture stitches. All six donkeys in group B had no significant bleeding from the surgical site postoperatively, except in two cases an intermittent fluid continued to ooze for a 7 days, (Fig. 1&2). The healing was completed 4-5 weeks after operations.

All 12 donkeys were able to urinate freely with normal urine streams throughout the study. No evidence of subcutaneous urine accumulation was seen in any of the operated donkeys.

Radiology:-

Urethral abnormalities consisting of irregular mucosal surface and stricture of the urethral lumen table 1 and figures (3 to 8).

Postmortem examination:-

Haematomas, fistulae and abscesses were not detected at the seat of the urethrotomies in all animals. From inside the suture material appeared without any covering tissues in one animal two weeks postoperatively in group A. While in groupB, unhealed incision was observed 2 weeks postoperatively in two animals. On the other hand a small ridge (about 2mm) was observed in all animals of group B, 4 & 12 weeks postoperatively.

DISCUSSION

Urethrotomy is necessary in some cases for removal of calculi lodged in penile urethra. Following urethotomy at the base of penis, some surgeons recommended that healing occur by second intention equally as well as by first intention *(WALKER and VAUGHAN 1980, and LUNDVALL, 1981). BERGE and*

WESTHUS (1966) sutured the urethral wound, but *DEBOWES (1992)* prefered the second intention wound healing. This study was performed to compare between frist and second intention healing and the complications following each technique.

Complications of urethrotomy in general have been discussed in canines, including urethral fistula, and persistent haemorrhage from incised corpus cavernosum tissue *(BROWN, 1975 and Stone, 1990).* These complications in equine have not be discussed. Primary closure of urethrotomy has been suggested as a means to control haemorrhage from the corpus cavernosum tissue, however, primary closure also has been stated to be a cause of urethral stricture *(ANNIS and ALLEN, 1967). STONE (1990),* mentioned that suturing the urethra requires extra time, gentle tissue handling and delicate instruments to prevent stricture.

The animal, in which healing by second intention took place were able to urinate normally just after the operation, but the heamorrhage-in a form of blood stained urine-persists few days post operatively. Primary closure of urethra and skin resulted no hamorrhage from the surgical site. It is probable that the sutures placed through the tunica alboginea, produce compression on the corpus cavernosum, thus reduce haemorrhage.

In normal male donkeys, the urethra should have a smooth luminal outline throughout the length of urethra. This has been confirmed in the healthy parts of the urethra on the urethrograms. The urethrograms performed postoperatively in early period (2 weeks) revealed no irregularity, but in later period (12 weeks) revealed mucosal irregularity and slight stricture in urethral diameter in group A. The mucosal irregularity was also observed on the urethrograms of the donkeys of group B. These irregularities may be due to areas of mucosal errosions. The stricture of the urethral diameter- in group B- was observed in slight degree after (4 weeks) and disappeared at (12 weeks) on the urethrograms.

In conclusion, advantages of suturing technique after urethrotomy can be summarized as follows:-

1- Healing of the urothrotomy wound occurs within 7 to 10 days by 1st in tention.
2- Wound management performed only at the time of removal of suture stitches, i.e their was no daily management.
3-No postoperative complications were recorded.

On the other hand, keeping of the urothrotomy wound without suturing have many dis-

advantages which can be summarized as follows:-

1-Delayed healing up to 5th week postoperatively which may be resulted in secondary infection.

2-Daily management of the urothrotomy wound up to 5 weeks for cleaning the fluid oozing from the skin incision, which may cause scalds at the skin when it is neglected.

3- long hospitalization time (up to 5 weeks).

From the result of our present study, it should be emphasized that suturing of the urothrotomy wound in donkeys is preferable than keeping it without suture.

Table .1: Radiographic results following urethrotomy in donkeys.

Periods after operations in week	Number of figure	Urethrogram	
Group A		Mucosal irregularity	Urethral stricture
2	3	no	around 50%
4	4	very slight	around 25%
12	5	slight	around 15%
Group B			
2	6	mild	around 10%
4	7	mild	around 15%
12	8	slight	around 10%

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LEGENDS

Fig. 1: The urethrotomy wound after 2 weeks postoperatively.

Fig. 2: The urethrotomy wound after 3 weeks postoperatively.

Fig. 3: Urethogram, 2 weeks after operation (group A) showing severe urethal stricture at the site of operation (arrow).

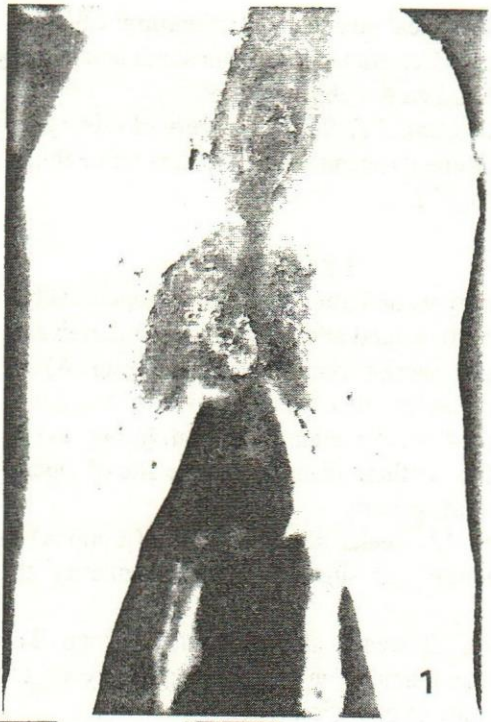
Fig. 4: Urethrogram, 4 weeks after operation (group A) showing mild stricture in the urethral diameter at the site of operation and very slight mucosal irregularity.

Fig. 5: Urethrogram, 12 weeks after operation (group A) showing slight diameter stricture and slight mucosal irregularity at the operation site (arrows).

Fig. 6: Urethrogram, 2 weeks after operation (group B) showing no stricture of the diameter and mild irregularity of the wall of the urethra at the site of operation.

Fig. 7: Urethrogram, 4 weeks after operation (group B) showing slight diameter stricture and mild mucosal irregularity of the urethra at the site of urethrotomy.

Fig. 8: Urethrogram, 12 weeks postoperatively showing no stricture of the urethral diameter and slight mucosal irregularity at the site of urethrotomy.



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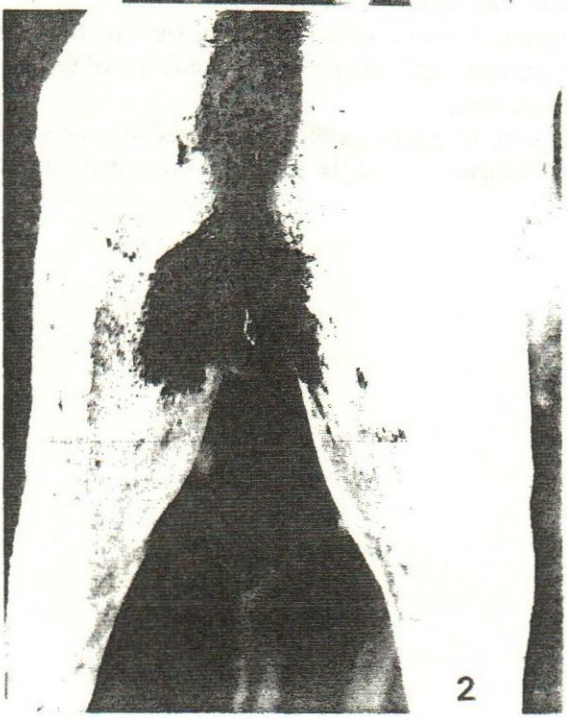

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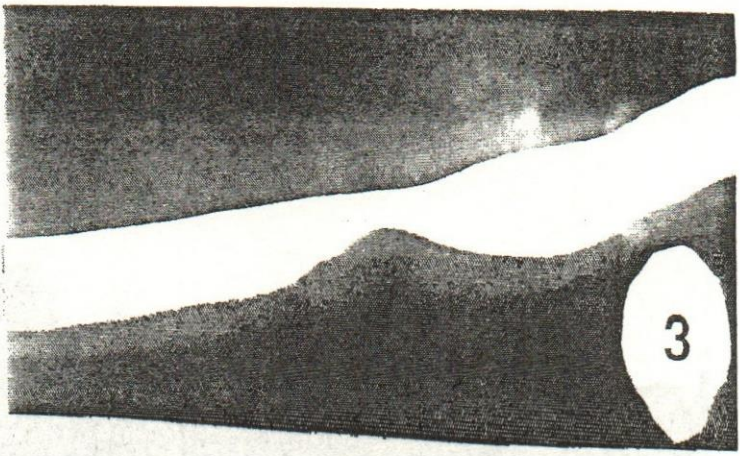
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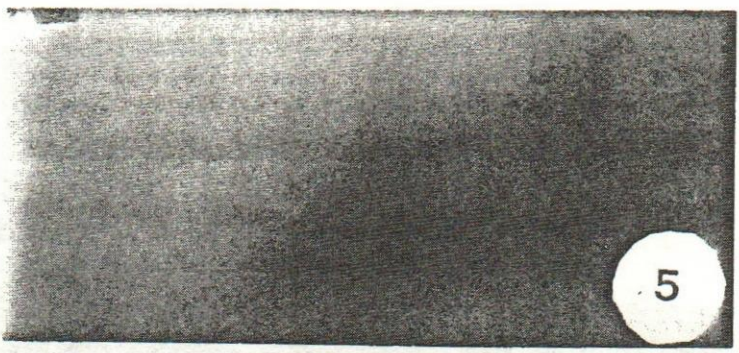
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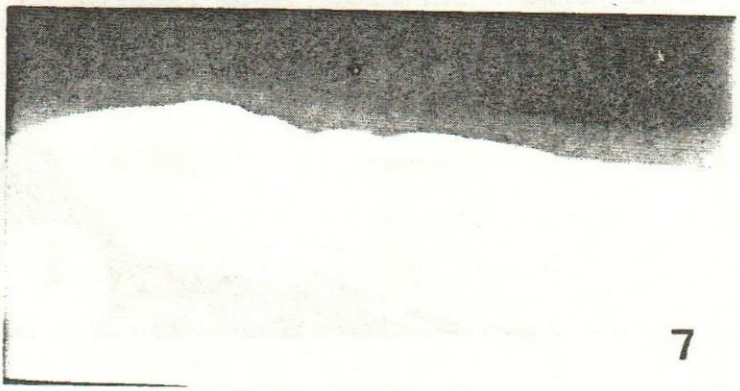
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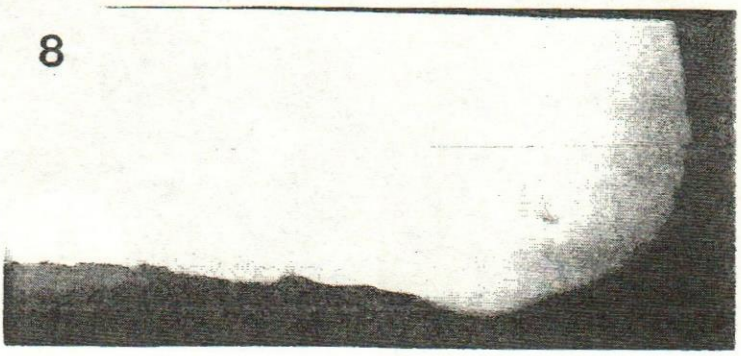
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