THE ROLE OF AN URGENT URETHROGRAPHY IN THE DIAGNOSIS AND OPTIMAL MANAGEMENT OF ANTERIOR URETHRAL INJURY

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ABSTRACT

Twenty one patients with straddle injuries (their age ranged from 20 - 45 years) underwent urgent urethrography for evaluation of urethral integrity, complete rupture bulbous urethra in 15 patients and simple urethral contusion in other 6 patients. 10 patients were managed by primary urethral reconstruction with supra pubic diversion and the other 5 patients by supra pubic cystostomy as the primary repair for rupture bulbous urethra.

Two out of ten patients were managed by primary urethral reconstruction requires further procedure of urethral dilatation, while 3 patients were managed primarily by suprapubic cystostomy required gradual urethral dilatation, two of them visualised internal urethrotomy and only one patient needs surgical excision of strectured part with urethroplasty (end to end anastomosis). Therefore urgent urethrography provides, non invasive, simple and accurate diagnostic procedure for the extent of urethral injury, that is necessary for optimal management with the best successful outcome and least morbidity, as well it can eliminate the controversy existed about the result of primary urethral repair in comparison to suprapubic cystostomy as preliminary procedure as it clarifies the extent of urethral injury.

INTRODUCTION

The wide spread acceptance of urethrography as the primary diagnostic procedure in patients suspected of having sustained urethral injuries has improved the understanding of the extent and mechanism of such injuries.

In past the diagnosis was based solely on the classical clinical triad of blood at the urethral meatus, inability to void and a palpable bladder. Secondary clinical features include a high riding prostate and the presence of perineal hematoma, (Sandler & Corriere 1989). The diagnostic catheterization is now condemned as such procedure may convert a partial urethral injury into a complete one, increases the risk of hemorrhage in the prosthetic bed and may infect a previously sterile hematoma, (Corriere & Harris 1981, Sandler et al., 1991).

Therefore urethrography has become the accepted method for a diagnosis of suspected injury. Straddle injury may result in anterior urethral contusion, complete or partial rupture of the bulbous urethra. Partial injury is demonstrated on urethrography when there is extravasation of contrast material from the mid bulbous urethra but the continuity of the urethra is maintained. Complete anterior urethral disruption may be diagnosed when the continuity of the urethra is completely disrupted (Sandler and Corrier 1989).
The discussion over the years has been whether to operate on straddle injuries instantly or just to put a cystostomy tube and leave them alone. Devine et al., 1977, McAninch 1981, Pontes and Pierce 1978 emphasized that these injuries are much better left alone without primary repair, but with suprapubic cystostomy, most patients do not develop stricture urethra (70%), and avoid the problem of attempting to repair these ruptured urethra is that severe bleeding extends laterally in the corpus spongiosum and makes the injured area friable when one explores it surgically, and failure of primary repair with subsequent stricture formation while Paul and Arthur 1992 reported that if there is any question regarding the integrity of the urethra especially if severe contusion of the anterior or posterior urethra is present cystostomy and delayed reconstruction of the urethra are preferred to Foley catheter urethral drainage. Partial or complete severance of the urethra may be managed by exploration.

**PATIENTS AND METHODS**

Twenty one laborers patients exposed to straddle injury over a period of 3 years 1991 - 1994 were studied. Their main clinical presentation was perineal pain: urethral bleeding, acute retention, perineal hematoma and associated fracture femur in one patient. Clinical evaluation included, physical signs, abdominal and local examination, laboratory investigation in the form of CBC, Blood chemistry (Serum creatinine, Blood Urea, Sugar). Radiological examination, "KUB" for an associated fracture bone of the pelvis or femur. All patients underwent urgent urethrography for evaluation of urethral integrity.

**Technique of urgent urethrography:**

Foley's catheter 18 Fr. with balloon 5 ml. Catheter was attached to an irrigating syringe filled with contrast material and inserted into the urethra for 2 - 3 cm, one to two milliliters of saline is injected into the balloon to seat the catheter in fossa navicularis.

The patient is placed in the 25 - 35 degree oblique position and a radiographic exposure made during the injection of 25 to 30 ml. of contrast material. The oblique position is greatly preferred because in the antero posterior the bulbous urethra is foreshortened and superimposed on itself on the radiograph. This latter position may cause confusion in interpretation, especially when gross extravasation is present. Out of the 21 patients, 15 had undergone surgical intervention while primary urethral reconstruction through perineal approach had been performed on 10 patients, the other 5 patients were treated initially by cystostomy. The primary reconstruction begins by exposing the urethral traumatic area without complete mobilization. The traumatized or ischemic part of the urethra was debrided, simple closure of the urethral floor only with suprapubic cystostomy tube. Urethral stent was removed after 15 days and suprapubic tube clamped in the second day and ask the patient to void. Ascending and voiding cystourethrogram was performed for all patients after one month.
The role of an urgent......

RESULTS

The most common clinical presentation in 21 patients with straddle injury were perineal hematoma in 6 patients, minimal urethral bleeding in 14 patients and massive uncontrollable and requires blood transfusion in one patient, palpable bladder in 4 patients while inability to void in 15 patients.

Following results of 21 patients straddle injury (up to 2 years).

6 patients with urethral contusion were passed free with conservative treatment except two patients and developed retention and a urethral catheter was fixed for two days only.

2 out of 10 patients underwent primary reconstruction of urethra required further urethral dilatation. While 3 patients from other group of initial cystostomy required further management to end, one patient developed stricture bulbous urethra for end anastomosis while two patients for repeated visualised internal urethrotomy.

Table 1

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>No. of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perineal Pain</td>
<td>21</td>
</tr>
<tr>
<td>Inability to void</td>
<td>15</td>
</tr>
<tr>
<td>Minimal Urethral Bleeding</td>
<td>14</td>
</tr>
<tr>
<td>Perineal Hematoma</td>
<td>06</td>
</tr>
<tr>
<td>Palpable Bladder</td>
<td>04</td>
</tr>
<tr>
<td>Massive Bleeding</td>
<td>01</td>
</tr>
</tbody>
</table>

(2) Urgent Urtherography for 21 patients:

* 06 patients urethral contusion.
* 15 patients complete rupture urethra (loss of urethral continuity).

(3) Surgical procedure in 15 patients with complete rupture bulbous urethra:

* 10 patients primary repair.
* 05 patients initial cystostomy.
Figure (1)
Urgent urethrography in straddle injury showed complete rupture bulbous urethra.

Figure (2)
Urgent urethrography showed complete rupture bulbous urethra.
Figure (3)
Surpapubic diversion as a preliminary procedure in pt. with complete rupture bulbous urethra.

Figure (4)
Asending urethrography 6 weeks post diversion showed complete obstruction at the bulbous urethra requires further dilatation.
Asending urethrography after delayed urethroplasty of the same pt. (minimal narrowing required further intervention).

Figure (6)
Asending urethrography of pt. at figure (5) after internal urethrotomy, requires further intervention.
Figure (7)
Asending urethrography showed the result of primary reconstructive surgery (after 3 months).

Figure (8)
Asending urethrography after primary reconstructive surgery
Asending urethrography after primary reconstructive surgery (minimal constructing band)

Figure (9)

Asending urethrography after primary reconstructive surgery (minimal constructing band)

Figure (10)
The role of an urgent ....

Figure (11)
Asending urethrography after 6 weeks of priliminary supra pubic diversion

Figure (12)
Asending urethrography of same pt. of figure (11) after gradual dilatation and further internal urethrotomy (one month later)
DISCUSSION

Urgent urethrography is certainly a simple non invasive procedure for diagnosis of urethral injury as well as the extent of such injury, depending on the finding of extravasation and the presence of urethral continuity. Corrier & Harris 1981 concluded that the diagnosis of rupture urethra by catheterization is now condemned due to high risk of complication, therefore urethrography has take the priority method for a diagnosis of our patients. In our study the most common clinical presentation was perineal pain with hematoma and inability to void, similar results were obtained in other series (Sandifer and Corrier 1989 - Corrier and Harris 1981).

In 21 patients underwent urethrography, absent urethral continuity with perineal extravasation was reported in 15 patients indicating complete rupture urethra, while normal urethral continuity in 6 patients with simple urethral contusion.

The controversy existed about the ideal management of straddle bulbous urethral injury: in the past established the advantages of suprapubic cystostomy diversion over a primary urethral reconstruction as emphasized by many authors Devlin et al., 1977, Pontes and Pierce 1978, McAnich 1981, while James and Pierce 1991 reported that if one has tried to establish urethral continuity surgically there certainly more involvement of urethra may be present because of tissue being lost secondary to the exploration. However such result in the absence of accurate diagnostic procedure for the extent of urethral injury considered unreliable because of the standard use of urethral catheterization with its well known sequences in the diagnosis of urethral injury that might affect the outcome of primary repair (infection, hematoma formation).

In our 10 patients operated upon with primary urethral reconstruction the success rate about 60% (excluding 2 patients required further dilatation) in comparison to 5 patients were managed by preliminary suprapubic cystostomy, in whom 2 patients required further procedure as internal visualization uretrotomy and dilatation, one patient has required excision of stricture part and end to end urethroplasty. We think that the comparison is more reliable as it quite depending on fixed parameters from urgent urethrography, also fruitful results of primary urethral reconstruction were improved by careful aseptic technique of urgent urethrography, trimming the contused or ischemic edge of urethra, the use of fine sutures material 5/0 Dexon, suprapubic diversion and use of small siliconeized 12 Ch. fenestrated urethral stent and finally restricted mobilization of urethral cut end and the avoidance of sutures in the supported part of urethral root.

CONCLUSION

Urgent urethrography is well established and accepted non invasive diagnostic procedure for urethral injury. Primary urethral reconstruction of the straddle injury is now favoured by urgent urethrography and simple modification of the surgical technique provide excellent results with the lowest morbidity.
REFERENCES


أهمية إشعاع مجرى البول الطارئة (العاجلة)
في تشخيص وعلاج إصابات مجرى البول الأمامي

إلهام عبد الله أبو السعيد
كلية الطب - جامعة الأزهر

أجري هذا البحث على إحدى وعشرون حالة إصابة مجرى البول من العاملين بتوصية الجراح المكي
الدريф نتيجة السقوط مباشرة على مادة المبان.

وقد أجريت لهم أشعة طبقة صاعدة (عاجلة) لتقييم شدة وعدد الإصابة ومقارنة أساليب العلاج
الجراحي.

وقد وجد أن 16 حالة مصابة بتهتك كامل مجرى البول الأمامي و6 حالات كدمات مجرى البول وقد
أجريت جراحة عاجلة في 16 حالة مع تهيئة مجرى البول. وأجري 20 حالة مجرى البول فقط في 5 حالات.

وكانت النتائج ما يلي:

1- حالات فقط من حالات التدخل الجراحي الأولى احتاجت إلى إجراء توسيع ترزيج وفترة متابعة
قصيرة.

2- ثلاث حالات من الذين أجري لهم تهيئة مجرى البول فقط تم علاجهم بعد ذلك بتوسيع مجرى البول
تزويريا بينما حالات من أجرى لهم تهيئة مجرى البول تزويريا احتاجت إلى تدخل الجراحي
لاستئصال التهتك.

وقد استخلص ما يلي:

1- أن إشعاع مجرى البول العاجلة تعتبر أسلوب سهل ودقيق في تشخيص مدى إصابة مجرى البول وتحديد
الأسباب المناسبة للتدخل الجراحي في أساس واضح.

2- إمكانية تقييم الأساليب المختلفة في علاج إصابات مجرى البول ومقارنة النتائج بما يعود على المريض
بالفائدة العاجلة.

3- إن التدخل الجراحي العاجل لإصلاح التهتك الكامل لمجرى البول الأمامي أعطى نتائج طيبة وليس كما
أشير أنها تؤدي إلى حدوث تهتك شديد بمجرى البول مقارنة بالعلاج المركزي، ومن ثم الاقتراح من نسبة
إعادة وعناية المريض في مثل هذه الحالات.