

# ENDOSCOPIC TRANSURETHRAL RESECTION OF BILHARZIAL ULCERS OF THE URINARY BLADDER SINGLE-CENTER EXPERIENCE WITH 1000 PATIENTS

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**Objective** To report on the results of endoscopic transurethral resection of chronic bilharzial ulcers of the urinary bladder at the Assiut University Hospital, Assiut, Egypt.

**Patients and Methods** Between June 1995 and April 2001, 1000 patients (87.3% males and 12.7% females) with chronic bilharzial ulcers (78% de novo and 22% recurrent ulcers after previous open partial cystectomy) were treated by endoscopic transurethral electroresection (TUR) at our department. Single ulcers were diagnosed in 612 (61.2%), double ulcers in 261 (26.1%) and multiple ulcers in 127 (12.7%) patients. The majority of patients (505 patients / 50.5%) presented with ulcers of a moderate diameter (1-2 cm). Electroresection was done until healthy fibers of the detrusor muscle or the perivascular tissue was reached.

**Results** The mean duration of the resection was 19.8 minutes. Extraperitoneal bladder perforation was recorded in 11 patients

(1.1%) in whom conservative treatment was successful. Intraperitoneal bladder perforation was recorded in 16 patients (1.6%). In six out of these patients conservative treatment was successful, while peritoneal drainage was necessary in the remaining cases. Conservative management was successful in 5 cases (0.5%) of secondary haemorrhage. Hospitalization was one day in 920 (92%), two days in 56 (5.6%) and three days in 24 (2.4%) cases. After six months 862 patients (86.2%) were available for follow up. 745 (86.4%) were symptom-free and 794 (92.1%) showed complete healing of the resected ulcer at follow-up cystoscopy.

**Conclusion** Endoscopic transurethral electroresection is a satisfactory modality for the treatment of bilharzial ulcers of the urinary bladder.

**Key Words** electroresection, bladder ulcers, bilharziasis

## INTRODUCTION

Genitourinary bilharziasis has been reported in approximately 40 countries throughout Africa and the Middle East<sup>1</sup>. With the construction of river dams, land management has changed from seasonal to perennial irrigation leading to an increased incidence of schistosomiasis as seen in Egypt after the construction of the Aswan high dam<sup>2</sup>. Chronic bladder ulcer is a common complication of bilharziasis in adults<sup>3,4</sup>. Various methods have been introduced for its treatment, e.g. open partial cystectomy<sup>5</sup>, endoscopic transurethral electroresection<sup>6-10</sup> and transurethral Nd:YAG laser photocoagulation<sup>3,11</sup>.

The present study was carried out to evaluate endoscopic transurethral resection for the

treatment of chronic bilharzial ulcers of the urinary bladder.

## PATIENTS AND METHODS

Between June 1995 and April 2001, 1000 patients with chronic bilharzial ulcers of the urinary bladder were treated by transurethral electroresection at the urology department of the Assiut University Hospital, Assiut, Egypt. The patient cohort consisted of 873 males (87.3%) and 127 females (12.7%). Mean patient age was 34 ± 14 years (range 18 – 50 years). The main presenting symptom was burning micturition.

All patients were subjected to a full clinical examination, routine laboratory work up, excre-

**Table 1: Number, Size and Site of the Bilharzial Ulcers of the Urinary Bladder in our Patients**

Data	No. of Patients	%
<u>No. of ulcers:</u>		
Single ulcer	612	61.2%
Double ulcers	261	26.1%
Multiple ulcers	127	12.7%
<u>Size of ulcers:</u>		
1 cm (small ulcer)	320	32.0%
1-2 cm (moderate ulcer)	505	50.5%
2 cm (large ulcer)	175	17.5%
<u>Site of ulcers:</u>		
Lateral wall	345	34.5%
Posterior wall	420	42.0%
Dome	75	7.5%
Anterior wall	55	5.5%
Combined ulcers	85	8.5%

tory urography and abdominal ultrasonography.

The bilharzial ulcers detected during outpatient diagnostic cystoscopy were either de novo (78%) or recurrent (22%) after a previous open partial cystectomy. The size of the ulcers was determined by using the diameter of an electric resection loop (6 mm)<sup>3,12</sup>. Number, size and site of the ulcers are illustrated in Table 1.

The instruments used for the intervention were a 20 Fr. urethrocystoscope, a 24 Fr. Iglesias continuous-flow resectoscope, fiberoptic lenses (0°, 30° and 70°) and a water electrodiathermy generator.

Spinal anaesthesia was used in all patients. A mucosal marking about 3 mm outside the edge of the ulcer was done using cutting current. Resection was started from outside the edge of the ulcer (in healthy tissue) towards the centre of the ulcer in a semi-filled bladder. In cases with multiple ulcers, the lower ones were resected before the upper ones. Care was taken to ensure a rapid resection with low current in a relatively empty bladder in order to avoid obturator jerk. The resection of domal

**Table 2: Symptomatology of Patients and Results of Follow-Up Cystoscopy 6 Months after the Operation in 862 Patients**

Data	No. of Patients	%
<u>Symptomatology:</u>		
Symptom-free	745	86.4%
Mild symptoms	117	13.6%
<u>Follow-up cystoscopy:</u>		
Complete healing	794	92.1%
Incomplete healing	68	7.8%

and anterior wall ulcers was done with the operating table tilted in the Trendelenberg position and facilitated by a 180° rotation of the resectoscope, aided by manual suprapubic pressure using the non-dominant hand. The ulcers were resected by removing all the ulcerated area and accompanying fibrotic tissue until healthy tissue was reached (the deep layer of the detrusor muscle or perivascular tissue depending on the extent of the fibrosis) (Fig. 1). Meticulous haemostasis was achieved during all steps.

Once perforation was recognized under vision by the resectionist, the bladder irrigant was decreased to a minimal amount just sufficient for endoscopic vision. The patient was tilted into the reverse Trendelenberg position and the resection was completed rapidly, applying suprapubic pressure with the non-dominant hand in an attempt to close the peritoneal perforation. Drainage of the bladder was done by a two-way Foley catheter with the patient in the reverse Trendelenberg position. Observation of the patient included clinical observation of abdominal muscle rigidity, sonographic calibration and monitoring of the peritoneal collection. The active management of perforation was drainage. A two-way Foley catheter was inserted at the end of the procedure and left in place for 10 days.

The resected tissue was sent for routine histopathological examination.

The patients were followed up at one, three, six and twelve months postoperatively by clinical examination and assessment of the pa



Fig. 1A: Cystoscopic picture of a chronic bilharzial ulcer on the posterior wall of the urinary bladder before resection. It shows the characteristic central ulceration of the mucosa with surrounding puckering due to submucosal fibrosis. B: Cystoscopic picture after resection of the ulcer.

tients' symptomatology. Follow-up cystoscopy was carried out in the 6<sup>th</sup> postoperative month.

## RESULTS

The mean resection time was 19.8 min (range 10 – 30 min). Extraperitoneal bladder perforation occurred in 11 cases (1.1%), while intraperitoneal perforation was encountered in 16 cases (1.6%). Conservative management was successful in all cases of extraperitoneal perforation and in 6/16 cases of intraperitoneal perforation, while in the remaining 10 cases drainage was necessary. Postoperative secondary haemorrhage was reported in 5 patients (0.5%) and was treated conservatively. Hospitalization was one day in 920 (92%), two days in 56 (5.6%) and three days in 24 (2.4%) cases.

Histopathological examination of the resected tissue revealed the benign bilharzial pathology of the ulcers (Fig. 2).

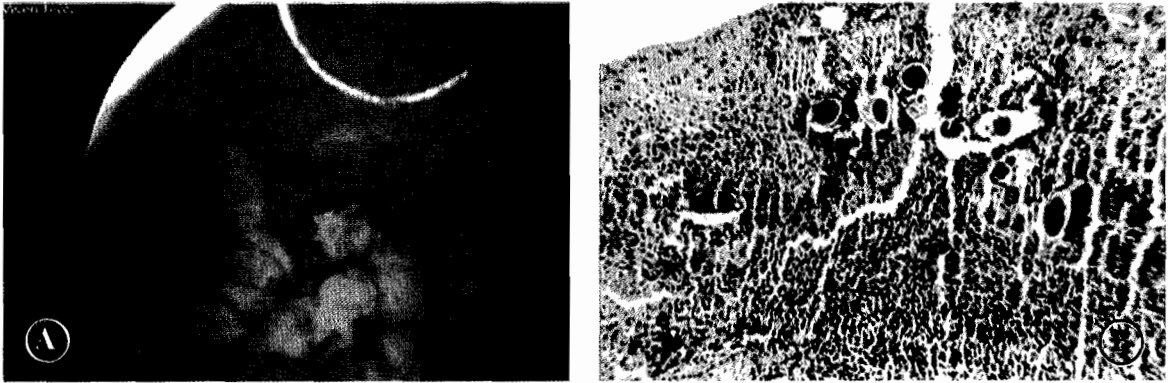
Out of the 862 patients available for follow up after six months, 745 (86.4%) were symptom-free and 794 showed complete healing of the resected ulcer at follow-up cystoscopy (Table 2).

One-year follow-up data were available for 692 patients (69.2 %), but did not reveal any differences compared to follow up after six months.

## DISCUSSION

Transurethral resection of bilharzial ulcers of the urinary bladder is a remarkable line of treatment that has many advantages over open partial cystectomy<sup>10</sup>. Since the size of the bladder ulcer is of considerable importance, the determination of the ulcer size should depend on an objective rather than a subjective method to have an accurate standard parameter. The majority of our patients (50.5%) presented with ulcers of moderate size (1-2 cm). The number and site of the ulcers in our cases are similar to those reported in other series<sup>4,6,10</sup>.

The ultimate goal of any treatment of chronic bilharzial ulcers of the urinary bladder is the removal of the ulcer-bearing area including the underlying fibrotic tissue. According to our experience, there is no difference between the results, whether endoscopic partial cystectomy (removal of the ulcer in one piece by saucerization all around) is resorted to or the ulcer is removed in pieces, whether an electric knife or an electric loop with or without modulation of its tip is used for resection. However, it is important to keep the bladder semi-filled to avoid distension which may make the bladder wall thinner and, thus, susceptible to perforation. Distension may also cause stretching and cracking of the bladder mucosa resulting in intravesical bleeding that may obscure the endoscopic vision. In the case of multiple ulcers it is advisable to start with the resection of



**Fig. 2A:** Cystoscopic picture of a bilharzial ulcer resected in pieces. **B:** Micrograph showing the characteristic bilharzial reaction in the floor of a chronic deep bilharzial ulcer (bilharzial ova together with chronic inflammatory cell infiltration) (H & E x 125)

the lower one. If resection is started at a higher ulcer, downward trickling of blood may render the further procedure more difficult.

Bladder perforation may occur during resection of the deeper part of the ulcer, especially at its center at the point of maximum fibrosis and with recurrent ulcers. Since it can be detected immediately under vision, it is easy to define whether it is extra- or intraperitoneal. In the present study conservative management was successful in all cases of extraperitoneal bladder perforation, while it was successful in only 6 out of 16 cases of intraperitoneal perforation. A significant intraperitoneal collection and failure of conservative treatment are two important indications for peritoneal drainage which we resorted to in the remaining 10 patients.

Meticulous haemostasis of the ulcer during all steps of resection is mandatory. The operator must not delay it at any step or depend upon postoperative irrigation. Although some authors advocate the postoperative insertion of a 3-way Foley catheter to maintain continuous bladder irrigation for at least 3 – 6 hours<sup>7,10</sup> we depended upon careful haemostasis only and did not use postoperative continuous bladder irrigation. In this study, no moderate bleeding or clot retention was encountered, while other authors reported these complications with rates of 4% and 5.4%, respectively<sup>7,10</sup>. Secondary haemorrhage was recorded in 5 of our patients and was treated conservatively. Hospitalization in our study proved to be shorter

than in other series<sup>10</sup> which may be attributed to our improved experience.

86.4% of our patients were symptom-free six months after the resection, which is similar to the findings of Hathout<sup>7</sup> (73.3%) and Shalaby et al.<sup>10</sup> (81.25%). Also the percentage of mild symptoms encountered in our study (13.6%) is comparable to their results (Hathout 16.6%<sup>7</sup> and Shalaby et al. 11.75%<sup>10</sup>). However, no complete persistence of the symptoms was recorded in our study – possibly due to the complete resection of the ulcer-bearing area -, while Hathout<sup>7</sup> found it in 10% and Shalaby et al.<sup>10</sup> in 7% of their cases.

Healing was assessed cystoscopically six months after the resection. Complete healing was reported in 92.1%, while incomplete healing was reported in 7.9% of our cases which is in agreement with the findings of Shalaby et al.<sup>10</sup>.

There seems to be a consensus that single ulcers of 1-2 cm in size on the posterior wall are ideal for TUR, while multiple, large, recurrent, domal or anterior wall ulcers present technical difficulties for the resectionist. We believe that the degree of bilharzial infestation of the bladder around a completely resected ulcer is the most important factor that affects both healing and postoperative relief of symptoms.

In conclusion, our experience has shown that endoscopic transurethral electroresection

is a satisfactory method for the treatment of bilharzial ulcers of the urinary bladder.

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#### RESUME

##### Résection Endoscopique Trans-Urétrale d'Ulcères Bilharziens de la Vessie. Experience d'un Centre sur 1000 Patients

**Objectifs :** Rapporter les résultats de la résection endoscopique trans-urétrale d'ulcères bilharziens chroniques de la vessie à l'hôpital universitaire d'Assiut en Egypte. **Patients et Méthodes :** De juin 1995 à avril 2001, 1000 patients (87.3% d'hommes et 12,7% de femmes) présentant un ulcère bilharzien chronique (78% d'ulcères de novo et 22% d'ulcères récurrents après cystectomie partielle par chirurgie à ciel ouvert préalable) ont bénéficié d'une électro-résection transurétrale endoscopique dans notre département. Un ulcère unique a été diagnostiqué chez 612 patients (61.2%), un double ulcère chez 261 patients (26.1%) et un ulcère multiple chez 127 patients (12.7%). Les ulcères de diamètre modéré (1-2 cm) ont été retrouvés chez 505 patients (50.5%). L'électro-résection a été réalisée jusqu'à atteindre les fibres musculaires saines du détrusor ou même jusqu'à la graisse prévésicale. **Résultats :** La durée moyenne de la résection était de 19.8 minutes. Une perforation extra-péritonéale de la vessie a été enregistrée chez 11 patients (1.1%). Chez tous ces patients la guérison s'est réalisée par abstention chirurgicale. Une perforation intrapéritonéale a été enregistré chez 16 patients (1.6%). Chez 6 de ces derniers la réparation a été effective avec abstention chirurgicale tandis que pour les autres un drainage péritonéal a été nécessaire. Un traitement conservateur a été bénéfique chez 5 patients (0.5%) ayant présenté une hémorragie. L'hospitalisation a duré une journée pour 920 patients (92.1%), deux journées pour 56 patients (5.6%) et trois journées pour 24 patients (2.4%). Après six mois, 862 patients (86.2%) étaient accessibles pour le suivi. Sept cent quarante cinq patients (86.4%) étaient asymptomatiques et 794 patients (92.1%) ne présentaient plus de lésion à la cystoscopie de contrôle. **Conclusion:** L'électro-résection transurétrale endoscopique est une méthode satisfaisante dans le traitement des ulcères bilharziens de la vessie.

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