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The Swiss Lithoclast: An Ideal Intracorporeal Lithotripter

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Key Words

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Abstract

We report our early experience with a new device for endoscopic stone disintegration: the Swiss lithoclast. This device was used to treat 200 patients with stones in kidney, ureter, and bladder. Its effectiveness was 100% when the stone could be approached irrespective of size or composition, and no complication was encountered.

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Introduction

One of the great medical advances is extracorporeal shock wave lithotripsy (ESWL). It is estimated that ESWL, percutaneous nephrolithotomy, and endoscopic lithotripsy have reduced the need for open stone operation to between 1 and 2% [1, 2]. Various methods have been used for endoscopic stone fragmentation (electrohydraulic, ultrasonic, and laser lithotripsy) with their own advantages and disadvantages and none can be considered ideal [3]. In this study, we report the results obtained after having used the Swiss lithoclast for endoscopic stone fragmentation in 200 patients.

Patients and Methods

The Swiss lithoclast was used during endoscopic procedures to treat 200 patients (125 men and 75 women) with urinary tract stones. The mean patient age was 47.9 (range 18-77) years. The stones were located in the ureter in 156 patients (9 in the upper third, 31 in midureter, and 156 in lower ureter) in the bladder in 36, and in the kidney in 8 (complete staghorn in 3 and large pelvic in 5) patients.

The lithoclast has been used during ureteroscopy with a 212.5-French ureteroscope for fragmentation of the stones. The patients

with stone in the upper third of ureter had impacted stones, and we have failed to treat them with ESWL in situ or to push them back to the kidney.

Both ureteroscopy failure and accidental migration of a ureteral stone to the kidney during the procedure have been excluded from analysis.

A 5-French ureteral catheter for ureteral stones and an indwelling catheter for bladder stones were left in place for 24 h after the procedure. The technical data and the principle of this lithotripter have been reported by Schulze et al. [4],

Results

Our results obtained by fragmentation with the Swiss lithoclast are shown in table 1.

During ureteroscopy, fragmentation was achieved in all patients. The fragments were easily extracted with forceps. All patients were free of stones after the inserted ureteral catheter was removed the next day. Only in 3 patients complications were observed (perforation of the ureteral wall in 2 and extended tearing of ureteral mucosa in 1), and a double-J stent was left in place for 2 weeks. These three complications were due to ureteroscopy itself and not to the use of the lithoclast.

Table 1. Lithoclast fragmentation of ureteral, renal, and bladder stones

Stone disintegration with the lithoclast during percutaneous nephrolithotomy was effective and uneventful in all patients. All patients with large pelvic stones became free of stones (100%), but patients with staghorn calculi had residual stone after the procedure because caliceal stone particles were not accessible with the exclusively used rigid nephroscope. Therefore, the overall achieved stone-free rate was 62.5%. Patients with remaining stones underwent ESWL.

The Swiss lithoclast was also used for bladder stone fragmentation. The procedure was effective and uneventful in all patients. The stone-free rate was 100%, even when large bladder stones had to be treated.

Stone analysis revealed struvite calculi in 3 patients (1.5%), uric acid in 22 (11%), cystine in 2 (1%), and calcium oxalate calculi in 173 (86.5%).

Discussion

Endoscopic stone disintegration is traditionally achieved by electrohydraulic, ultrasonic, and recently laser lithotripsy. All these modalities have their own advantages and disadvantages to be considered as ideal [3].

Recently, a new device for endoscopic stone disintegration – the Swiss lithoclast – has been made. The principle of this lithotripter is based on pneumatic shock waves induced by the central compressed air system of a hospital or by a compressor [4].

Our results demonstrate that with this device the rate of successful lithotripsy for ureteral and bladder stone was 100%, even for hard stones, without increasing the rate of complications. The 62.5% stone-free rate for kidney stones is due to inability to approach the entire staghorn stone through the rigid nephroscope. In addition to this impressive effectiveness, both that there was no complication attributable to the use of this device and that even large, hard stones were successfully treated are worth mentioning. Our results are in accordance with previous reports [4].

In conclusion, the major advantages of this new lithotripter, its low cost, its impressive effectiveness irrespective of size or composition of the stone, and its safety make it an ideal device for endoscopic stone disintegration.

References 1 Assimos DG, Boyce WH, Harrison LH, et al:

Role of open stone surgery since extracorporeal lithotripsy. J Urol 1989; 142:2631.

Boyle ET, Segura JW, Patterson DE, et al: The role of open stone surgery in stone disease (abstract). J Urol 1989;141:293.

Dretler SP: Ureteral stone disease. Options for management. Urol Clin North Am 1990;17: 217-230.

Schulze H, Haupt G, Piergiovanni M, Wisard M, Von Niederhäusern W, Seuge T: The Swiss lithoclast: A new device for endoscopic stone disintegration. J Urol 1993;149:15-18.

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