

TREATMENT OF VUJ CALCULI WITH ESWL-EXPERIENCE WITH PIEZOELECTRIC LITHOTRIPTOR

Lt.Col.Dr.BK Hamal
Consultant Surgeon
Birendra Hospital, Kathmandu

ABSTRACT:

ESWL is a well established modality even for the management of Ureteric Calculi except for those lying near the pelvic bone. ESWL has also been used successfully in the management of steinstrasse. Since VUJ calculi are usually associated with obstructive features and the patients are highly symptomatic, they, most of the time create an urological emergency. The early non-invasive management with ESWL (PIEZO ELECTRIC) has shown an encouraging result in a small number of patients studied at Shree Birendra Army Hospital. The same has been discussed.

Key words: ESWL, VUJ calculi, PIEZOELECTRIC Lithotripor, STEINSTRASSE.

SUBJECT AND PERIOD OF THE STUDY

Period	:	6 months (Nov. 1999 – June 2000)
Number of patients with VUJ Calculi	:	22
Males	:	15
Females	:	7
Serving soldiers	:	10
Army family	:	3
Civilians on payments	:	8
Police	:	1
Age group	:	21-61 yrs
Laterality	:	right 13 left 9
Size	:	4mm – 16mm

PATIENT PRESENTATION

Colic, Dysurea, Frequency, Vomiting, Strangury, Fever, Heamaturia, etc.

CLINICAL FINDINGS

Painful agony, Flank tenderness, Renal angle tenderness, etc.

INVESTIGATIONS

X – Ray KUB, Urinalysis, CBC, BUN, USG and IVU.

TREATMENT

- 1) All patients were treated as day cases.
- 2) Patients with pregnancy, Non functioning kidney, Solitary Kidney, Children, Infection, Distal Obstruction, Cardiac Pacemaker, Creatinine > 3 and bleeding diatheses were excluded from study.
- 3) PIEZO ELICTRIC LITHOTRIPTOR (EDAP LT 01) was used for treatment.
- 4) All patients were treated on prone position with FULL BLADDER.
- 5) Duration of shockwave treatment ranged from 30 – 50 minutes.
- 6) Pulse rate used was 5 – 10 per second.
- 7) Power used was 100% in all cases (increasing every 5 minutes by 20%).

FINDINGS

- 1) Sixteen patients (2.7%) were stone free.
- 2) Two patients [9%] required Dormia Basketing.
- 3) Six patients [27.3%] had no change in the stone mass despite three sessions of lithotripsy.
- 4) Minimum of one and maximum of three sessions were required to make patients stone free.
- 5) No anesthesia was required except oral diclofenac in all cases.
- 6) ECG gating was not required.

POST ESWL COMPLICATIONS

Gross Haematuria	:	22 (100%)
Severe Colic	:	2 (9%)
Vomiting	:	2 (9%)

Post operative Instructions

Norfloxacin 400 mg bd x 7 days.

Water consumption, 3-4 litres/ day.

Straining of urine for recovery of sand for stone analysis.

X-Ray KUB in 2 weeks.

DISCUSSION

Ureteric calculi originate in the kidneys and are usually secondary except in certain conditions like ureterocele, neoplasm, ectopic ureter etc. The composition and aetiological factors responsible are same as for the kidney stones.

The common sites of stone impaction are: At or just below UPJ.

- a. Base of the broad ligament in females and area of vas in males.
- b. Entry point of ureter in bladder musculature.
- c. At Vasical orifice
- d. Two anatomical angulations are important.
 - Where ureter crosses vessels iliac vessels.
 - Angle where it enters the bladder.

Ureteric stones may be multiple. The stone may be of a few mm to a record length of 2.5 x 15 cm. H in 1992 recorded ureteric stone measuring 65.8 gms. Tennant in 1924 removed ureteric calculus of more than 60 gms. Ureteric calculi are equally common on both sides. Recently voided stones are either round or ovoid. The multiple stones are usually faceted.

Small ureteric stones may pass spontaneously but large and small impacted stones may grow further leading to various complications like partial or complete obstruction, Ureteritis or periureteritis, proximal dilatation, tortuosity, thickening, adhesions, infection, and rarely ulceration of ureter.

In practice it is seen that ureteric stones less than 5 mm have about 80% chance of self expulsion. Whereas 10% to 20% of stones measuring 7 to 8 mm can be expected to pass spontaneously. Any stone measuring more than 1 cm is unlikely to pass. (Wooly 1975).

The main objective of treatment is the RELIEF OF OBSTRUCTION and there are various treatment options available. Watchful waiting for a so called golden period of two weeks with or without the use of drugs like Neostigmine, Aminophylline, Atropine, Oxyphenbutazones etc is practiced.

CESSATION OF PAIN WITHOUT STONE EXPULSION IS OMINOUS.

Various types of ESWL viz EHL, PIEZO ELECTRIC, ELECTRO MAGNETIC, etc are being used. Piezo electric lithotripter has high frequency, high voltage pulse that excites more than 325 ceramic elements arranged in a concave reflector dish and the generated shock waves are converged at the focal point FL. Due to the focal region which is about 4 x 8 mm, the procedure is anaesthesia free and ECG gating is not required.

Other options include stone manipulations like basketting using various type of baskets like Dormia, Nitinol, Davies loops, Graspers with two, three or four prongs etc. Ureteroscopy either rigid or flexible is the preferred method of stone manipulation to reduce the injury rate and to increase the success rate. Blessed with the intra corporial lithotriptors using various energy sources like EHL, US, LASER, or pneumatic, and with the availability of finer probes Ureteroscopy either singly or with multimodality approach has become the treatment of choice in the management of the ureteric calculi in the recent years.

PCNL of the ureteric calculi is easily and effectively done with Holmium laser during the management of kidney stones with PCNL. Forced diuresis has been tried with limited success in small ureteric calculi. Open surgery in the form of ureterolithotomy has been obsolete in the developed countries, however, it still ranks number one method of treatment in our setting.

CONCLUSION

- 1) Management of VUJ calculus with obstruction is Urological emergency.
- 2) No single modality is completely successful.
- 3) Piezo electric lithotripsy has shown high success rate with least complications in this small study group.
- 4) The procedure is anaesthesia free and does not require ECG monitoring.
- 5) The technique is MINIMALLY INVASIVE and no hospitalisation is required.
- 6) This study has shown encouraging results and further continuity of the study in a larger series is recommended.

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