

ORIGINAL ARTICLE

Outcome of 23 Cases of Holmium Laser Cystolithotripsy Done in COVID-19 Pandemic Era: An Effective Mode of Bladder Stone Treatment

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ABSTRACT

Background: The endourology procedure cystolithotripsy using holmium YAG laser has brought a new approach towards bladder stone treatment and has presented itself as the treatment of choice as it is more effective in stone clearance and minimal post operative morbidity irrespective of the stone size.

Study objective: To demonstrate the efficacy of holmium YAG laser cystolithotripsy (HLC) in patients irrespective of the stone size.

Design: Descriptive type of retrospective clinical study.

Setting: Hospital based

Sample: A sample of 23 patients both male as well as female having bladder stone ranging from 8mm to 42mm admitted during Covid 19 pandemic period which stressed the need for minimal hospital stay along with increased treatment efficacy.

Duration of study: From December 2019 to June 2021

Results: All 23 patients presented with an excellent stone clearance with minimal morbidity irrespective of the size of stone and demographic differences. They also had lesser hospital stay without any complications.

Conclusion: HLC proposes a highly effective treatment option with better outcome as well as minimal patient complication and morbidity.

Keywords: Holmium YAG laser, Cystolithotripsy, Bladder stone, COVID-19 pandemic, Endourology.

INTRODUCTION

Bladder stone constitutes 5% of all stone patients and is the most commonly performed surgery in endourology departments¹. A few years ago the standard teaching and concept of bladder stone treatment comprised of mechanical endoscopic breaking to percutaneous cystolithotripsy to open surgery like supra pubic cystolithotomy. Generally, cystolitholapaxy for <2cm size bladder stones, use of pneumatic lithoclast for 2-4 cm size stones for cystolithotripsy whether endoscopic or percutaneous and open surgery for stones more than 4 cm size is performed². With change of time and easy availability of Hol:YAG laser at different centers the treatment scenario of bladder stone has changed completely. Using laser all sizes of bladder stone can be dealt without any hesitancy^{3,4}.

METHOD

This is a retrospective clinical study. 23 patients were operated in Covid - 19 pandemic era from December 2019 to June 2021 for different size of bladder stones. All patients had undergone holmium laser cystolithotripsy using 20 f/25f cystoscopy sheath with 365nm laser fiber in 5f ureteric catheter. Complete clearance was achieved by dusting and fragmentation. All procedures were done in regional and local anesthesia. The patients were categorized into three groups. Group A consisted of patients with bladder stone size <20 mm, group B consisted of patients with stone size 21-40 mm and group C consisted of patients with stone size > 40mm. Patients' demographic data, size of stone, operating time, total lasing time, difficulty and complication and hospital stay were recorded. All the patients were operated with their informed written consent and after confirming a COVID-19 RTPCR negative reports.

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RESULT

23 patients have been included in our study during this period. In group A (fig 1) the total no. of patients was 16, their mean age was 32.68 years ranging from 14 to 49 years. and all patients were male. The mean stone size was 14 mm ranging from 8 to 20 mm, the mean operating time was 35.62 minutes ranging from 30 to 60 minutes. Average lasing time was 13.25 minutes and mean hospital stay was 1.6 days.

Group B (fig.2) included 3 male and 3 female patients, the average size of the stone was 26.83 mm, had a mean operating time of 57.6 minutes, mean lasing time of 21.33 minutes and hospital stay of average 2.83 days.

Group C (fig.3) included a single male patient of age 70 years with a bladder stone of size 42 mm, had an operating time of 75 min, lasing time of 29 min and a hospital stay of 3 days.

All the patients treated showed excellent stone clearance without any complications and morbidity.

DISCUSSION

Bladder stones can be classified as primary and secondary stones. Primary stones are due to diet and nutritional deficiencies which are more common in developing countries and are mainly seen in pediatric patients⁵. Secondary bladder stones are formed due to urinary stasis and infection which is commonly seen in bladder outlet obstruction patients⁶. These types of bladder stones are more prevalent in developed countries. Although a variety of treatment methods, such as open cystolithotomy, pneumatic or laser transurethral cystolithotripsy, percutaneous cystolithotripsy, cystolitholapaxy and ESWL are available but none can be claimed to be better than another⁷. Open surgery is commonly performed in large stone burden causing great post operative morbidity and prolonged hospital stay for the patients⁸. The results of ESWL depend largely upon the stone size and Percutaneous suprapubic cystolithotripsy (PCCL) is an invasive procedure. Transurethral procedures are the best choice as they provide a wide array of tools that can be used to achieve stone clearance⁹. The use of the holmium laser has made it possible to fragment the stone into as minute particles as dust which ensures its easy removal with minimal hematuria and mucosal trauma resulting in least post

operative morbidity and short hospital stay^{10,11}.

According to a study published in JCDR in 2016, by Nameirakpam S et.al. on 85 patients they have concluded that Transurethral cystolithotripsy with Holmium laser is an effective and safe procedure with large bladder stones and can be easily performed as a day care procedure the mean age of the patients is 52±7, mean size being 3± 1.2 and mean operating time of 40 ± 10 min. in their study⁴. A similar study by Karami H et.al., has suggested the same in a study done on 48 patients with a bladder stone of size >2cm³. The holmium laser cystolithotripsy(HLC) has a high success rate with reduced post operative morbidity being a minimally invasive procedure and can safely be used in pediatric bladder stone treatment as well as concluded in a study by Javanmard B et.al., and Gangkak G et.al.^{9,10} HLC has proved to be an effective and excellent choice of treatment regardless of the bladder stone size as supported by a study by D'Souza N et al done on 37 male patients with excellent stone clearance and no recurrence rate¹¹.

In our study on 23 patients, we find similar results with excellent stone clearance irrespective of stone size^{12,13}, minimal post operative morbidity, no complications and short hospital stay (Table1).

Table 1: Demographic details of patients with stone size

	A	B	C
	Stone size <20 mm	Stone size 21-40mm	Stone size >40mm
No. Of Patients	16	6	1
Mean Age In Yrs	32.68 (14 -49)	55.5(51-64)	70
Gender (M:F)	16:0	1:1	1:0
Mean Stone Size In mm	14 (8-20)	26.83 (21-35)	42
Operating Time In Min.	35.62 (30-60)	57.6 (45-90)	75
Lasing Time In Min	13.25 (8-22)	21.33 (12-38)	29
Hospital Stay In Days	1.62 (1- 2)	2.83 (2-3)	3

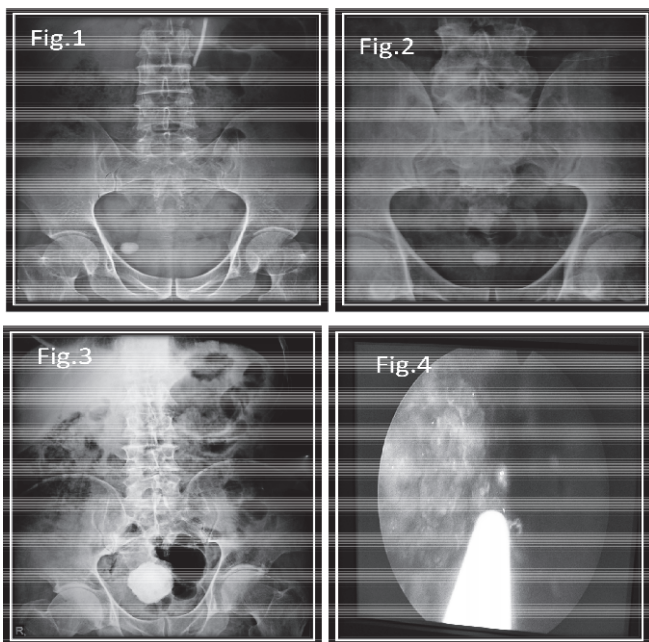


Fig.1: Group A: Stone Size <20mm

Fig.2: Group B: Stone Size 21 - 40mm

Fig.3: Group C: Stone Size >40mm

Fig.4: Holmium laser cystolithotripsy in bladder stone.

CONCLUSION

Holmium laser cystolithotripsy can safely and effectively be used for all sizes of bladder stones irrespective of demographic parameters with excellent results. It is an effective and essential endourology tool which has revolutionized and changed the approach towards bladder stone treatment.

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