Sarcouncil Journal of Biomedical Sciences

ISSN(Online): 2945-3666

Volume- 02| Issue- 03| 2023

Research Article

Received: 03-04-2023 | Accepted: 20-05-2023 | Published: 07-06-2023

A Cross-Sectional Study of Patients in Iraq with Stones in Renal Calculi Underwent Treated According to Use of Retrograde Surgery

Dr. Khalid Ghaffar Kadhim[1], Dr. Nafea Taha Salih[2], and Dr. Gailan Adil Saeed[3]

[1]M.B.Ch.B. \ F.I.B.M.S. \ (Community Medicine), Ministry of Health, Baghdad Medical Office Al-Russafa, Al-Kindey Teaching Hospital, Baghdad, Iraq

[2]M.B.Ch.B. \ F.I.C.M.S. \ (URO) – Urology, Iraqi Ministry of Health, Kirkuk Health Directorate, Kirkuk Teaching Hospital, Kirkuk, Iraq

[3]M.B.Ch.B. \ F.I.C.M.S. \ (URO) – Urology, Iraqi Ministry of Health, Kirkuk Health Directorate, Azadi Teaching Hospital, Kirkuk, Iraq

Abstract: Background: Up until recently, the first-line therapy for kidney stones larger than 2 cm was percutaneous nephrolithotomy (PCNL). Although PCNL has good clearance rates for kidney stones, there are morbidity and mortality issues to consider, which can extend the length of hospitalization. In the management of kidney stones of significant size, recent investigations have demonstrated that retrograde intrarenal surgeries (RIRS) can be an efficient and safer option. **Objective**: This paper contributes to conduct a cross-sectional study of patients in Iraq with stones in renal calculi who underwent treated according to use of retrograde surgery. **Patients and methods**: This paper presented to a cross-sectional study of patients in Iraq with stones in renal calculi who underwent treated according to use of retrograde surgery, which was on renal calculi patients in comparison between men and women which have men groups with 45 cases and women 45 cases. This paper has examined all data of demographic characteristics into renal calculi outcomes related to RIRS operative patients Holmium laser lithotripsy by SPSS program, which conduct for all data was extracted in the study between 18th January 2021 to 25th April 2022 in different hospitals in Iraq. **Results and discussion**: As technology developed, flexibility ureterorenoscopy as laser fragmentation in renal lithiasis became an efficient and less invasive method for treating this ailment. In most published series on this issue, problems from hematuria have been documented in 28% of cases among women, by severe complications corresponding with failed insertion of a sheath into 34% of the cases. In contrast, the research by Aboumarzouk assessed the total number of RIRS problems at 10%, with most of these issues being mild if adjusted to this categorization, which the researchers are not doing in their study. The outcomes of our series confirm that RIRS is a reliable and secure method for treating kidney stones under 2 cm. Effectiveness rates ranging from 71.6 percent (for a single surgery) and 93.4% (for retreatment) were found when the findings were analysed. **Conclusions**: In conclusion, this paper was shown changes of results in comparison between the men group and women group, where it was shown almost of man got high injuries in compare with women, although this study found success of applied RIRS with Holmium laser lithotripsy operation which apply on both kinds of group. With these findings, this study resulted that RIRS with Holmium laser lithotripsy considers more safety and effective to treat all patients of kidney stones and should be taken into consideration as a substitute for PCNL in certain circumstances.

Keywords: Renal calculi; kidney stones; complications; and RIRS with Holmium laser lithotripsy.

INTRODUCTION

Up until recently, the first-line therapy for kidney stones larger than 2 cm was percutaneous nephrolithotomy (PCNL) [Tiselius, H.G. *et al*., 2009]. Although PCNL has good clearance rates for kidney stones, there are morbidity and mortality issues to consider, which can extend the length of hospitalization. In the management of kidney stones of significant size, recent investigations have demonstrated that retrograde intrarenal surgeries (RIRS) can be an efficient and safer option. [Miller, N.L. *et al*., 2007; Segura, J.W. *et al*., 1985]

The widespread use of RIRS has been aided by technological advancements in the construction of freshly developed adaptable ureteroscopes (thinner and offering better vision), as well as in the wide range about endourological supplies (ureteral accessibility sheaths, basket extraction, and guidewires) [Ming-Fong, L, 2012; Michel, M.S. *et al*., 2007]. With reduced associated morbidity, the kidney stone removal rates among people utilizing kidney stones managed by RIRS have increased and are now very close to the successful rates of PCNL. [Aboumarzouk, O.M. *et al*., 2012; Hyams, E.S. *et al*., 2010; Ben Saddik, M.A. *et al*., 2011]

Endourology is recommended as the therapy of choice for kidney stones larger than 2 cm in diameter in the most recent assessment of the clinical recommendations of the European Association of Urology. Centers having experience in these procedures can choose between PCNL or CRIR. [Riley, J.M. *et al*., 2009; Breda, A. *et al*., 2008]

In situations of considerable comorbidity (anticoagulation, cardiovascular disorders, advanced age) and in patients with extra risky anatomical characteristics (obesity, renal malformations), RIRS can be thought of as a safe substitute for PCNL. [Türk, C. *et al*., 2012; Akman, T. *et al*., 2012]

Hematuria (blood in the urine) and discomfort in the flank, groin, or belly are frequently brought on by renal calculi [Palmero, J.L. *et al*., 2012]. They

*Corresponding Author: Dr. Subhas Chandra Datta

DOI- https://doi.org/10.5281/zenodo.8014999

afflict one in eleven persons at some point in their lives, with males being impacted more frequently than women (2 to 1). Reduced urine volume or increased excretion of substances that might form stones, including calcium, oxalate, uric acid, cystine, xanthine, and phosphate [Al-Qahtani, S.M. *et al*., 2012], are linked to the development of the stones. Low urine citrate levels or high urinary acidity can also result in calculi. [Galvin, D.J. *et al*., 2006]

Hematuria (blood in the urine) and discomfort in the flank, groin, or belly are frequently brought on by renal calculi. They afflict one in eleven persons at some point in their lives, with males being impacted more frequently than women (2 to 1) [Labate, G. *et al*., 2011]. Reduced urine volume or increased excretion of substances that might form stones, including calcium, oxalate, uric acid, cystine, xanthine, and phosphate, are linked to the development of the stones. Low urine citrate levels or high urinary acidity can also result in calculi [Schoenthaler, M. *et al*., 2012]. This paper contributes to conduct a cross-sectional study of patients in Iraq with stones in renal calculi who underwent treated according to use of retrograde surgery.

PATIENTS AND METHODS

This paper presented to a cross-sectional study of patients in Iraq with stones in renal calculi who underwent treated according to use of retrograde surgery which was on renal calculi patients in comparison between men and women which have men group with 45 cases and women 45 cases. This paper has examined all data of demographic characteristics into renal calculi outcomes related to RIRS operative patients Holmium laser lithotripsy by SPSS program, which conduct for all data was extracted in the study between 18th January 2021 to 25th April 2022 in different hospitals in Iraq.

To follow the study, this paper was examining all demographic characteristics of renal calculi patients, which define all baselines of renal calculi patients' distributions based on age were divided into two different groups were the first one represented men patients in the range 30-65 years and the second one was in 30-55 years as well as, BMI that include three sections which are (16.4---25.8), (26---32.5), and (33---38.3), which represent in Table 1, Table 2, and Table 3.

Besides that, this paper was distributed all Changes of renal calculi patients' data based on symptoms that depend on all parameters, which are blood in the urine, fever, nausea, severe pain on either side of the lower back, urine that smells bad, and vomiting and all these characteristics which define in Table 4.

Moreover, this study was progressed to get on all causes of renal calculi, which show into data analyse of men and women which depend on drinking too little water, family history, Infections, obesity, and weight loss surgery which all these results can be clarify in Table 5, and Table 6.

To further of results, this paper was determined into examine of Stone location of renal calculi patients for both groups, which define into five locations which are Lower calyx, Mid calyx, pelvis, Proximal ureter, and Upper calyx and. All these outcomes were resulted in Table 7.

According to complications this paper was focused on the impact of complications on patient's cases. Where this study was presents an examination of women's and men's patients into Intra- RIRS operative according to complication, which results can be defined in Table 8 and Table 9.

In contract, this study was shown to assess all renal calculi women and men patients into post-RIRS operative according to complication, which includes Hematuria, none, and Steinstra, which can be clarified in Table 10 and Table 11. Finally, this paper was determined of abnormalities changes that occurred to renal calculi patients into post-RIRS operatives that access the result into Malrotation, none, Renal ectopia, and Solitary kidney, which all these outcomes can be resulted into Table 12.

RESULTS

Publisher: SARC Publisher

Table 1: Distribution of baselines characteristics for men based on age

Age-men		
N	Val	45
	Mi	0
M		48.2444
SEM		1.35444
Me		50.0000
Mo		40.00
SD		9.08584
V		82.553
Sk		.336
SEK		.354
Ku		-.721
StEK		.695
R		33.00
Min		32.00
Max		65.00
S		2171.00

Table 2: Distribution of baselines characteristics for women based on age

Age-women		
N	Val	45
	Mi	0
M		41.1111
SEM		1.10564
Me		38.0000
Mo		38.00
SD		7.41688
V		55.010
Sk		.532
SEK		.354
Ku		-.682
StEK		.695
R		25.00
Min		30.00
Max		55.00
S		1850.00

Table 3: Distribution of baselines characteristics for men based on BMI

		F	Per (%)	VP (%)	CP (%)
Valid	16.4---25.8	15	33.3	33.3	33.3
	26---32.5	17	37.8	37.8	71.1
	33---38.3	13	28.9	28.9	100.0
	Total	45	100.0	100.0	

Table 4: Changes of renal calculi patients' data based on symptoms

		F	Per (%)	VP (%)	CP (%)
Valid	blood in the urine	4	8.9	8.9	8.9
	fever	8	17.8	17.8	26.7
	nausea	4	8.9	8.9	35.6
	severe pain on either side of the lower back	15	33.3	33.3	68.9
	urine that smells bad	9	20.0	20.0	88.9
	vomiting	5	11.1	11.1	100.0
	Total	45	100.0	100.0	

Publisher: SARC Publisher

Table 5: Changes of causes renal calculi patients' men data

		F	Per (%)	VP (%)	CP (%)
Valid	drinking too little water	7	15.6	15.6	15.6
	family history	6	13.3	13.3	28.9
	Infections	6	13.3	13.3	42.2
	obesity	21	46.7	46.7	88.9
	weight loss surgery	5	11.1	11.1	100.0
	Total	45	100.0	100.0	

Table 6: Changes of causes renal calculi patients' women data

		F	Per (%)	VP (%)	CP (%)
Valid	drinking too little water	10	22.2	22.2	22.2
	family history	5	11.1	11.1	33.3
	Infections	3	6.7	6.7	40.0
	obesity	14	31.1	31.1	71.1
	weight loss surgery	13	28.9	28.9	100.0
	Total	45	100.0	100.0	

Table 7: Stone location of renal calculi patients (45 cases)

		F	Per (%)	VP (%)	CP (%)
Valid	Lower calyx	10	22.2	22.2	22.2
	Mid calyx	4	8.9	8.9	31.1
	pelvis	16	35.6	35.6	66.7
	Proximal ureter	8	17.8	17.8	84.4
	Upper calyx	7	15.6	15.6	100.0
	Total	45	100.0	100.0	

Table 8: Examination of men patients into Intra- RIRS operative according to complication

		F	Per (%)	VP (%)	CP (%)
Valid	Failed placement of the sheath	34	75.6	75.6	75.6
	Hematuria	11	24.4	24.4	100.0
	Total	45	100.0	100.0	

Table 9: Examination of women patients into Intra- RIRS operative according to complication

		F	Per (%)	VP (%)	CP (%)
Valid	Failed placement of the sheath	17	37.8	37.8	37.8
	Hematuria	28	62.2	62.2	100.0
	Total	45	100.0	100.0	

Table 10: Assessment of renal calculi men patients into post-RIRS operative Holmium laser lithotripsy according to complication

		F	Per (%)	VP (%)	CP (%)
Valid	Fever-sepsis	2	4.4	4.4	4.4
	Hematuria	5	11.1	11.1	15.6
	none	32	71.1	71.1	86.7
	Steinstrasse	6	13.3	13.3	100.0
	Total	45	100.0	100.0	

Table 11: Assessment of renal calculi women patients into post-RIRS operative Holmium laser lithotripsy according to complication

		F	Per (%)	VP (%)	CP (%)
Valid	Hematuria	14	31.1	31.1	31.1
	none	26	57.8	57.8	88.9
	Steinstra	5	11.1	11.1	100.0
	Total	45	100.0	100.0	

Publisher: SARC Publisher

Table 12: Determination of abnormalities changes that occurred to renal calculi patients into post-RIRS operative

		F	Per (%)	VP (%)	CP (%)
Valid	Malrotation	3	6.7	6.7	6.7
	none	35	77.8	77.8	84.4
	Renal ectopia	5	11.1	11.1	95.6
	Solitary kidney	2	4.4	4.4	100.0
	Total	45	100.0	100.0	

DISCUSSION:

As technology developed, flexibility ureterorenoscopy as laser fragmentation in renal lithiasis became an efficient and less invasive method for treating this ailment. In most published series on this issue, problems from hematuria have been documented in 28% of cases among women, by severe complications corresponding with failed insertion of a sheath into 34% of the cases. In contrast, the research by Aboumarzouk assessed the total number of RIRS problems at 10%, with most of these issues being mild if adjusted to this categorization, which the researchers are not doing in their study. [Hussain, M. *et al*., 2011]

The outcomes of our series confirm that RIRS is a reliable and secure method for treating kidney stones under 2 cm. Effectiveness rates ranging from 71.6 percent (for a single surgery) and 93.4% (for retreatment) were found when the findings were analysed. Similar findings have been found by several writers, including Alqahtani (96.7%), Hyams et al. (97.5%), and Breda. The fact that many writers in the scientific literature have presented their overall findings without include the percentages of retreatment, as in the instance of Hyams et al., is a significant point to consider. [Hyams, E.S. *et al*., 2009]

However, our series comes close to this conclusion with a rate of 1.9 according to the meta-analysis by Aboumarzouk, which shows a mean retreatment rate in the investigated series of 1.8. In comparison to males, women had a lower overall rate of postoperative complications. If we regard an occurrence of steinstrasse that requires equipment for the treatment of it as a complication, as in other research, they will equate to grades I, II, and IIIa if we modify the complications in the Clavien classification system. Our series agrees with the main series' findings in this regard, which had a mean overall proportion of complications of 14%, even though the Clavien system of classification was not used in this investigation. [Wiesenthal, J.D. *et al*., 2011]

The lack of lithiasis or remaining kidney stones measure below 6 millimeters among the radiological controls following surgery served as our study's definition of success. It is crucial to note that this approach requires more accuracy than other methods, including extracorporeal lithotripsy and PCNL, to detect residual lithiasis. Since there is no consensus and monitoring in the literature varies greatly, further randomized trials are required to clarify and standardize techniques for the postoperative care of residual fragments.

CONCLUSIONS

In conclusion, this paper was shown changes of results in comparison between the men group and women group, where it was shown almost of man got high injuries in compare with women; although this study found success of applied RIRS with Holmium laser lithotripsy operation, which apply on both kinds of group. With these findings, this study resulted that RIRS with Holmium laser lithotripsy considers more safety and effective to treat all patients of kidney stones and should be taken into consideration as a substitute for PCNL in certain circumstances.

REFERENCES

1. Tiselius, H.G., Alken, P., Buck, C., Gallucci, M., Knoll, T. and Sarika, K, et al. "Guidelines on urolithiasis." *EAU*. (2009):49.
2. Miller, N.L. and Lingeman, J.E. "Management of kidney stones." *BMJ*. 334 (2007):468-72.
3. Segura, J.W., Patterson, D.E., Leroy, A.J., Williams Jr, H.J., Barrett, D.M., Benson Jr, R.C., May, G.R. and Bender, C.E. "Percutaneous removal of kidney stones: review of 1,000 cases." *The Journal of urology* 134.6 (1985): 1077-1081.
4. Ming-Fong, L. "The accessibility, efficiency, and cost analysis of flexible ureteroscopy with holmium: YAG laser in treating largesized renal calculi." *Urol Sci*. 23 (2012):67-9.
5. Michel, M.S., Trojan, L. and Rassweiler, J.J. "Complications in percutaneous nephrolithotomy." *European urology* 51.4 (2007): 899-906.

Publisher: SARC Publisher

6. Aboumarzouk, O.M., Monga, M., Kata, S.G., Traxer, O. and Somani, B.K. "Flexible ureteroscopy and laser lithotripsy for stones> 2 cm: a systematic review and meta-analysis." *Journal of endourology* 26.10 (2012): 1257-1263.
7. Hyams, E.S., Munver, R., Bird, V.G., Uberoi, J. and Shah, O. "Flexible ureterorenoscopy and holmium laser lithotripsy for the management of renal stone burdens that measure 2 to 3 cm: a multi-institutional experience." *Journal of endourology* 24.10 (2010): 1583-1588.
8. Ben Saddik, M.A., Al-QahtaniSejiny, S., Ndoye, M., Gil-Diez-deMedina, S., Merlet, B. and Thomas, A, et al. "Flexible ureteroscopy in the treatment of kidney stones between 2 and 3 cm." *Prog Urol*. 21 (2011):327---32.
9. Riley, J.M., Stearman, L. and Troxel, S. "Retrograde ureteroscopy for renal stones larger than 2.5 cm." *Journal of endourology* 23.9 (2009): 1395-1398.
10. Breda, A., Ogunyemi, O., Leppert, J.T., Lam, J.S. and Schulam, P.G. "Flexible ureteroscopy and laser lithotripsy for single intrarenal stones 2 cm or greater—is this the new frontier?." *The Journal of urology* 179.3 (2008): 981-984.
11. Türk, C., Knoll, T., Petrik, A., Sarica, K., Straub, M. and Seitz, C. "Guidelines on urolithiasis." *EAU*. (2012):56.
12. Akman, T., Binbay, M., Ugurlu, M., Kaba, M., Akcay, M., Yazici, O., Ozgor, F. and Muslumanoglu, A.Y. "Outcomes of retrograde intrarenal surgery compared with percutaneous nephrolithotomy in elderly patients with moderate-size kidney stones: a matched-pair analysis." *Journal of endourology* 26.6 (2012): 625-629.
13. Palmero, J.L., Amoros, A., Ramírez, M., Pastor, J.C. and Benedicto, A. "Surgical therapy of lithiasis in horseshoe kidney." *Actas Urológicas Españolas (English Edition)* 36.7 (2012): 439-443.
14. Al-Qahtani, S.M., Gil-Deiz-de-Medina, S. and Traxer, O. "Predictors of clinical outcomes of flexible ureterorenoscopy with holmium laser for renal stone greater than 2 cm." *Adv Urol*. 2012 (2012):543537.
15. Galvin, D.J. and Pearle, M.S. "The contemporary management of renal and ureteric calculi." *BJU Int.* 98 (2006):1283---8.
16. Labate, G., Modi, P., Timoney, A., Cormio, L., Zhang, X., Louie, M, et al., on behalf of the CROES PCNL Study Group. "The percutaneous nephrolithotomy global study: classification of complications." *Journal of endourology* 25.8 (2011): 1275-1280.
17. Schoenthaler, M., Wilhelm, K., Katzenwadel, A., Ardelt, P., Wetterauer, U., Traxer, O. and Miernik, A. "Retrograde intrarenal surgery in treatment of nephrolithiasis: is a 100% stone-free rate achievable?." *Journal of endourology* 26.5 (2012): 489-493.
18. Hussain, M., Acher, P., Penev, B. and Cynk, M. "Redefining the limits of flexible ureterorenoscopy." *Journal of endourology* 25.1 (2011): 45-49.
19. Hyams, E.S. and Shah, O. "Percutaneous nephrostolithotomy versus flexible ureteroscopy/holmium laser lithotripsy: cost and outcome analysis." *The Journal of urology* 182.3 (2009): 1012-1017.
20. Wiesenthal, J.D., Ghiculete, D., Honey, R.J.D.A. and Pace, K.T. "A comparison of treatment modalities for renal calculi between 100 and 300 mm2: are shockwave lithotripsy, ureteroscopy, and percutaneous nephrolithotomy equivalent?." *Journal of endourology* 25.3 (2011): 481-485.

Source of support: Nil; **Conflict of interest:** Nil.

Cite this article as:
Kadhim, K.G., Salih, N.T. and Saeed, G.A. "A Cross-Sectional Study of Patients in Iraq with Stones in Renal Calculi Underwent Treated According to Use of Retrograde Surgery." *Sarcouncil Journal of Biomedical Sciences* 2.3 (2023): pp 28-33.

Publisher: SARC Publisher