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Research Article

**THE EFFECTIVENESS OF ANATROPHIC
NEPHROLITHOTOMY PROCEDURE IN THE ELIMINATION
OF LARGE STAGHORN STONES OF KIDNEY**Dr. Muhammad Ahsan Shafiq¹, Dr. Kinza Rehman², Dr. Qasim Yab Khan³^{1,2,3}District Headquarters Hospital, Rawalpindi.**Abstract:**

Purpose: The purpose of our study was to assess the effectiveness of anatrophic nephrolithotomy procedure in the elimination of large staghorn stones of kidney.

Design of Study: Retrospective clinical series study.

Place and Duration: This study was held in the Surgical Department of District Headquarters Hospital, Rawalpindi for the duration of 12 months from November, 2017 to December, 2018.

Methodology: Selected 100 patients who went through anatrophic nephrolithotomy with kidney Stag horn calculus. Each patient was operated with a lumbar approach on the 12th rib's bed and assessed preoperatively. Sterile normal saline solution was used to pack the perirenal space to obtain the cold ischemia. Confirmation of calculi elimination was obtained through radiology and by visual means confirmed the clearance of stone. For 3 months, patients were followed up in the OP clinic.

Results: Gender of all selected (100) patients was as male 44 and female 56 with the mean age of 41.33 years. 76.93 minutes was the average working time. 22.44 minutes was the mean cold ischemia time. Secondary bleeding was there in 07 patients, angioembolization was required in 04 patients. Carried out preoperative nephrectomy in 01 patient. Blood transfusion was required in 12 patients.

Conclusion: It was concluded in our study that for complete stone clearance in large staghorn kidney stones, anatrophic nephrolithotomy is very suitable option.

Key words: calculi elimination, cold is chemia, stones, nephrectomy, anatrophic nephrolithotomy.

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INTRODUCTION:

The stones of the urinary tract are amongst the most painful diseases of humanity and constitute a significant part of the workload of a surgeon. Up until the last quarter of the last century, open surgery was still the only option for treatment of stones. There have been made serious changes in curing the urinary systems over the last 02 decades. Now days, most patients with kidney stones can be cured without open surgery. However, large stag-horn calculi still present a problem and may need the various sessions of the PCNL or Sandwich approach, as for example, the time-consuming and expensive combination of PCNL + ESWL. Therefore, in our study, open renal lithotomy with cold ischemia and anatrophic nephrolithotomy technique to control bleeding of the renal pedicle were exercised.

MATERIALS AND METHODS:

We carried out this study in the Surgical Department of District Headquarters Hospital, Rawalpindi for the duration of 12 months from November, 2017 to December, 2018. This retrospective case series was comprised of 100 patients who underwent anatrophic nephrolithotomy for staghorn renal calculi. Furthermore, for this clinical study, intravenous urography, ultrasonography, creatinine and electrolytes, blood sugar and urea, urine analysis and complete blood analysis were assessed preoperatively in all patients. After suitable preparation, all patients were operated with a lumbar approach along the 12th rib bed. The kidney was moved meticulously; extra ordinary attention was taken to safeguard the skeleton of the kidney capsule and kidney pedicle. Achieved cold ischemia by inclosing perirenal space by means

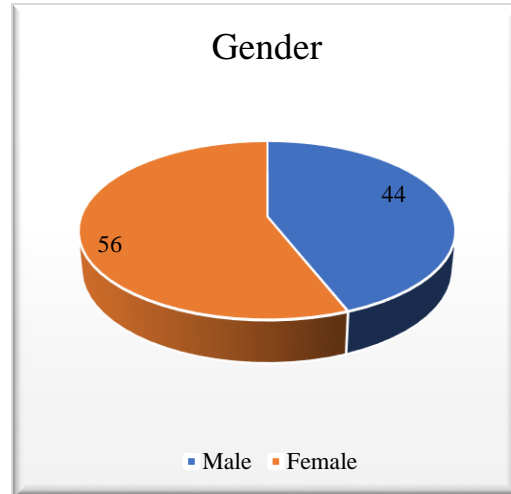
of sterile physiological saline, which was spotted by vascular with kidney pedicle Satinsky's clamps and then crushed for 10 min. The kidney was opened at the convex edge and the account removed. Full clearance of the stone was confirmed by direct visualization and palpation. Haemostasis, partially clamp and bleeding 3 / vicryl free view secured. Convex surface 2/0 vinyl is an approach to suture of renal stitching, 0 vicryl or chromic intestinal matrix, while continuous or chronic bowel is closed. Retroperitoneum was drained. The clearance of the stone was confirmed by KUB X-rays on the 3rd post-operative day. For 3 months, patients were followed up in the OP clinic.

RESULTS:

Gender of all selected (100) patients was as male 44 and female 56. Age of the patients was from 18 years to 75 years with the mean age of 41.33 years. With 45 minutes to 190 minutes, 76.93 minutes was the average working time. With 15 minutes to 25 minutes, 22.44 minutes was the mean cold ischemia time. One patient had perioperative uncontrollable bleeding, so a nephrectomy was obligatory. Seven patients had secondary bleeding between the 14th and 21st post-operative days and obligedre-admission. From these 04-necessary needed angioembolization; the remaining 03 were decided by antibiotics, hydration and blood transfusion. Overall, blood transfusion was required in 12 patients. For the confirmation of stone clearance, all patients underwent KUB X-rays on the 3rd post-operative day. 07 patients had residual stone fragments, instinctively cleared 04 patients from these. The other 03 patients had 08 mm to 01 cm fragments and hence required ESWL afterwards.

Table No 01: Gender of the patients

Gender	Quantity
Male	44
Female	56



DISCUSSION:

Urinary tract stone disease in our country is a common incidence. Important reasons include lack of drinking water, inadequate nutrition, hot air and insufficient access to the configuration of medical care. Staghorn calculi can be asymptomatic and sometimes coincidental findings [1]. With various approaches like DJ, PCNL combined ESWL PCNL is to apply staghorn stone including ESWL without stent (approach Sandwich) [2-5] and anatomic nephrolithotomy [6-10]. The incision in the side section that removes the kabbac provides adequate access to the kidney. Careful attention must be paid to isolate the kidney and isolate the renal pedicle [11]. Every effort should be made to protect the renal capsule to ensure adequate coverage of the nephrectomy. Our mean surgical time was 79.63 minutes, shorter than the other authors [9,10,11]. Cold ischemia is necessary to reduce the damage of the nephron. Ideally, it should not be more than 30 minutes. However, an ischemia time of up to 45

minutes has been reported [12]. The mean duration of ischemia in this study was 22.44 minutes.

Problematic hemorrhage requiring transfusion has been reported. Conservative approach can be adopted in patients who are hemodynamically stable. However, those who do not respond to conservative treatment may need angioembolization or, very rarely, nephrectomy [13]. In this series, four patients require angioembolization for secondary bleeding. The rate of stone removal by different methods has been documented for anatomic nephrolithotomy [14,15]. In this study, stone removal rate was 93%. Only three patients had to undergo ESWL to detect residual fragments of 8 mm to 1 cm. The remaining four spontaneously cleared for the first 12 weeks. ESWL, PCNL, or both together, are less invasive in the management of stag horn calculations. However, limited availability, repeated / multiple sessions and the necessity of financial limitations lead to less patient compliance. In these cases, anatomic nephrolithotomy can achieve the highest rates without a single procedure.

Table No 01: Patients of Relevant Studies on Complication of PNL

Variables	Shin [16]	Mousavi [17]	El Nahas [18]	De Rosette [19]	la Lee [20]	Rana [21]	Osman [22]
Quantity of Patients	88	671	241	5,803	582	667	315

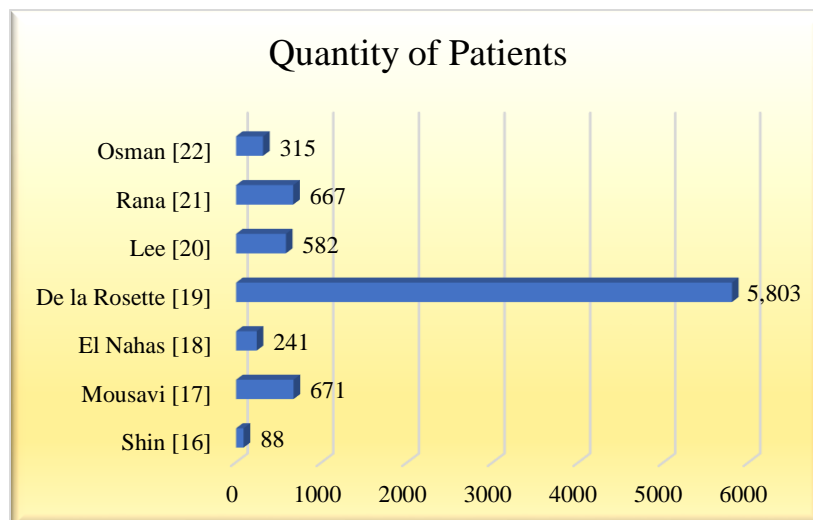


Table No 02: Percentage of PNL Complications in Relevant Studies

Complications (%)	Shin [16]	Mousavi [17]	Nahas [18]	De la Rosette [19]	Lee [20]	Rana [21]	Osman [22]
Transfusion	6.9	0.6	16	5.7	11.2	1.49	0
Hemorrhage requiring intervention	1.4	0.15	02	NA	NA	0.14	0.3
Fever	11	01	1.2	10.5	22.4	NA	32
Sepsis	0.6	0	0.4	NA	0.8	1.79	0.3
Colonic injury	0.7	0.3	NA	NA	0.2	0	0
Pleural injury	1.1	0.7	2.4	1.8	3.1	0.14	0
Extravasation/urine leak	0.4	5.2	08	3.4	7.2	NA	NA
Mortality	0.4	0.3	0.4	0.3	0.3	0	0.3

CONCLUSION:

Anatrophic nephrolithotomy is a viable option to ensure complete clearance of the Stag horn type of stones from the kidney.

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