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Research Article

**EFFICACY OF TREATMENT OF LARGE STAGHORN RENAL
CALCULI WITH ANATROPHIC NEPHROLITHOTOMY*****Dr. Sara Kiran, *Dr. Shabana Rasheed, *Dr. Asia Hameed*****Quaid-e-Azam Medical College, Bahawalpur Pakistan****Abstract:**

Purpose: To evaluate the efficacy of anatrophic nephrolithotomy in the treatment of large staghorn renal stones.

Study Design: A Retrospective case series.

Place and Duration: In the Surgical Department, Unit II of Nishter Hospital, Multan for one year Duration from March 2017 to March 2018.

Methodology: 100 patients with kidney Stag horn calculus who underwent anatrophic nephrolithotomy were selected. All patients were evaluated preoperatively and operated with a lumbar approach on the 12th rib's bed. Cold ischemia was obtained by packaging the perirenal space with sterile normal saline solution. The calculi was eliminated and confirmed by direct visualization of complete stone clearance and then radiology. The patient was followed up in the outpatient clinic for 12 weeks.

Results: Of the 100 patients, 56 were male and 44 were female, and the mean age was 41.33. The average working time was 76.93 minutes. And the mean cold ischemia time was 22.44 minutes. Seven patients had secondary bleeding; Four required angioembolization required. One patient should undergo peroperative nephrectomy. Twelve patients required blood transfusion.

Conclusion: anatrophic nephrolithotomy is a viable option to obtain complete stone clearance in large staghorn kidney stones.

Key words: kidney stones, anatrophic nephrolithotomy, nephrectomy.

Corresponding author:***Dr. Sara Kiran,*****Quaid-e-Azam Medical College,****Bahawalpur,****Pakistan**

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INTRODUCTION:

The stones of the urinary tract are among the most painful diseases of humanity and constitute a significant part of the workload of a surgeon. Until the last quarter of the last century, open surgery was still the only option to treat stones. There have been serious changes in the treatment of urinary systems over the last two decades. Currently, most patients with kidney stones can be treated without open surgery. However, large stag-horn calculi still pose a problem and may require the multiple sessions of the PCNL or Sandwich approach, ie the time-consuming and expensive combination of PCNL + ESWL. Therefore, in this study, open renal lithotomy with cold ischemia and anatomic nephrolithotomy technique to control bleeding of the renal pedicle were used.

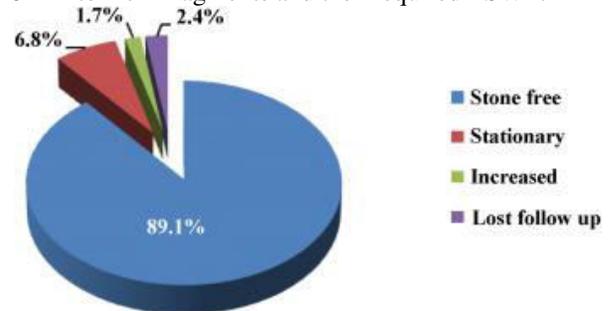
MATERIALS AND METHODS:

This study was held in the Surgical Department, Unit II of Nishtar Hospital, Multan for one year Duration from March 2017 to March 2018. This retrospective case series was applied to 100 patients who underwent anatomic nephrolithotomy for staghorn renal calculi. In addition to clinical study, whole blood analysis, urine analysis, blood sugar and urea, creatinine and electrolytes, ultrasonography and intravenous urography were evaluated preoperatively in all patients. After appropriate preparation, all patients were operated with a lumbar approach along the 12th rib bed. The kidney was moved meticulously; Special attention was shown to protect the skeleton of the kidney capsule and kidney pedicle. Cold ischemia was obtained by packaging the perirenal space with sterile physiological saline, which was detected 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 third postoperative day. The patient was followed up in the outpatient clinic for 12 weeks.

RESULTS:

During the study, anatomic nephrolithotomy was performed on 100 patients, 56 male and 44 female.

The mean age was 41.33 (12-77 years). The average working time was 76.93 minutes. (45 to 190 minutes), the mean cold ischemia time was 22.44 minutes. (15-25 minutes). One patient had perioperative uncontrollable bleeding, so a nephrectomy was required. Seven patients had secondary bleeding between the 14th and 21st postoperative days and required re-admission. From these four necessary need angioembolization; the remaining three were decided by hydration, blood transfusion and antibiotics. Overall, 12 patients required blood transfusion. All patients underwent KUB X-rays on the third postoperative day to confirm clearance of the stone. Seven patients had residual stone fragments, four of which were removed spontaneously. The other three patients had 8 mm to 1 cm fragments and then required ESWL.

**DISCUSSION:**

Urinary tract stone disease in our country is a common prevalence. 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. With various approaches, or DJ, PCNL combined ESWL PCNL is to apply staghorn stone including ESWL without stent and (approach Sandwich) and anatomic nephrolithotomy. 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. 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. 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. The mean duration of ischemia in this study was 22.44 minutes.

Table 1 Relevant studies on complication of PNL

Series (citation)	Shin (22)	Mousavi-Bahar (17)	El Nahas (19)	de la Rosette (21)	Lee (25)	Rana (26)*	Osman (27)
Patient number	88	671	241	5,803	582	667	315
Complication (%)							
Transfusion	6.9	0.6	16	5.7	11.2	1.49	0
Hemorrhage requiring intervention	1.4	0.15	2	NA	NA	0.14	0.3
Fever	11	1	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	8	3.4	7.2	NA	NA
Mortality	0.4	0.3	0.4	0.3	0.3	0	0.3

*81% of patients underwent PNL.

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. In this series, four patients require angioembolization for secondary bleeding. The rate of stone removal by different methods has been documented for anatomic nephrolithotomy. 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.

CONCLUSION:

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

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