

Effectiveness and morbidity of concomitant bilateral percutaneous nephrolithotomy (about 20 cases)

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Abstract

Percutaneous nephrolithotomy (PCN) has become the technique of choice for the treatment of large stones larger than 2 cm or after failure of other techniques. Thus, its unilateral performance has become a routine technique, but bilateral percutaneous nephrolithotomy in one stage is not common practice. This therapeutic option appears attractive in patients at high risk of recurrence and unable to tolerate a two-stage PCN, however it must be performed in expert reference centers.

The objective of our study is to retrospectively evaluate the efficacy and morbidity of concomitant bilateral percutaneous nephrolithotomy and to compare the results of our series with those of an extensive and recent review of the literature.

This is a retrospective study including 20 cases of concomitant bilateral percutaneous nephrolithotomy performed between January 2011 and January 2023. The mean age was 47.4 years. These were 14 men and 6 women, all had bilateral kidney stones. The mean stone size was 28.8 cm, of which 11 were

coralliform. We obtained a good result (Stone-free) in 17 patients with an average duration of 130 min, the residual stones required additional treatment in 3 cases by extracorporeal lithotripsy (ECL).the main complications encountered were hemorrhagic (1 case) and infectious (2 cases), the renal function is unchanged in the end.

The results of our series are consistent with those of the literature with a success rate of 85% without residual fragments greater than 4 mm.

1. Introduction

Percutaneous nephrolithotomy (PNL) has become the technique of choice for the treatment of large stones larger than 2 cm or after failure of other techniques (1)

Thus, unilateral percutaneous nephrolithotomy has become a routine technique(2), but bilateral percutaneous nephrolithotomy in one stage is not common practice. This therapeutic option appears attractive for patients at high risk of recurrence who cannot tolerate a two-stage PCNL, but it must be performed in expert reference centers.

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2. Materials and methods

This is a retrospective descriptive study, analyzing 20 files of patients who underwent concomitant bilateral percutaneous nephrolithotomy, during the period from January 2011 to January 2023.

Patients meeting the following inclusion criteria were included in our series:

Patients older than 16 years of age who had received concomitant bilateral NLPC

The exclusion criteria were: Patients with a lithiasis pathology operated by another surgical technique or by unilateral or bilateral NLPC in two steps.

Patients with a contraindication to NLPC

3. Results

Table 1 Characteristics of the study population (n=20)

| | |
|--|---|
| Age | Average age of 47.4 years |
| gender | 14 men and 6 women |
| Functional signs and reasons for consultation | - Low back pain 55% -Renal colic 40% -Urinary problems 5% of the time |
| Biological aspects | Renal function: 95% normal ECBU: positive for E coli 20%. |

Table 2 Topography of the calculations

| Lithiasis | Number of cases (Rate %) | | |
|------------------|-----------------------------------|----------------------------------|----------------------------|
| | Right kidney (20 kidney units) | Left kidney (20 kidney units) | Total (40 kidney units) |
| pyelic | 11(55%) | 7 (35%) | 18 (45%) |
| coralliform | 5 (25%) | 6 (30%) | 11 (27.5%) |
| lower callus | 1(5%) | 5 (25%) | 6 (15%) |
| Upper callus | 2 (10%) | 2 (10%) | 4 (10%) |
| Moy callus | 1 (5%) | 0 | 1 (2.5%) |

3.1. Concurrent bilateral NLPC treatment

The operative time ranged from 105 min to 155 min, with a mean time of 130 min. The mean operative time to perform the first NLPC was 67 min, with a maximum of 85 min and a minimum of 50 min. The average operative time to perform the second NLPC was less than 41 min, with a maximum of 52 min and a minimum of 30 min.

The success rate in our series is defined by the absence of residual fragments greater than 4 mm on each side on the control AUSP. A residual fragment-free result was achieved in 17 patients, representing a stone-free rate of 85%. Only 3 patients required further treatment We encountered complications in 3 cases, or (15%) : Complications were essentially infectious in 2 cases (10%) and hemorrhagic in one patient (5%). Hemorrhagic complications required an emergency transfusion.

4. Discussion

The operative time on our series varied between 105 minutes and 155 minutes with an average of 130 min. This difference can be explained by the type of stone to be treated: Volume of stones (greater than 4cm). The location and topography of the stones: especially those located in an inaccessible calyx with a narrow stem. Chemical composition of the stones: since brushite and oxaloclaste stones are difficult to break up. And finally the associated lesions: such as calcified diverticulum and associated pyeloureteral junction syndrome.

The success rate in our series is defined by the absence of residual fragments greater than 4 mm on each side on the control AUSP. Our success rate (stone free) is 85%. It is consistent with the success rate in the literature, which varies between 73% (3) and 96.6% (4)

The overall complication rate in our series is 15%. This rate depends mainly on the experience of the operator, the technical platform, the anatomical variations of the urinary and excretory tracts, the presence of comorbidity and especially the high rate of nosocomial infections.

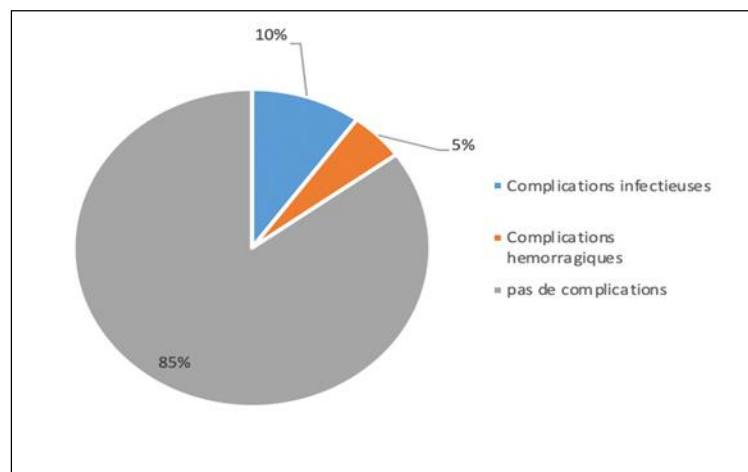


Figure 1 Post-operative complication rates

5. Conclusion

While unilateral percutaneous nephrolithotomy has become a routine technique, bilateral one-stage treatment is not common practice.

In patients most often at high risk of recurrence, regularly hospitalized and undergoing numerous procedures, the option of performing a single-stage treatment appears attractive.

One-stage bilateral percutaneous nephrolithotomy has been shown to achieve good results at the cost of only slightly longer hospitalization than for unilateral percutaneous nephrolithotomy. Morbidity remained low and similar to that observed for unilateral treatment.

It avoided a second anesthesia and a second hospitalization especially in patients with a history of iterative surgery for renal lithiasis.

Nevertheless, it should be reserved for referral centers with proven expertise in percutaneous surgery.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

6. References

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