Conventional Percutaneous Nephrolithotomy (PCNL) Complications Rate in a Tertiary Care Center.

Sami Ullah1, Muhammad Asif2, Naveed Haroon3, Ijaz Ali4, Azara Ghani5

1. P.G. Department of Urology, LRH Hospital Peshawar
2. Asstt Prof Department of Urology, LRH Hospital Peshawar
3. Asstt Prof department of Urology LRH Hospital Peshawar
4. Registrar Surgical A Unit Saidu Teaching Hospital Swat
5. Asstt prof department of Urology LRH hospital Peshawar

 Corresponding author: Muhammad Asif
 Email: drasif_15@yahoo.com
 Cell no: +923359935313

ABSTRACT
Background: Assess The Complication Rate Of Conventional Percutaneous Nephrolithotomy In A Tertiary Care Hospital (PCNL).

Study design: A Retrospective observational study.

Place and duration of study: Department Urology Lady Reading Hospital In Peshawar, Pakistan. From 05-January 2016 To 05-January 2020

MATERIALS AND METHODS: The following research was carried out by the urologist department of Lady Reading Hospital in Peshawar, Pakistan, from January 2016 to January 2020. Four hundred thirty-nine individuals with normal-panel underwent the study. Before non-contrast, C.T. kub was done on all subjects. The patient was lying flat after the 6fr ureteric catheter was inserted in the lithotomy position. All prone procedures using 30fr am plating sheaths were directed by fluoroscopy. Hydraulic lithoclasts broke the stone. All nephrostomy tubes were foley devices with a 16-fr size. Six physicians performed these operations with four years of penal experience. Postoperative problems were evaluated using an adapted Cloven rating method.

Results: There were problems with 46.9%. 54 (12%) and (120) grade I and II clavier problems were discovered. 67 (15%) stage I patients with transient temperature were treated with antipyretics. 53 (12%) patients used supine pressure bands to treat nephrostomy site leakage. 9 (2%) of the grade II issues needed IV antibiotics for sepsis, and 45 (10%) required blood transfusions. Extended haemorrhage occurred in 4 (0.8%) patients who underwent percutaneous angoembolization and 6 (1.2%) patients who underwent perinephric collection drainage. One (0.2%) patient had a colostomy, and 24 (5.3%) patients with persistent nephrostomy leakage or PCS injury underwent D.J. stenting. I was alright with Intensity IV. 0.4% of fatalities were due to severe bleeding.

Conclusion: The procedure of percutaneous nephrolithotomy is economical, risk-free, and well-tolerated. Most of the time, minor problems like brief temperature and nephrostomy site leaks go away independently. The degree of complexity has been reduced to almost nothing due to the shrinking size of Pcnls from conventional to mini, ultra mini, and micro.

Keywords: Complications, Tertiary Care, Percutaneous Nephrolithotomy, Conventional, Pakistan
Introduction:

PCNL was originally used for big renal stones in the 1970s and has been the technique of choice ever since. In our globe region, urolithiasis affects 2-3% of the population and a lifetime chance of having a kidney stone is 13%. (3). A lower mortality and morbidity rate are more common with PCNL. However, This Grading System Has Its Flaws; it Has Been Thoroughly Tested And Is Widely Accepted. Complications May Now Be Graded Using This Method.3

Methodology:

This descriptive study was conducted at the lady reading hospital in Peshawar, Pakistan, from 2016 to 2020. The study comprised 449 participants with pcnl: preoperative ultrasound, x-ray, and non-contrast ct kub on all patients. The patient was prone after passing a 6fr ureteric catheter via lithotomy cystoscope. All surgeries were conducted prone under fluoroscopy supervision with a 30fr am Platz sheath. Stone fragmentation using pneumatic lithoclast. All instances

Figure 01: Demographically chart

They used a 16fr foley catheter for nephrostomy. Six surgeons with four years of penal experience conducted these surgeries. Modified clavier grading was used to grade perioperative problems.

Results:

Across the board, 46.9% had complications. Most Grade I and II Clavier problems were found in 120 (27%) and 54 (12%), respectively. Temporary fever in 67 (15%) of the patients who received antipyretics and nephrostomy site leakage in 53 (12%) patients who received pressure dressings at the bed site were Grade I complications. 10% of patients with Grade II complications required blood transfusions, and 2% developed sepsis that required parenteral antibiotic treatment. 10 (2% of the participants) experienced Grade III-A complications, including prolonged bleeding in 4 (0.8%) of the patients treated with percutaneous angioembolization and 6 (1.2%) of the patients who needed percutaneous drainage of the perinephric collection. Grade IIIB sequelae occurred in 25 patients (5.5%), 24 patients (5.3%) needed D.J. stenting due to PCS damage or ongoing leakage from the nephrostomy site, and one patient (0.2%) required a colostomy due to a gastrointestinal injury. No Grade IV complication existed. Mortality due to bleeding was 0.4% (Grade V).
Table 1: Complications According to the Modified Clavien Grading System

<table>
<thead>
<tr>
<th>Clavien Grade</th>
<th>No. of Patients</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>120 (27%)</td>
<td>Antipyretics were used to manage transient fever in 67 people (15%), 53 (12%) patients with nephrostomy site leaks received basic pressure bandages at the bedside.</td>
</tr>
<tr>
<td>II</td>
<td>54 (12%)</td>
<td>9 (2%) and 45 (10%) received intravenous drugs for sepsis.</td>
</tr>
<tr>
<td>III</td>
<td>25 (5.5%)</td>
<td>4 (0.8%) cases of percutaneous angioembolization, 6 (1.2%) cases of percutaneous drainage of perinephric collections, 24 (5.3%) cases of nephrostomy site leakage, and one (0.2%) case of colonic injury requiring a colostomy.</td>
</tr>
<tr>
<td>IV</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>V</td>
<td>2 (0.4%)</td>
<td>Deaths</td>
</tr>
</tbody>
</table>

Table 2: Situations That Are Complicated According To The Modified Clavien Grading System

<table>
<thead>
<tr>
<th>Clavien Grade</th>
<th>No. of Patients</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>120 (27%)</td>
<td>Antipyretics were used to manage transient fever in 67 people (15%), 53 (12%) patients with nephrostomy site leaks received basic pressure bandages at the bedside.</td>
</tr>
<tr>
<td>II</td>
<td>54 (12%)</td>
<td>9 (2%) and 45 (10%) received intravenous drugs for sepsis.</td>
</tr>
<tr>
<td>III</td>
<td>25 (5.5%)</td>
<td>4 (0.8%) underwent percutaneous angioembolization, 6 (1.2%) experienced percutaneous drainage of perinephric collections, 24 (5.3%) underwent D.J. stenting for PCS injury or nephrostomy site leaking, and one (0.2%) underwent a colostomy due to a colon injury.</td>
</tr>
<tr>
<td>IV</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>V</td>
<td>2 (0.4%)</td>
<td>Deaths</td>
</tr>
</tbody>
</table>

Table 3: Complications Rate in PCNL Studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Complication Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tefekli et al.</td>
<td>29.2%</td>
</tr>
<tr>
<td>De la Rosette et al.</td>
<td>43.8%</td>
</tr>
<tr>
<td>Guy's Hospital</td>
<td>50.5%</td>
</tr>
<tr>
<td>This Study</td>
<td>46.9%</td>
</tr>
</tbody>
</table>

Discussion:

PCNL's total complication rate is between 20% and 83%. The real complication rate in our study is 46.9%, compared to 29.2% in Tefekli et al., 43.8% in De la Rosette et al., and 50.5% at Guy's Hospital. The total complication rate in a 5,803-case study was 21.5 percent. Nephrostomy tube leakage (15%) and transient per cent needed blood transfusions. A complication of Grade III was found in 9.4% of instances requiring surgery or imaging. In a study of 244 PCNL patients, De la Rosette et al. found a 44.8% complication rate. The overall complication rate at Guy's Hospital in 2008 was 43 per cent.
According to hospital records (50.5 per cent). The most common complication was Clavien Grade I, with 27 cases (32%)\(^\text{14}\). Patients with clavier grade III complications needed surgical or radiological intervention in 9% of cases.

Complications of grade IV or V were not discovered\(^\text{15}\). Percutaneous pleural access for PNL has a pleural violation incidence of 0.3 per cent to 1%. Our study found no evidence of this since most patients had access to the lower calyceal artery\(^\text{16}\). Only 1% of the 3,878 patients who had PNL were found to have significant bleeding, with a transfusion rate of 5.5 per cent. Surgical time and big volume stones may have contributed to the study's transfusion rate of 10%\(^\text{17}\) (staghorn). According to a survey by Srivastava and colleagues, persistent bleeding necessitated angioembolization in 1.4% of the 1,854 patients treated with percutaneous renal access and PNL\(^\text{18}\). Angioembolization was required in 0.8 per cent of patients in our study\(^\text{19}\). In the immediate post-PCNL interval, 30 per cent of patients have a transitory fever, whereas the risk of developing sepsis ranges from 0 to 3. 20.15% of patients had a transitory fever, whereas 2% developed sepsis. Fever (10-30%) was the most common consequence. The Clavien method was used in 811 patients treated with percutaneous access for PCS damage or leaking from the nephrostomy site, attributable to fluoroscopy guidance. Among the 5,803 patients treated at various facilities throughout the globe, a fatality due to Clavien grade V complications (0.03% of all cases) has been documented (10). Mortality was at a low of 0.4%. The deaths of two patients were attributed to bleeding and comorbidities\(^\text{23}\). In terms of stone removal and morbidity, PCNL is a safe technique. Postoperative discomfort is reduced, allowing the patient to return to work more quickly. The short incision and minimally invasive access to the kidney are credited with the low risk of consequences. Complication rates have been greatly lowered due to advancements in stone-breaking techniques and the downsizing of PCNL\(^\text{24}\).

**CONCLUSION:**

Percutaneous nephrolithotomy is a secure, economical, and well-tolerated procedure despite the comparatively low chance of serious consequences. The two mildest issues that occur most frequently are brief temperature and nephrostomy tube leakage, Percutaneous nephrolithotomies (PCNL) with an overall complication rate of 29.2 per cent, according to Tefekli and colleagues. 16.3 per cent of the patients had grade II problems. Only 4.6 per cent of patients required D.J. stenting for urine leakage, and 10.9 Eight per cent of PCNL patients are reported to have had a PCS injury\(^\text{21}\). Electrolyte abnormalities, mental status changes, and intravascular volume overload are possible consequences of PCS damage\(^\text{22}\). In our study, 5.3 per cent of patients required D.J. stenting because of PCS damage or leaking from the nephrostomy site, attributable to fluoroscopy guidance. Among the 5,803 patients treated at various facilities throughout the globe, a fatality due to Clavien grade V complications (0.03% of all cases) has been documented (10). Mortality was at a low of 0.4%. The deaths of two patients were attributed to bleeding and comorbidities\(^\text{23}\). In terms of stone removal and morbidity, PCNL is a safe technique. Postoperative discomfort is reduced, allowing the patient to return to work more quickly. The short incision and minimally invasive access to the kidney are credited with the low risk of consequences. Complication rates have been greatly lowered due to advancements in stone-breaking techniques and the downsizing of PCNL\(^\text{24}\).

**References:**


4. Karakoyunlu AN, Yucel MO, Alkibay T. Laparoscopic pyelolithotomy: a comparison with percutaneous nephrolithotomy. Urologia