In the mid-1980s, kidney stones were treated using lithotripsy and percutaneous nephrolithotomy, while ureterorenoscopy was rarely carried out until the 1990s, now the ureteroscopes was being widely used for operating kidney and ureteral stones. Ureterorenoscopy is a process of performing endoscopy, passing it through the urethra, bladder to enter the upper urinary tract. The use of ureterorenoscopy has gained more popularity in recent years. The advancements in procedures have made it a minimally invasive therapy with the least per-operative complications. According to various studies, the formation of stones in the bladder and urinary tract is highly frequent in pregnant women [1]. Patients presenting with urolithiasis during the first or second trimester normally have the complaint of renal colic pain, difficulty in urination, fever, tenderness, and hematuria. Some studies showed...
left hydronephrosis >10mm to be one of the clinical symptoms that predict urolithiasis [2,3]. The most common clinical symptom of urolithiasis in pregnant women is pain on the side of the torso (also called flank pain), and in a study of 144 subjects, around 96.5% of cases reported it [8]. Other symptoms reported are hematuria, urinary retention, and other symptoms such as dysuria nausea and vomiting [4,5]. However, traditional clinical signs can be less significant to base the diagnosis as back or flank pain, and hematuria can also result from the usual pregnancy changes [6]. In pregnant women, urolithiasis management needs detailed clinical assessment and considerate examination of imaging risks to the mother and fetus. As reported, around 0.026% to 0.531% of urinary calculi occurs during pregnancy and may be related to 40% of premature births. Due to the fetus’s sensitivity and risks involved with radiation exposure, many scans are entirely skipped in diagnosing the patient with renal colic pain. According to Lewis’s study, such symptoms can lead to premature birth, abortion, or low-birth-weight infants [7,8]. Different methods are widely used to manage ureteric stones depending on the size of the stone and complexity, from ureterorenoscopy to laparoscopic ureterolithotomy extracorporeal shockwave lithotripsy (ESWL). Comparatively, the results of Ureterorenoscopy are reported to be 76.9%-100% accurate than other available treatments [9,10]. Therefore, an abdominal ultrasound examination is mostly chosen for pregnant patients and conclusive investigations are carried out in cases with abdominal pain and alleged renal colic. Around 5–15% in the world are affected by renal colic, with 50% having a repeat rate. Due to the high prevalence, Urinary stone disease is a significant liability in Pakistan healthcare departments [11].

**METHODS**

The study was conducted at Islam Medical and Dental College/ Islam Teaching Hospital, Sialkot from Jan 2016 to Dec 2019. A total of 33 pregnant women attended the Obstetric and Urology departments of hospital were included in the study. The sample size was calculated by taking the confidence interval as 95%, margin of error as 5%. Non-probability consecutive sampling was employed [12]. Clinical details, including checks for renal functioning, urine culture, ultrasound and consultation records of obstetricians were collected. To ensure safety of the fetus, no KUB, IVU, or CT scan was done on the patients. Inclusion Criteria: Patients with renal colic pain, Patients with ureteric calculi, Patients with hydronephrosis. Patients who didn’t respond to oral antibiotics were referred for surgical interventions. Ureterorenoscopy was performed as first-line treatment in all cases with semirigid ureteroscope and DJ stent placement. After induction of spinal anesthesia, Patients were laid in lithotomy position for surgery, the surgeon elevated the right side of patient to divert pressure on the uterus’s inferior vena cava. Fetal heart sounds were monitored throughout the obstetrician’s operation while ureterorenoscopy was performed using 6/7.5 for semirigid ureteroscope (Wolf) with a 4.2 × 4.6 Fr working channel and 7.3/8 with a 3.6 working channel. For emergencies of the ureteric orifice, balloon dilators were available. Renal ultrasound monitoring was done without fluoroscopy, and fragmentation of stones was done using pneumatic lithoclast, and upper ureteric stones were confined in the dormia basket during disintegration. An introduction of a DJ stent was done at the close of the process in almost all the cases. Other post-operative care and fetal monitoring were advised for women showing symptoms of cramps and vaginal discharge. Patients were released according to the health of the fetus and the child.

**RESULTS**

Out of the 33 patients, all women were presented with renal colic pain. The age distribution is shown in the table below (table 1). The patients’ mean age is calculated as 31 years (standard deviation: 5.71; range: 22-41years). The most repeated age groups were 30-34 years with nine patients (27%) and 22-26 years and 38-41 years with seven patients in both (21%) and 26-30 years and 34-38 years with five patients (15%) each with the gestation period varying from 8 weeks (1st trimester) to 33 weeks (3rd trimester). The stone size ranged from 0.4cm to 1.2cm, with a mean size of 0.95 cm.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Total Population</th>
<th>Clinical Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age ± SD</td>
<td>31±5.71</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Gender, No. (%)</td>
<td>Females: 33 (100%)</td>
<td>Min: 0.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean Size ± SD</td>
<td>0.95±0.307</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td></td>
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</tr>
</tbody>
</table>

**Table 1**: Demographics of Patients and other clinical symptoms

**Figure 1**: Frequency and Percentage of Age-Range of Ureteric Stones in Pregnant Women
According to studies, about 25 to 40% of pregnant patients with renal colic pain, on the right, left, and bilateral side; an average time taken 9.84 hours and 0.82 (in days) 

Figure 2: Clinical Symptoms of Patients with ureteric Calculi 
Patients presenting during the first trimester were 4, and 2nd trimester was 17, and 12 patients were presented in 3rd trimester. Severe renal colic pain was observed in 6 patients(18%) and haematuria was presented in 6 patients (18%), nausea vomiting in 18 patients (55%), two were presented with acute retention of urine (6%), and one patient (3%) presented with oliguria due to bilateral ureteric obstruction.

Table 1: Details of Operation time of Patients 
The average time taken for the surgical procedure was 22.27±5.63 min while the maximum time noted was 29 mins and 14 mins minimum in the treatment of all the 33 cases; however, the hospital stays varied from 1 day to 6 hours with an average time taken 9.84 hours and 0.82 (in days).

Figure 3: Details of Operation time of Patients 
The comparative study reported 25.5±4.6 years (range 16–41 years), and the gestation period of 9 to 36 weeks [15]. Semin and colleagues found a 67.9%, 63.4%, and 66.5% clearance rate in the upper, mid, and lower ureter [16]. While in our study amongst all the patients presented with renal colic pain, on the right, left, and bilateral side; an overall stone was broken, and clearance achieved in 28 patients(85%) and five patients (15%) stones were pushed back, and obstruction was relieved. However, no obstetric or urological complications were noted [17]. Only temporary difficulty in urination and burning micturition in few cases were recorded. Some other studies show the risk of premature birth and renal colic and its complications increase early birth risk [18–21]. In our study, the average time taken for the surgical procedure was 22.27±5.63 min in the treatment of all the 33 cases; however, the hospital stays varied from 1 day to 6 hours. The stone size ranged from 0.4 cm to 1.2 cm, with a mean size of 0.95 cm. In similar works on 128 pregnant women suffered from acute renal colic/ureteral calculi of Foshan Maternal and Child Health Hospital, the success rate was 83 to 96%. Abdel-Kader reported ureterorenoscopy conducted on 17 women with stone-free rate to be 100% [22, 23].

**CONCLUSION**

Thus, we can define ureterorenoscopy as a preferred first-line treatment that is harmless and effective for treating obstructive ureteric stones during pregnancy.

**REFERENCES**


