

EXAMINING THE FREQUENCY OF ENDOSCOPIC RESECTION OPERATION IN THE TREATMENT OF LARGE SYMPTOMATIC SIMPLE RENAL CYSTS AND ITS COMPLICATIONS IN PEYMANIEH HOSPITAL OF JAHROM

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ABSTRACT

Introduction: Acquired kidney cyst is a common kidney disease. The spread of this disease increases with aging. There are different methods such as sclerotherapy, open surgery, and laparoscopy for the treatment of kidney cysts. However, each of these methods has its own complications. Although sclerotherapy is a safe method, its relapse rate is high. One of the newest methods recently introduced is percutaneous endoscopic resection of the cyst. Thus, the aim of this study is to examine the frequency of endoscopic resection operation in the treatment of large symptomatic simple renal cysts and its complications in Peymanieh Hospital of Jahrom.

Method: This descriptive study was conducted on patients with symptomatic renal cysts larger than 5 cm who referred to department of urology of Peymanieh Hospital of Jahrom from August 2007 to February 2009. These patients underwent percutaneous endoscopic resection of cysts. The questionnaire was completed for all patients and some data were collected from medical records of patients. Data were analyzed at descriptive and inferential statistics levels using SPSS.

Results: 100 patients with an average age of 57.07 ± 7.67 participated in this study. Pleural and intestinal perforation, rupture of the spleen and liver and severe kidney damage were not seen in any patient. Five percent of patients had leakage of urine, 7% prolonged hematuria, 5% urinary tract infection, and 1% had infection of stitches. Hematoma was formed in the operation place of 9% of patients. Sixteen percent of patients suffered minor pain after surgery and 53% complained of moderate pain. The average loss of hemoglobin compared with pre-operation stage was 1.95 ± 0.57 mg/dl. With increase in patients' age, size and number of cysts also increased. Thus, they were prone to formation of hematoma, drop in hemoglobin, and long-lasting hematuria.

Conclusion: Our studies showed that percutaneous endoscopic resection of kidney cysts is a safe and effective method with minimal invasion and the rate of morbidity and recurrence after operation is low.

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Introduction

Simple kidney cysts may develop at any age from birth to old age. However, its likelihood increases with age. Approximately 25% of adults over 40 years have detectable kidney cysts in x-ray images and from 80 years of age, 75% of patients have cysts detectable by CT-scan (greater than 1 cm) [1]. In general, over time, the number of simple renal cysts increases, but the increase in size is limited. According to studies, in 33% of patients, the number of cysts has increased over seven months, but only in

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6% of patients, increase in cysts size is observed [2]. Unlike the high prevalence of kidney cysts, fortunately, only 8% of patients suffer symptoms of cysts in the kidneys. According to the definition of WHO, urologists only treat simple cysts of the kidney that are large (greater than five cm) and have symptoms [3]. There are several methods for the treatment of large symptomatic simple renal cysts:

1. Percutaneous aspiration and sclerotherapy
2. Endoscopic percutaneous therapy
3. Laparoscopic kidney cyst removal

4. Kidney cyst removal by open surgery [4] Percutaneous endoscopic therapy of kidney cysts began in the early 1990s. This treatment method was used in patients with definitive contraindications of other methods such as treatment of cysts related to urinary collecting system [5]. Currently, the best treatment in symptomatic patients with acquired and simple renal cysts is percutaneous drainage along with ultrasound monitoring, fluoroscopy, or CT scan [6]. In sclerotherapy, the chance of recurrence is high [7]. Laparoscopic treatment has many side effects including severe damage to the intestines, and in addition to that, the patient suffers from general anesthesia and postoperative pain. Moreover, length of stay of the patient in the hospital after surgery is long [8]. Nevertheless, percutaneous endoscopic therapy has few side effects. Chance of recurrence is very low. Duration of stay in the hospital is low and patients are under topical anesthesia, so they are safe from anesthesia complications [3]. Thus, in this study, we have decided to examine patients undergoing percutaneous endoscopic therapy to verify the suitability of this method of treatment.

Method:

This study is a descriptive one. In the original design of the study, the patients admitted from August 2007 to August 2008 were studied.

The study population included all patients with symptomatic renal cysts larger than 5 cm who had referred to department of urology of Peymanieh Hospital of Jahrom from August 2007 to February 2009 and had undergone percutaneous endoscopic resection operation that entered the study regardless of age and sex.

This study was conducted using census, some part of the data was collected from archival records, and questionnaires completed by the surgeon at the hospital, before and after surgery.

Inclusion criteria: patients entered the study according to WHO criteria and urologist's diagnosis, i.e. patients with renal cysts larger than 5 cm who had symptoms such as flank pain, hematuria, and blood pressure (regardless of age and sex).

Exclusion criteria:

1. Patients who had high risk for local anesthesia (spinal and epidural)
2. Patients who had preganglionic kidney cysts in ultrasound
3. Patients who had active coagulopathy
4. Patients who had active urinary tract infection or abdominal wall infection, if patients had positive urine culture, a course of antibiotics was done, and until negative urine culture, surgery was not possible.
5. Patients who were under treatment with aspirin or warfarin, the patients were enrolled after discontinuation of therapy
6. Patients who had surgery on the pelvis or abdomen, for such patients, operative percutaneous is preferably not done. In case of their entry into the research project, CT-scan was used to diagnose change in the anatomy of the pelvis or abdomen before operation and the proper place for operation to be chosen.

Preoperative measures:

First, urologist requested ultrasound for the patient who had referred to the urology clinic of Peymanieh Hospital in Jahrom with symptoms of simple renal cyst to approve the existence and to determine the size of the cyst. In the next step, to reduce the error of CT scan in the diagnosis and to determine the location and size of the cyst, he requested abdominal-pelvic CT-scan. Patients who had kidney cysts larger than 5 cm and symptomatic were selected for surgery.

Urologist was requesting U / C, PTT, PT, Cr, BUN, and CBC tests for the patient before surgery.

Operation technique:

After local anesthesia (spinal), patients lay on his back. Surgeon inserted retrograde ureteral catheter Fr6 through cystoscopy into the pathological kidney. He used Foley catheter for the patient and fixed it with urethral catheter. The patients lay on belly, and the surgeon injected 10 mL of methylene blue dye into the urethral catheter so that the kidney was visible. He sent fluoroscopy-guided 18Fr nephrostomy syringe needle into the cyst. He extracted amber colored or transparent liquid from the syringe and sent it to the laboratory for cytological examination. If the extracted fluid was bloody, he became suspicious of malignancy and clinical practice for patients became different. If the extracted substance was blue, needle had mistakenly entered into urine collecting system. In this case, the surgeon would remove it and insert it again. With the injection of cystogram, he widened the path, inserted Aamplatos sheat 28Fr into the cyst, electrocauterized the lateral wall of the cyst, and removed it. In resection of the cyst wall, the surgeon used distilled water. Finally, he placed drainage with 20Fr Foley catheter in place of cyst and stitched it to the skin. Operation time was 30-40 minutes. In the absence of severe complications, the patient was discharged the day after surgery, and the surgeon removed drainage five days after surgery.

Finally, using SPSS at descriptive and inferential statistics levels, data were analyzed.

Findings:

One hundred patients underwent percutaneous endoscopic therapy of large symptomatic simple renal cysts. Of the patients, 67% were male and 33% female. The mean age of patients was 57.07 ± 7.67 years of age, and age distribution of the patients was in 35-80 years range- 51% of patients were in 59-50 years of age.

The overall size distribution of cysts in patients was in range 19-5.3 cm and its mean was 9.27 ± 3.44 cm. Among the patients, 76% had single cyst and 24% of patients had two cysts in their kidneys. In 51% of patients, the cysts were in the right kidney, and in 49%, it was in the left kidney. In 23% of patients, the cyst was in the upper pole, in 21% in the middle, and in 32% of them, it was in lower pole of the kidney. In 12% of patients, the cyst was in the upper and middle pole, and in 11%, it was in the middle pole.

In studying the relationship between age and complications of endoscopic percutaneous therapy of kidney cysts (febrile urinary tract infection, infection of sutures, urinary leakage, prolonged hematuria, and hematoma), Pearson correlation coefficient was used, and the results were as follows:

Except for the rate of hematoma formation at the place of operation, no significant relationship was seen between any of the side effects and age. With increase in patients' age, only the amount of hematoma formation at the place of surgery increased. The greatest amount of hematoma formation was in patients in the age of 60-69 years of age. In the age of 70-79, the prevalence of patients with hematoma at the place of surgery was the same as the patients who did not have this condition. To investigate the relationship between age and the number and overall size of kidney cysts, we got help from Pearson correlation coefficient, where a significant relationship was observed. With increasing patient age, overall size and the number of cysts increased. Most patients with two cysts in the kidneys were in the age of 60-69 years. In the age of 70-79, there was no patient with single cyst and none of the patient under 50 years of age had multiple cysts.

Pearson correlation coefficient showed no significant relationship between age and duration of hospitalization, severity of pain and bleeding after surgery.

In investigating the relationship between complications arising from the surgery and bleeding while operating and duration of hospitalization of the patients, we used Pearson correlation coefficient, and to show the relationship between these complications and severity of pain of patients, we got help from Spearman correlation coefficient. These investigations showed that the duration of hospitalization had a significant relationship with infection of stitches and febrile urinary tract infection- with the increase in the rate of stitches infection and febrile urinary tract infection, duration of hospitalization became more. However, other complications had no significant relationship with the duration of hospitalization. No statistically significant relationship was observed between the possible complications of surgery with pain and perioperative bleeding. Spearman correlation coefficient showed that the presence of cysts in the right or left kidney or in different poles of kidney had no effects on the complications due to operation. Only in the case of the presence of cysts in different pole of kidney at the same time, the formation of hematoma at the place of operation increased. Patients who had cyst at the middle pole of the kidney suffered no complications of hematoma. The hematoma formation in patients who had renal cysts in the lower pole was more than the patients who had it in the upper pole.

Discussion:

When conservative treatment of simple kidney cysts is not successful, aspiration, percutaneous endoscopic resection, laparoscopic and open surgery are recommended. So far, most simple kidney cysts have been treated with aspiration and injection of sclerosing. Aspiration alone has 38% to 78% risk of recurrence [7].

The use of a sclerosing agent alone only reduces recurrence partly and growing complications and probable risks associated with them have been reported. Laparoscopy and open surgery are associated with severe pain and serious complications after surgery [8].

In the study by Tadayon, the average age of the patients was lower than our study [9], and in the study by Dlakas, D., the range of age was less than in our patients [10]. The number of patients in our study was more than all articles reviewed.

In the study by Tadayon, Panann, I., and Dlakas, D., the average size of cysts before operation was less than our study [9, 11, 12]. In a study by Foster, the scope of cysts size was less than our study [13].

Operation time in the study by Tadayon was almost similar to our study [9]. Length of stay in the study by Panann, I. was less than length of stay in our study [11], but in the study of Tadaon and Abbas Zadeh, this variable was higher than our study [9, 14].

Pain intensity in the study by Akashuva and Zama was less than our study [15, 16] and in the study by Abbaszadeh, the intraoperative blood loss was less than our study [14].

In the studies by Panann, I., Salas Siroanvaleh, Lopatkin, Özgür S. and Foster, no major complications were observed after surgery [13, 18, 11, 19, 12]. In the study by Zama, in some patients, minor complications such as low-grade fever were observed [15]. In the study by Akashuva, severe complications and infections were not seen and only a few patients had mild fever and minor hematuria [16]. In the study by Tadayon, per nephric hematoma and urinary leakage were seen in a number of patients [9]. In the study by Abbaszadeh, intestinal perforation and hematuria were observed in some patients [14].

In the study that we conducted, complications such as pleural and intestinal perforation, severe damage to the kidneys and liver and spleen rupture were not observed in any patient. Urine leakage, prolonged hematuria, febrile urinary tract infection, stitch infection, and hematoma formation at the place of surgery stitches were seen in a small number of patients.

Like the study by Abbaszadeh, we showed that the age of the patients, size, and location of the cysts were not associated with length of stay [14], and as Panann, I. showed pain intensity was not associated with cyst size, we showed that pain intensity was not associated with cyst size [11].

In the study by Abbaszadeh that was performed by transabdominal laparoscopic method, despite serious complications, the success rate of operation was close to 90% and recurrence was not found in follow-up [14].

In the study by Zama and Nishikawa Way, cysts in contact with sclerosing agent had volume reduction more than the ones that did not have contact and no cyst disappeared completely [15, 20]. In the study by Panann, I., the volume of most cysts reduced after contact with sclerosing substance and only 22% of them were completely destroyed [11]. In the study by Dlakas, D., the complete shrinkage of cysts after contact with sclerosing substance was reported as 83.82% [10]. In the study by Foster, after contact with sclerosing substance, all cysts reached 98% of the initial volume, but in follow-up, there was recurrence at the rate of 3.57% [13].

In the study by Özgür, S., all cases not treated with sclerosing agent had recurrence in follow up. In all cysts in contact with sclerosing agent, size reduction was observed and no recurrence was observed, but no cyst completely disappeared [18]. The studies by Tadayon, Lopatkin, N.A., and Salas Siroanvaleh were conducted as our study [9, 19, 12]. In the study by Tadayon, 90% of cysts disappeared or reduced to less than 50% of the initial volume [9]. The study by Lopatkin, N.A. was 100% successful, and recurrence was observed in follow-up [19]. The study by Salas Siroanvaleh was 100% successful, but recurrence was observed in 20% [12]. In 81% of patients in our study, the cysts completely disappeared and after three months, there was no recurrence.

Conclusion:

The results showed that percutaneous endoscopic resection of kidney cysts is a safe and effective method with minimal invasion and the rate of morbidity and recurrence after operation is low.

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