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Research Article

**STUDY TO KNOW EFFICACY AND SAFETY OF CT GUIDED  
RENAL BIOPSY AND ITS COMPLICATIONS**<sup>1</sup>Dr. Aatiqa Irshad, <sup>1</sup>Dr. Asma Yasin, <sup>2</sup>Dr. Faryal Naveed Ahmed<sup>1</sup>Allied / DHQ Hospital Faisalabad<sup>2</sup>Women Medical Officer, BHU Nandpur Sialkot**Abstract:**

**Objective:** This study was undertaken to evaluate the safety and efficacy of PRB during the IT guideline for the development of complications and to investigate whether the diagnostic performance of this procedure was fulfilled in the outpatient clinic.

**Study Design:** A Retrospective Study.

**Place and Duration:** In the Nephrology and Radiology department of Services Hospital, Lahore for one-year duration from April 2016 to April 2017.

**Methods:** Patients were included if the PRB was performed in an indigenus kidney by an experienced nephrologist with an 18-gauge spring biopsy gun and an IT guidance and met the criteria for participation. All patients were observed 24 hours after the biopsy because of gross hematuria, transfusion requiring hemoglobin impairment or transient complications requiring surgical or radiological intervention and transient hematuria, spontaneously recovering perinephric hematoma and surgical times. development. In addition, information is collected about the diagnostic performance of the sample.

**Results:** 100 consecutive biopsies were performed. 98% of biopsies showed no significant complications. 2% of the patients developed significant macroscopic hematuria and hematomas with reduced hemoglobin transfusions required. 2% of patients had minor complications. The sample had enough tissue for 100% diagnosis. All major complications developed within 12 hours of operation. the complication of the minor occurred 18 hours.

**Conclusion:** PRB However, it is a safe and effective method that cannot make suggestions to realize this from afar.

**Key words:** CT, percutaneous renal biopsy, safety, complications.

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**INTRODUCTION:**

Percutaneous renal biopsy (PRB) is often used to diagnose and treat various kidney diseases. Nephrology is an important tool in the field. In 1951, progress has been made by Iversen and Brun since their original description to make the procedure safer and improve the success rates to obtain adequate tissue for diagnosis. A patient with a bias current technique was placed and developed in 1954 by Kark and Muehrcke, who with a needle taking the biopsy instrument and taking the right tissue. Over time, safer techniques were used to find the kidney. Some of these techniques include guided ultrasound (US), guided 3, guided 4-computer tomography (CT) guida5 and techniques with the latest technology fluoroscopy.6, different studies report high rates of success (up to 95% in one study) and minimal complications. Haaga et al. He published a report that ran the idea of better visualization of the kidney with his computerized tomography (CT) 0.8 Many reports documented biopsy results in efficiency, technique and CT-guided biopsy. In a natural kidney, renal biopsy is performed by proteinuria, with or without renal failure, with or without hematuria, renal manifestation of systemic disease. It is generally accepted that patients without bleeding diathesis, uncontrolled hypertension, or severe co-operation have a contraindication to the percutaneous approach. In addition, obese patients are thought to have increased risk of percutaneous access if they limit their size or weight to receive IT counseling. In Pakistan, most of the PRBs administered are directed by the United States. Many studies have examined the safety and effectiveness of this procedure.9 We have reviewed the safety of the PRB in the IT guideline and the timing and timing of complications that have not been reported by Pakistan until now. We also look at the sample to determine suitability and diagnostic performance.

**MATERIALS AND METHODS:**

This Retrospective Study was conducted in the Nephrology and Radiology department of Services

Hospital, Lahore for one year duration from April 2016 to April 2017. Computerized tomography-guided renal biopsies were performed in patients. The study was approved by the hospital ethics committee. Informed consent was obtained in all cases. Inclusion criteria include all patients aged 18-70 years who require renal biopsy, as recommended by a nephrologist. Exclusion criteria include uncontrolled AHT, active urinary tract infection and pregnancy defined by a changed coagulation profile, SBP> 160 or DBP> 100. Informed consent was obtained and the patient was referred to the procedure for 24 hours. Basal hemoglobin (Hb), prothrombin time (PT) / normalized international index (INR), active partial thromboplastin time (APTT) were recorded. The data entered SPSS version 14. Frequency was calculated for gender, indications for kidney biopsy, and post-biopsy complications. and the number of passes.

One of the ways in which Anova was used was to compare the variables between the complicated and uncomplicated groups, while the paired t-test was used to compare the Hb levels before and after the procedure. <0.05 P value was considered significant. The patient was placed in a supine position. Axial sections of 3-mm CT were removed from the kidney and placed in the lower pole for biopsy. 22 gauge needles were used to provide local anesthesia to renal capsule renal, perirenal and subcutaneous tissue. The needle was left in place and a CT image was taken to see the direction of the needle. An automatic 18-gauge bow biopsy gun was then placed in the same spot and in the same direction, and when the previously measured depth was reached, gunfire was fired to obtain gun tissue. All patients were subjected to a limited CT scan. Immediately after the biopsy to define the hematoma. The patients were rested for six hours in a solid state.

**RESULTS:**

We performed CT-guided renal biopsies in 100 consecutive patients. The initial demographic data of the biopsied patients are summarized in Table 1.

Demographic Characteristics of the Study Population	
Age (in yrs)	43.05 ± 16.62
Gender	
Male	53 %
Female	47 %
Proteinuria	33 %
History of DM	9 %
History of HTN	20 %
Unexplained renal failure	25 %
Vasculitis	13 %
Urea	106.75 ± 54.5
Creatinine	3.8 ± 2

Table 1

Kidney biopsy was performed to obtain at least 2 nucleus renal tissues to be examined for light microscopy (LM) patients (82%) and only 2 passages were needed, indicating the ease of operation. At 100% of the cases, enough renal tissue was obtained to make a diagnosis. There was no rebiopsy in any of the patients. Post biopsy complications only occurred in 2 patients, of which 2 had a major complication, namely blood transfusion required, while 2 small complications developed including Hp (1 patient) and hematoma without progression, including gross hematuria, were self-limited 1 patient). When the pain developed in the biopsy area, the patient was diagnosed with hematoma 18 hours after the procedure. Table 2

Details of Biopsy Procedure	
Number of Passes	N=100
• 2 passes	82 %
• 3 passes	17 %
• 4 passes	1 %
Needle gauge	18 g
Renal tissue obtained	100%

Table 2

None of the patients had surgery or radiological intervention (Table 3). Patients with major complications developed within 6 hours after the biopsy.

Post Biopsy Complications	
Bleeding	4%
Gross Hematuria	3%
Infections	Nil
Intervention	Nil
Transfusion	2%
Hematoma	3%

Table 3

There was no statistically significant difference between complicated patients and age, urea, creatinine, or systolic or diastolic blood pressures and those not related to blood pressure (Table 4).

Patient Characteristics	With complication	Without complication	P value
Age( in yrs)	55.6 ± 19.5	42.39 ± 16.3	0.083
Creatinine	4.1 ± 3.0	3.78 ± 2.07	0.73
Urea	105.00 ± 70.83	106.84 ± 54.07	0.94
SBP(mmHg)	135 ± 17	134 ± 19	NS
DBP(mmHg)	81 ± 9	78 ± 11	NS
Pre-Hb (g/dl)	10 ± 2	11 ± 2	0.01
Post-Hb (g/dl)	8 ± 2	10 ± 2	<.0001

Table 4

### DISCUSSION:

If renal biopsy is useless, it is a common procedure to record the kidneys or to help diagnose unexplained renal insufficiency, severe proteinuria, rapid diagnosis of renal function patients at a time and to help identify appropriate treatment, and sometimes to determine prognosis. Although it is a simple procedure, It is associated with complications. the complication rate has decreased with new safety precautions and careful observation techniques and this surgery or nephrectomy reported significant complications such as blood transfusion, embolization, need bleeding, 1-2% 7, Small complications such as spontaneous limited macroscopic hematuria, spontaneous resolution of the perirenal hematoma between 10-7%. In addition, studies have suggested a 24-hour observation period after biopsy, but recently biopsy has been recommended as an inexpensive outpatient procedure for 8 hours of illness registration. We practice PRB under CTB practice because it places the kidney and lower pole correctly and visualizes the cerebral cortex clearly, so it is easier to get enough tissue. It has been reported that the incidence of major and minor complications is less or equal to the performance of the US under guidance. U. Bleeding is 4.2% to 7.5% and transfusion is <1%. We also observed a very low complication rate in our CT guided procedures. None of the patients required surgical or radiological intervention. The incidence of small complications may also be comparable to that reported at international level. Among the factors causing complications are patients with renal insufficiency, coagulopathy and uncontrolled hypertension 12,13 Renal insufficiency has been reported as an important risk factor with six times increased risk in patients with major complications. This is doubled if GFR is <40 ml / min and GFR is between 61-80 ml / min.19 This was consistent with our finding that GFR <60 ml / min in patients with our major complications. However, the others did not improve. For this reason, there is no definite way to predict which patients will develop a major complication. Because we use the 18 G needle in all

procedures, our low complication rate may be related to the size of the needle (G). It has been reported that tick size is associated with complications as compared to 16 or 18 G to 14 G.7, which are associated with fewer complications. A hemoglobin drop of 1 g after biopsy has been reported in approximately 50% of cases in different studies, 20,21 may not be due to a significant hemorrhagic complication. In our study, 17% of patients developed an Hgb drop of approximately 1 g, but no significant complications occurred.

### CONCLUSION:

We concluded that CT-guided renal biopsy is a safe and effective tool with good diagnostic performance. To apply this procedure as an outpatient treatment, it can not be recommended at this time and ideally the patients should be observed for 24 hours. If you want to implement this approach, there is a need for greater work.

### REFERENCES:

1. Iguchi, Toshihiro, Takao Hiraki, Yusuke Matsui, Hiroyasu Fujiwara, Jun Sakurai, Yoshihisa Masaoka, Hideo Gohara, and Susumu Kanazawa. "CT fluoroscopy-guided renal tumour cutting needle biopsy: Retrospective evaluation of diagnostic yield, safety, and risk factors for diagnostic failure." *European radiology* 28, no. 1 (2018): 283-290.
2. Sadat-Khonsari, M., Papayannis, M., Schriefer, P., Kluth, L., Meyer, C., Schüttfort, V., Regier, M., Rink, M., Chun, F., Fisch, M. and Becker, A., 2018. Worth a second look: outcomes of patients with initial finding of regular renal tissue in CT-guided renal tumor biopsies. *World journal of urology*, pp.1-4.
3. Seager, Matthew J., Uday Patel, Christopher J. Anderson, and Michael Gonsalves. "Image-guided biopsy of small ( $\leq 4$  cm) renal masses: the effect of size and anatomical location on biopsy success rate and complications." *The British journal of radiology* 91, no. 1085 (2018): 20170666.
4. Gupta, Supriya, Ronald S. Arellano, Debra A.

- Gervais, and Dushyant V. Sahani. "Assessing the Effect of Weight-Based Protocol Modifications to Lower Dose for CT-Guided Hepatic and Renal Tumor Radiofrequency Ablations." *American Journal of Roentgenology* 210, no. 3 (2018): 657-662.
5. Wasnik, Ashish P., Ellen J. Higgins, Giovanna A. Fox, Elaine M. Caoili, and Matthew S. Davenport. "Yield of Routine Image-Guided Biopsy of Renal Mass Thermal Ablation Zones: 11-Year Experience." *Academic Radiology* (2018).
  6. Sun, Y.S., Sun, I.T., Wang, H.K., Yang, A.H., Tsai, C.Y., Huang, C.J., Huang, D.F. and Lai, C.C., 2018. Risk of complications of ultrasound-guided renal biopsy for adult and pediatric patients with systemic lupus erythematosus. *Lupus*, 27(5), pp.828-836.
  7. Kumar, Rajender, Bhagwant Rai Mittal, Anish Bhattacharya, Harmandeep Singh, Amanjit Bal, Shelvin Kumar Vadi, Ashwani Sood, Gaurav Prakash, Harjeet Singh, and Aman Sharma. "Diagnostic performance of real-time robotic arm-assisted 18 F-FDG PET/CT-guided percutaneous biopsy in metabolically active abdominal and pelvic lesions." *European Journal of Nuclear Medicine and Molecular Imaging* (2018): 1-10.
  8. Alle, Nisha, Nelly Tan, Julie Huss, Jiatoi Huang, Allan Pantuck, and Steven S. Raman. "Percutaneous image-guided core biopsy of solid renal masses: analysis of safety, efficacy, pathologic interpretation, and clinical significance." *Abdominal Radiology* 43, no. 7 (2018): 1813-1819.
  9. Patel, Roshan M., Shoaib Safiullah, Zhamshid Okhunov, Daniel Meller, Kathryn E. Osann, Kamaljit S. Kaler, Jaime Landman, and Ralph V. Clayman. "Pretreatment Diagnosis of the Small Renal Mass: Status of Renal Biopsy in the USA." *Journal of endourology* ja (2018).
  10. Koch, Guillaume, Julien Garmon, Georgia Tsoumakidou, Faramarz Edalat, Jean Caudrelier, Roberto Luigi Cazzato, and Afshin Gangi. "Adrenal Biopsy under Wide-Bore MR Imaging Guidance." *Journal of Vascular and Interventional Radiology* 29, no. 2 (2018): 285-290.
  11. Breen, David J., Alexander J. King, Nirav Patel, Richard Lockyer, and Matthew Hayes. "Image-guided cryoablation for sporadic renal cell carcinoma: three-and 5-year outcomes in 220 patients with biopsy-proven renal cell carcinoma." *Radiology* (2018): 180249.
  12. Paterson, Caterine, Joseph Ghaemi, Abduel Alashkham, Chandra Shekhar Biyani, Bernadette Cole, Lee Baker, Magdalena Szewczyk-Bieda, and Ghulam Nabi. "Diagnostic accuracy of image guided biopsies in small (< 4cm) renal masses with implications for active surveillance: A systematic review." *The British journal of radiology* (2018): 20170761.
  13. Rasmussen, Lars René, Martina Loft, Tommy Kjærgaard Nielsen, Marie Bjødstrup Jensen, Søren Høyer, Arne Hørlyck, and Ole Graumann. "Short-term complications for percutaneous ultrasound-guided biopsy of renal masses in adult outpatients." *Acta Radiologica* 59, no. 4 (2018): 491-496.
  14. Iguchi, T., T. Hiraki, Y. Matsui, H. Fujiwara, J. Sakurai, Y. Masaoka, M. Uka, T. Tanaka, H. Gohara, and S. Kanazawa. "CT fluoroscopy-guided core needle biopsy of anterior mediastinal masses." *Diagnostic and interventional imaging* 99, no. 2 (2018): 91-97.
  15. Azevedo, Andre Arantes Pereira, Antonio Rahal Junior, Priscila Mina Falsarella, Gustavo Caserta Lemos, Oliver Rojas Claros, Arie Carneiro, Marcos Roberto Gomes de Queiroz, and Rodrigo Gobbo Garcia. "Image-guided percutaneous renal cryoablation: Five years experience, results and follow-up." *European journal of radiology* 100 (2018): 14-22.