

Dear Endourological Society,

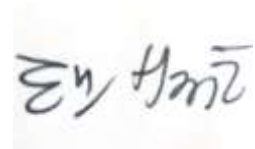
Thank you Endourological Society for giving me the chance to carry out this project. I feel so honoured to be one of ten students who received Summer Student Scholarship 2019. This research project has allowed me to get a better exposure about Urology. As someone who want to pursue Urology as their career next career, I found this project was the best opportunity to learn about research in Urology especially in the field of Endourology (urolithiasis) while still being a medical student.

By doing this research, I got the chance to develop my skill and knowledge. I learned about how to make a study protocol for RCT, asking informed consent to the patients which need a good communication skill, looking at surgical procedure, discussing patient's case should there be anything that I got confused about, collecting and evaluating patient's data using SPSS analysis, and also writing a research report.

I am very fortunate to have dr Widi Atmoko, as my mentor as well as supervisor of this project. As someone who has never done research using primary data with the design of randomized controlled trial (RCT), I found several difficulties at the beginning of making this project. The need of collaboration with several endourologists, residents and also interns to help me with this project was also a challenge of this project. Having said that, dr Widi Atmoko patiently helped and guided me throughout the study.

Becoming awardee of this scholarship was such a milestone of my education and career. I wish all the invaluable experience that I got from this project, would help me to be a better physician in the future. We are now still recruiting the subjects for this study, in order to have a more valid result. By doing that, we are expecting to publish out study in the future. Once again, thank you Endourological Society for the support you had given to me.

Best Regards,

A handwritten signature in black ink, appearing to read 'En Han', is written over a light yellow rectangular background.

Missy Savira

Summary of Summer Research Project 2019

Effectiveness and Safety of Spooling Technique to Evacuate Stone Fragment during Percutaneous Nephrolithotomy for Staghorn Renal Calculi:

A Prospective Randomized Controlled Trial

Missy Savira¹, Widi Atmoko²

¹ Faculty of Medicine Universitas Indonesia, Jakarta, Indonesia

² Department of Urology, Cipto Mangunkusumo Hospital, Jakarta, Indonesia

Introduction

Staghorn calculi is a large, branching stone that occupy most part of pelvicalyces system including renal calyces. This type of stone needs to be treated aggressively as it carries a high risk of morbidity and mortality. Percutaneous lithotomy (PCNL) is recommended as first-line treatment for stone >20 mm. Having said that, PCNL for staghorn calculi has longer operation time, lower stone free rate, and more frequent complications compared to smaller and non-staghorn calculi.

Forceps, graspers, or basket are the most commonly used instruments to take out stone fragments during PCNL. These method can be time consuming and potentially causing mucosal injury. Moreover, small and loose fragmented stone is not easy to be retrieved using these instruments. To overcome these issues, spooling technique was first introduced in 2009 by Panah et al Spooling was known to be effective, time saving, and safe without any reported mucosal injury.

Nevertheless, to date there is no comparative study about the use of spooling technique as additional stone extraction method during standard PCNL procedure for staghorn calculi. This study is aimed to evaluate and compare the effectiveness and safety of PCNL with and without spooling as management of staghorn calculi.

Materials and Method

This study was a prospective randomized controlled trial study conducted at Cipto Mangunkusumo Hospital from April to June 2019. Study protocol for this research has been approved by Ethics Committee, Faculty of Medicine, Universitas Indonesia. Subjects were recruited based on inclusion and exclusion criteria using consecutive sampling method. The inclusion criteria were adult ≥ 18 years , diagnosed with staghorn calculi, undergone PCNL for its treatment, and had sign the informed consent form. Patients were excluded if they were pregnant, have urinary tract anatomic malformation, distal obstruction, uncontrolled diabetes mellitus, end-stage renal disease, history of previous open renal surgery, and if there were any major intra operative difficulty or complication found during operation.

All the subjects were randomized with a 1:1 ratio to the two study arms (control and treatment group). In control group, stone retrieval is done by using stone forceps whereas in treatment group, spooling technique is added to evacuate the stone fragments. In order to do spooling, 50-ml syringe filled with normal saline are connected to 14Fr NGT and inserted into the sheath to mechanically flush out the stone fragments.

Pre, intra, and post-operative data obtained from patient were processed using SPSS 21.0 software for Windows. Data processing is performed using descriptive statistics to determine the amount,

proportion, mean, and median of the data. Then, an analytical test using Pearson χ^2 test, Fisher exact test, Student's t-test, or Mann-Whitney U was performed to determine the significance of outcome differences between spooling and non-spooling group.

Results

During this reserach, 11 patients were enrolled, 1 patients were excluded after major difficulty found during surgery. 10 patients completed the study: 5 in non-spooling group and 5 in spooling group. There were 4 female patients and 6 male patients with average age of 56.1 years old. Patients' baseline characteristics between two groups were similar. Mean stone burden for non-spooling group were smaller at 42.8 mm compared to spooling group at 52 mm but it was statistically insignificant ($p = 0.14$).

During intra-operative, we found mean operative time for spooling group were 109.8 minutes whereas non-spooling technique needed longer time at 155 minutes. Having said that, this number were not statistically significant with $p = 0.103$ based on Student's t-test. Stone displacement were found in 2 subjects of spooling group and non in non-spooling group. No significant mucosal injury found during surgery. Based on KUB radiography, 1 day after surgery date, residual stone found in 3 subjects of non-spooling group and 2 subjects of spooling group. Stone free rate between two groups were statistically not significant. The mean size of residual stone in non-spooling and spooling group were 20 mm and 8 mm, respectively ($p = 0.405$). Other post-operative outcomes, including post-operative leukocyte count, sepsis, VAS score, number of blood transfusion, length of hospital stay were similar between two groups.

Conclusion

The effectiveness and safety of spooling technique during PCNL for staghorn renal calculi were comparable to non-spooling group based on its operative time, stone free rate, and other post-operative outcomes. Further research is needed to be done with bigger sample size.