

## CORRELATION BETWEEN CATHETERIZATION AND TRANSABDOMINAL USG FOR ESTIMATING THE BLADDER VOLUME AND POST-VOID RESIDUAL VOLUME IN POST-PARTUM PATIENTS

### Hypothesis / aims of study

The most common method for measuring bladder volume in post-partum patients is catheterization, which frequently may cause urinary tract infection. The other non-invasive method includes ultrasonograph (USG) examination which may reduce the risk of infection and trauma. The aim of this study was to recognize the correlation between catheterization and trans-abdominal USG in estimating bladder volume and post-void residual volume. In addition, it was also aimed to determine diagnostic value of trans-abdominal USG for diagnosis of urinary retention.

### Study design, materials and methods

This study was an analytic-observational study with cross-sectional design conducted in 90 post-partum patients on day 1, 2 and 3 following their vaginal delivery at The Anggrek Clinic, Fetomaternal Subdivision and Emergency Unit, 3<sup>rd</sup> Floor, RSCM since October 2003 – August 2004.

Measurements of bladder volume and post-void residual volume were performed by trans-abdominal USG, which was further compared to catheterization measurement. Both measurements were subsequently tested on three kinds of USG formula (1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> formula). Trans-abdominal USG was also considered for diagnosing urinary retention.

### Results

By measuring the bladder volume, we found a strong correlation between the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> USG formula and catheterization with R of 0.84, 0.87, and 0.80 respectively. By measuring the post-void residual volume, we also found a strong correlation between the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> USG formula and catheterization with R of 0.85, 0.87 and 0.85 respectively. However, there was only the 2<sup>nd</sup> USG formula (Koelbl formula) which indicated no significant difference of bladder measurement compared to catheterization. Hence, it may be considered in establishing the diagnosis of urinary retention and indicated 87% sensitivity, 95.5% specificity, 87% of PPV (Positive Predicted Value), and 96% NPV (Negative Predicted Value).

### Interpretation of results

Trans-abdominal ultrasonograph measurement of bladder volume and post-void residual volume is strongly correlated to catheterization procedure.

### Concluding message

The trans-abdominal USG could be considered as an alternative method other than catheterization, which may reduce adverse effects such as infection and trauma due to invasive catheterization.

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<b><i>What were the subjects in the study?</i></b>	<b>HUMAN</b>
<b><i>Was this study approved by an ethics committee?</i></b>	<b>Yes</b>
<b><i>Specify Name of Ethics Committee</i></b>	<b>Ethics Committee School Of Medicine University Of Indonesia</b>
<b><i>Was the Declaration of Helsinki followed?</i></b>	<b>Yes</b>
<b><i>Was informed consent obtained from the patients?</i></b>	<b>Yes</b>