# Visualization of Endometrial and Uterine Cavity Structure Abnormality with Transvaginal Sonography, Color Doppler Transvaginal Sonography and Saline Infusion Sonography in Abnormal Uterine Bleeding

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## ABSTRACT

*Abnormal uterine bleeding is a gynecologic problem that requires treatment. The causes of abnormal uterine bleeding is still hard to diagnose. We need another technique that is not invasive, such as visualization of endometrium. The objective of this study was to acknowledge the visualization of endometrium in abnormal uterine bleeding using TVS, TVS Color Doppler and uterine cavity structure abnormality with SIS as a gold standard. This study was a cross sectional study with adiagnostic test between TVS and SIS to observe the uterine cavity structure abnormality of the research's subjects which are women with abnormal uterine bleeding. During the research, we found insignificant differences in endometrial thickness measurements between endometrial polyps and leiomyomas submucous with the normal group on abnormal uterine bleeding. In conclusion, in evaluation between leiomyomas submucous ecogenity endometrium and endometrial polyps compared with normal subjects in abnormal uterine bleeding. We found another insignificant differences in vision endometrial vascular density between endometrial polyps and submucosal leiomyoma with normal group of abnormal uterine bleeding.(MOG 2013;21:67-70)*

*Keyword: Endometrial thickness, endometrial vascular density,endometrial ecogenity, TVS, Color Doppler TVS, SIS, abnormal uterine bleeding*

## ABSTRAK

*Perdarahan uterus abnormal merupakan masalah ginekologis yang memerlukan perawatan. Penyebab perdarahan uterus abnormal masih sulit untuk didiagnosis. Diperlukan teknik lain yang tidak invasif, seperti visualisasi endometrium. Tujuan dari penelitian ini adalah untuk mengetahui visualisasi endometrium pada perdarahan uterus abnormal menggunakan TVS, TVS Color Doppler dan kelainan struktur rongga rahim dengan SIS sebagai standar emas. Penelitian ini merupakan penelitian cross sectional dengan uji adiagnostic antara TVS dan SIS untuk mengamati struktur kelainan rongga rahim pada subyek yang merupakan pasien dengan perdarahan uterus abnormal. Selama penelitian, kami menemukan perbedaan signifikan dalam pengukuran ketebalan endometrium antara polip endometrium dan leiomyomas submukosa dengan kelompok normal pada perdarahan uterus abnormal. Kesimpulannya, dalam evaluasi antara leiomyomas submukosa ecogenity endometrium dan polip endometrium dibandingkan dengan subyek normal pada perdarahan uterus abnormal, kami menemukan perbedaan signifikan lain dalam visi kepadatan vaskular endometrium antara polip endometrium dan leiomioma submukosa pada kelompok normal dengan perdarahan uterus abnormal.(MOG 2013;21:67-70)*

*Kata kunci: ketebalan endometrium, kepadatan vaskular endometrium, ekogenitas endometrium, TVS, Color Doppler TVS, SIS, perdarahan uterus abnormal*

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## INTRODUCTION

Based on WHO 2011 data, from 3,5 billion the number of women in the world, 18 million women experience abnormal uterine bleeding. These conditions affect the productivity performance of the women.[1] In the world, abnormal uterine bleeding is a complaint that makes a lot of women with gynecologic problems go to clinic. In the United States in 1980 and 1992, women with abnormal uterine bleeding who consulting doctors had emergency treatment until surgical treatment. National hospital data show that abnormal uterine bleeding gives a contribution more than 5 million admittance and 2 million hysterectomy.

The fourth gynecological factor that caused admittance is abnormal uterine bleeding, 89% of the patients undergo operation, and about 3 million others make visitation at outpatient clinic in 1999-2000. Abnormal uterine bleeding is an indication that can cause hysterectomy.[2]

In the world, 9-30% of women of childbearing age have symptoms of menorrhagia. Prevalence of abnormal uterine bleeding increases with age, the highest in the perimenopausal age.[3] In Sweden, the incidence of abnormal uterine bleeding by the age of 20-74 years was caused by endometrial polyps in 7.8%, 15.3% myoma uteri, and unknown 38%. Abnormal uterine bleeding in postmenopausal age is 11.8%, in premenopausal age is 5.8% and in reproductive age 82.4%. Endometrial polyps cause abnormal uterine bleeding symptoms in women aged <30 years at 0.9%, 7.6% in premenopausal age, while 82% were asymptomatic.[4] In post menopausal bleeding polyp causes about 30%, most are benign, while malignancy incidence ranges from 0.5% to 1.5%.[5]

Soares et al. compared the diagnostic accuracy of SIS, TVS, HSG and hysteroscopy in patients with infertility. For polyps and endometrial hyperplasia, SIS has a sensitivity and specificity of 100%. For polyps, the sensitivity of TVS was 50%, and specificity was 82.5%. Examination of SIS for the direct detection of intra uterine abnormalities found 100% sensitivity (23/23) (95% CI 85% -100%) and a specificity of 85% (23/27) 95% CI 66% - 96%).[7]

In the United States in 1980 and 1992, women who experience heavy menstrual bleeding made a lot of visit to obtain treatment to undergo emergency surgery. Data from the national hospital showed abnormal uterine bleeding contributes more than 5 million and 2 million hospitalizations for hysterectomy. From the years 1988-1990 abnormal uterine bleeding is the most common cause of gynecologic hospitalization. Four to 89% of those treated in the hospital underwent surgery, while the outpatient visits in 1999-2000 was about 3 million. Hysterectomy is second only to cesarean sections as major operations throughout the 1990's. Abnormal uterine bleeding is a frequent indication for hysterectomy and accounted for 25% of all hysterectomies.[2] In 2007, patient visitation in gynecology outpatient clinic, Dr. Soetomo Hospital, showed that 12.48% of 3992 patients and in 2008 about 8,8% of 3629 patients had abnormal uterine bleeding. From the survey most of the patients obtained hormone therapy without unknown cause, resulting in the recurrence of the bleeding.

Abnormal uterine bleeding affects health-related quality of life and place a heavy economic burden on society. The direct and indirect annual economic cost of abnormal uterine bleeding is conservatively estimated at around 1 billion dollars and 12 billion dollars respectively. Expenses caused by abnormal uterine bleeding needed further investigation and more thorough. Additional research must be prospectively done to evaluate the impact of abnormal uterine bleeding and the value of the treatment provided to help guide the allocation of health resources in the future and to make clinical decision making.[2]

Death and serious complications of abnormal uterine bleeding is rare. Expenses actually happened on health-related quality of health service utilization, direct costs and indirect costs, such as lost of work productivity and high impact-related quality of life. Bleeding is the most common cause of iron deficiency anemia in developed countries because it can deplete the supply of iron that leads to iron deficiency anemia. Anemia impact on health-related quality of life in the form of weakness, fatigue, weight loss, mood swings, and impaired cognitive function.[2]

A few of the evidence proves that in the management of abnormal uterine bleeding there are undertreatment or overtreatment. Undertreatment happens when there are condition where the cause of the bleeding are unknown so the treatment is mostly empiric, such as hormonal and anti-fibrinolytic therapy. Overtreatment happens when there are condition where the treatment is surgical without any malignancy. Increasing hysterectomy incidence for abnormal uterine bleeding shows that the patients are not fully informed about another technique that is not invasive or less communication between patient and their doctors, that counts the decision making.[2]

The causes of abnormal uterine bleeding is still hard to diagnose recently. Some diagnostic modalities have used to diagnose the causes. There are some new classifications of abnormal uterine bleeding that established by FIGO called PALM COEIN. The purpose of this classification is to facilitate and equate the clinical procedure of abnormal uterine bleeding. This research is continuing the previous research to measure the thickness, ecogenecity and endometrium vascular density by using TVS Color Doppler and SIS to asses the uterine cavity, because the problem of finding the causes and the diagnoses of abnormal uterine bleeding. It is expected that the result will make the diagnose of abnormal uterine bleeding by both of the modalities can be better and finally make the therapy more appropriate.

## MATERIALS AND METHODS

This study was a cross sectional study with a diagnostic test between TVS and SIS to observe the uterine cavity structure abnormality. The research's subjects were women with abnormal uterine bleeding. The study was conducted between April-June 2011 in Gynecology

Outpatient Clinic and Endocrine Outpatient Clinic in Dr. Soetomo Hospital with a population of patients with abnormal uterine bleeding. Sample involved patients with abnormal uterine bleeding that conclude inclusion and exclusion criteria.

## RESULTS AND DISCUSSION





Figure 1. Results of TVS uterine retroflexion, endometrial thickenss of 7.3 mm, medium endometrial vascularization.

We evaluated leiomyomas submucous ecogenity endometrium and endometrial polyps compared with normal subjects in abnormal uterine bleeding. We found insignificant differences in observed endometrial vascular density between endometrial polyps and submucosal leiomyoma with normal group of abnormal uterine bleeding. From the analysis of the ability of the diagnostic test to diagnose structural abnormalities in the uterine cavity compared with TVS in abnormal uterine bleeding, SIS had specificity of 76.92%, sensitivity of 57.14%, positive predictive value 57,14% and negative predictive value of 76.92%.
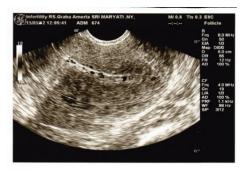




Figure 2. Results ecogenity of suspected mass. The SIS results revealed blood clot with normal conclusion.

## CONCLUSION

In evaluation between ecogenity endometrial submucosal leiomyomas and endometrial polyps compared with normal subjects in abnormal uterine bleeding, we found insignificant differences in observed endometrial vascular density between endometrial polyps and submucosal leiomyoma with normal group of abnormal uterine bleeding.

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