

Predictive values of bubble test during office hysteroscopy in assessment of tubal patency

Hazem H. Ahmed^a, AbdEl-Naser A .Ali ^a, Mohamad A. Mohamad^a

^aObstetrics and Gynaecology Department, Faculty of Medicine, South Valley University, Qena, Egypt.

Abstract:

Background: Tubal dysfunction is responsible for approximately 30% of infertility cases. Tests to determine if tubes are open and undamaged are an important part of the infertility workup.

Objectives: The aim of this study was to find out the predictive values of bubble test during office hysteroscopy in assessment of tubal patency. .

Patients and methods: This study included 100 cases underwent for both hysteroscopy and laparoscopy at the same setting in department of obstetrics and gynecology , Qena University hospital, South Valley University, Egypt.

Result: In our study 100 women were included , 74 presented by primary infertility and 26 presented by secondary infertility..In our study using bubble test for tubal patency as primary outcome , the results showed that bilateral tubal patency represented 71 %, unilateral tubal block represented 11% and bilateral tubal block 18%.And the results of laparoscopy with MB injection for tubal patency assessment as secondary outcome , showed that bilateral tubal patency represented 75%, unilateral tubal patency 13 % and bilateral tubal block 12%.so , we figured out that Evaluation of Diagnostic Performance of bubble test in hysteroscopy right in sensitivity of 87.9% specificity of 54.5% positive predictive value of 92.1%, negative predictive value of 42.9% with diagnostic accuracy of 83.1%

Conclusion: Bubble test had a good predictive value in diagnosis of tubal patency through office hysteroscopy.

Keywords: Office hysteroscopy, Infertility,Laparoscopy, Tubal patency.

Introduction

Infertility is defined as failure to achieve a successful pregnancy after 12 months of regular unprotected sexual intercourse(American society for reproductive medicine 2008).

Tubal dysfunction is responsible for approximately 30% of infertility cases. Tests to determine if tubes are open and undamaged are an important part of the infertility workup(Yildizhanet al.,2009). The etiology of tubal damage can be intrinsic (ascending salpingitis, including

salpingitisisthmicanodosa) or exntrinsic (peritonitis, endometriosis and pelvic surgery). Themost common causes of pelvic inflammatory disease (PID) are chlamydia trachomatis, Neisseria gonorrhoeae and multibacterial infections(Sotrel, 2009).

Fallopian tube patency is diagnosed by hysterosalpingeography(HSG),laparoscopy chromotubation and hysterosalpingo-contrast-sonography (HyCoSy). Mucosal appearance was achieved by

Fallopscopyper vaginam and salpingoscopy performed at laparoscopy (Saunders et al .,2011).

Hysteroscopy is performed for evaluation and treatment of different pathologies of the endometrial cavity, tunalostia or endocervical canal, it can be performed for diagnostic alone or diagnostic and treatment in the same operative time(Emanuel, 2013).

Patients:

This study included 100 cases underwent for both hysteroscopy and laparoscopy at the same setting in deparment of obstetrics and gynecology,Qena University hospital, South Valley University, Egypt. The inclsion criteria was any infertile female patient underwent for both hysteroscopy and laparoscopy at the same setting.

We excluded Patients previouslydiagnosed for tubal factor infertility,with acute genital tract infection , active vaginal bleeding , and with recent history of uterine perforation.

Methods:

All of patients had been subjected to the following:

- Detailed history taking with emphasis on:Obstetric history ,history of present condition to fulfill inclusion and exclusion criteria,medical history to fulfill inclusion and exclusion criteria ,Full physical examination: vital sign,General examination ,Local examination and PV examination .

- Routine Laboratory investigation : Complete blood picture (CBC),fasting blood sugar , Abo typing ,Complete

urine analysis , SGOT,SGPT ,Serum Urea and Serum Creatinine.

-2D transvaginal ultrasound

Then patient had the following steps:

- Transvaginal ultrasound examination was done before office hysteroscopy.
- Office hysteroscopy was performed to evaluate proximal tubal patency using bupple test.
- Patients examined by transvaginal ultrasound after the hysteroscopy for presence of fluid in Douglas pouch. - Laparoscopy was performed with Methylene Blue injection to evaluate tubal patency and compare the results.

Statistical analysis:

All patients had been analyzed using Statistical package for Social Sciences (SPSS).

Results:

Our study included 100 female patients, with mean age 28.67 ± 3.18

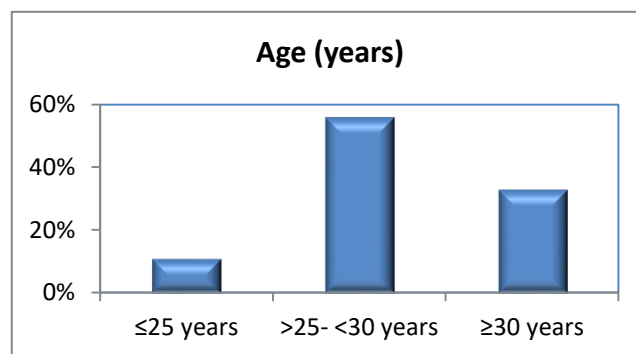


Figure. 1: Age groups involved in the study

In our study 100 women were included , 74 presented by primary infertility and

26 presented by secondary infertility. also duration of infertility <5 years (48%), ≥- <10 years (48%) and ≥10 years (4%) with mean 4.9±2.51 .

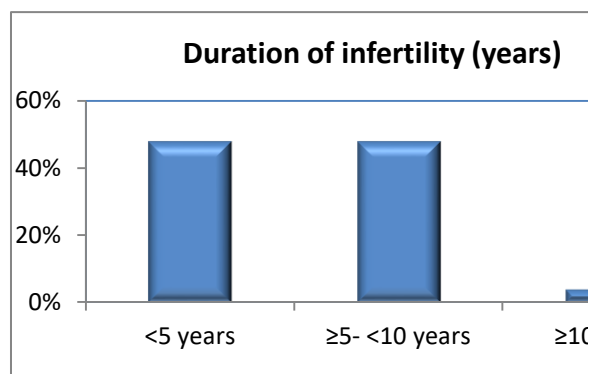


Figure 2: Bar chart duration of infertility (years) distribution of the study group

In our study using bubble test for tubal patency as primary outcome, the results showed that bilateral tubal patency represented 71 %, unilateral tubal block represented 11% and bilateral tubal block 18%.

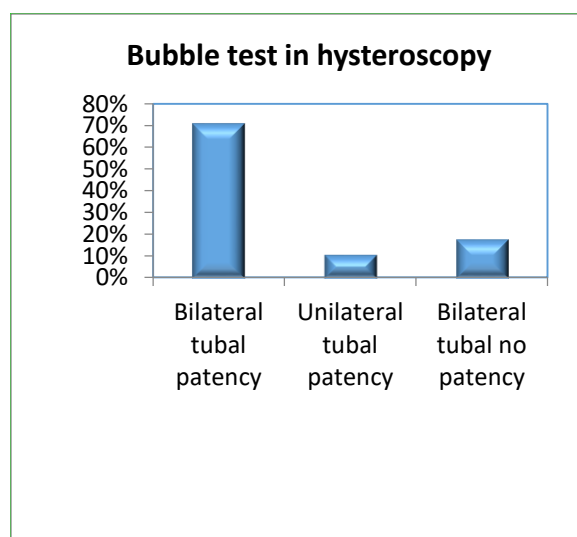


Figure 3: Bar chart bubble test in hysteroscopy distribution of the study group

And the results of laparoscopy with MB injection for tubal patency

assessment as secondary outcome , showed that bilateral tubal patency represented 75%, unilateral tubal patency 13 % and bilateral tubal block 12%.

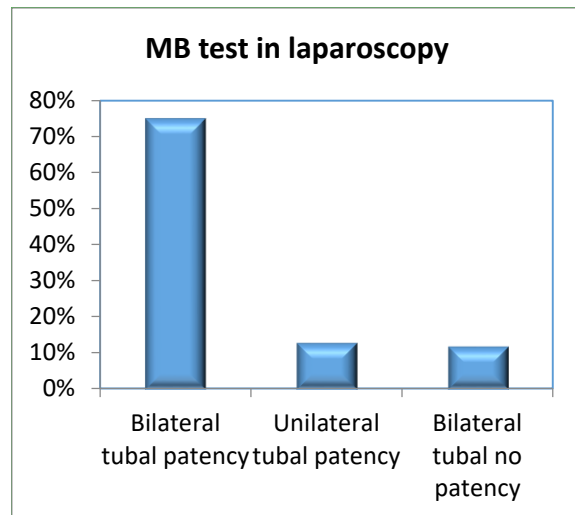


Figure 4: Bar chart MB test in laparoscopy distribution of the study group

So, we figured out that Evaluation of Diagnostic Performance of bubble test in hysteroscopy right in sensitivity of 87.9% specificity of 54.5% positive predictive value of 92.1%, negative predictive value of 42.9% with diagnostic accuracy of 83.1%

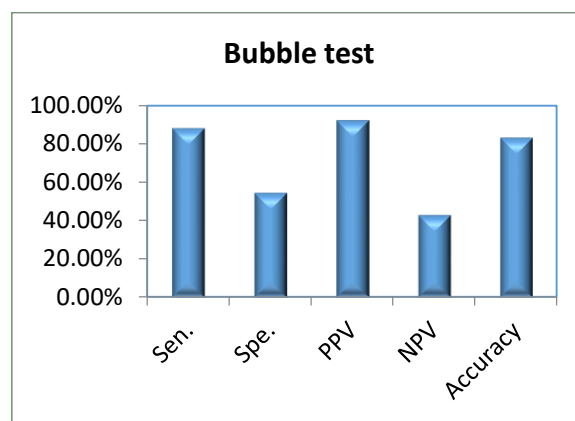


Figure 5: Diagnostic indices of bubble test in hysteroscopy in comparison to MB test in laparoscopy as gold standard for diagnosing tubal occlusion.

Discussion

Evaluation of fallopian tube patency is important and crucial for infertility workup. Indeed, since a long time, HSG is the classic but not ideal tubal patency test. Lipiodol HSG has been shown to increase pregnancy rate which may be attributed to tubal patency or endometrial stimulation with possible enhanced receptivity of the endometrium to embryo implantation even in women with history of endometriosis (Johnson, 2014).

Saline infusion sonography (SIS) is an attractive alternative to HSG as it is a comprehensive evaluation methodologically simple, cost-effective, and time efficient. Despite its wide spread usage in many clinics, the main drawbacks of SIS are failure to localize the side of tubal patency and failure to properly visualize the tubes. (Saunders et al., 2011).

The current study is across sectional study which was conducted at Obstetrics and Gynecology Department, Qena University Hospitals, Egypt in the period between February 2018 to February 2019. sample size was 100 women underwent both Laparoscopy and Hysteroscopy at the same setting.

In our study 100 women were included, 74 presented by primary infertility and 26 presented by secondary infertility.

Our study we tested office hysteroscopy as a simple, effective tool for prediction of tubal patency.

Observation of air bubbles passing through the ostia did not add much time to the procedure.

Transvaginal US examination done before and after hysteroscopy for evaluation of

presence of fluid in Douglas pouch.

This procedure done in postmenstrual period, bubble test during office hysteroscopy as primary outcome, followed by laparoscopy with MB injection for tubal patency as secondary outcome.

In our study using bubble test for tubal patency as primary outcome, the results showed that bilateral tubal patency represented 71%, unilateral tubal block represented 11% and bilateral tubal block 18%.

And the results of laparoscopy with MB injection for tubal patency assessment as secondary outcome, showed that bilateral tubal patency represented 75%, unilateral tubal patency 13% and bilateral tubal block 12%.

So, we figured out that Evaluation of Diagnostic Performance of bubble test in hysteroscopy right in sensitivity of 87.9% specificity of 54.5% positive predictive value of 92.1%, negative predictive value of 42.9% with diagnostic accuracy of 83.1%.

Similar study was published in April 2016 with the name of (A novel use of vaginoscopic office hysteroscopy for prediction of tubal patency and peristalsis among infertile women) (Atef et al., 2016), in that study 85 infertile patients underwent office hysteroscopy for tubal patency assessment in comparison to laparoscopy with MB injection and HSG, results of tubal patency by office hysteroscopy was 7.7% for bilateral tubal block, 11.5% for unilateral tubal block and 80.8% for bilateral tubal patency.

The diagnostic indices for office hysteroscopy in that study was 100% sensitivity, specificity 95.8%, positive predictive value 66.7%, negative predictive

value 100% with diagnostic accuracy 97.4%.

In comparison to our study office hysteroscopy in evaluation of tubal patency, had a higher sensitivity, specificity, positive and negative predictive values.

In our study and the previous study , we find out that Bubble test has high diagnostic accuracy for assessment of tubal patency in comparison to laparoscopy with MB injection.

Many studies were done for searching about effective methods for diagnosis of tubal patency as apart of infertility evaluation, Thus this study was held on the steps of previous studies to evaluate tubal patency in infertility investigations and diagnosis.

This study included 100 infertile women admitted to Qena University Hospital underwent to both hysteroscopy and laparoscopy at the same setting.

The aim of this study was to find out the predictive values of bubble test during office hysteroscopy in assessment of tubal patency.

The primary outcome of our study to evaluate tubal patency using bubble test in office hysteroscopy and the secondary outcome was evaluation tubal patency using abdominal laparoscopy with MB injection ,then the results were compared.

So , we figured out that Evaluation of Diagnostic Performance of bubble test in hysteroscopy right in sensitivity of 87.9% specificity of 54.5% positive predictive value of 92.1%, negative predictive value of 42.9% with diagnostic accuracy of 83.1%.

In the current study we find that bubble

test during office hysteroscopy has high diagnostic accuracy in prediction of tubal patency in comparison with using abdominal laparoscopy with MB injection as secondary outcome.

Conclusion:

Bubble test had a good predictive value in diagnosis of tubal patency through office hysteroscopy.

Recommendation:

This study recommended that every gynecologist could use the bubble test as a reliable method in prediction of tubal patency during routine office hysteroscopy or during any indications of hysteroscopy in infertile women.

References:

Allam IS, Rashed AM, Sweedan KH, El Bishry AG, Ahmed WE. (2014). Role of hysteroscopy in the evaluation of tubal patency in infertile women. *MEFS Journal*, 19(3):215–220.

Darwish AM and Youssef AA. (1999). Screening sonohysterography in infertility. *GynecolObstetInvestig*, 48(1):43–47.

DarwishAM, Hassanin AI, Abdel Aleem MA, Aboushama IA, Mohammad II. (2014). Routine vaginoscopic office hysteroscopy in modern infertility work-up: a randomized controlled trial. *GynecolSurg*, 11:185–189.

Emanuel MH. (2013). New developments in hysteroscopy. *Best Pract Res ClinObstetGynaecol*, S1521–6934(13)00005-9.

Johnson NP.(2014). Review of lipiodol treatment for infertility—an innovative treatment for endometriosis-related

infertility? Aust NZJ ObstetGynaecol, 54(1):9–12.

Practice Committee of American Society for Reproductive Medicine, (2012). Diagnostic evaluation of the infertile female: a committee opinion. FertilSteril, 98(2):302–7.

Practice committee of the American Society for Reproductive Medicine, (2008). Definitions of infertility and recurrent pregnancy loss., FertilSteril, 90(5 Suppl):S60.

Török P, Major T. (2012). Accuracy of assessment of tubal patency with selective pertubation at office hysteroscopy compared with laparoscopy in infertile women. J Minim Invasive Gynecol, 19(5): 627–630.

Yildizhan B, Durmusoglu F, Uygur M, Erenus M. (2009). Diagnosis of fallopian tube patency by sing hysteroscopy with ultrasond. Arch GynecolObstet, 280(4): 543-7.

Sotrel G. (2009). Is Surgical Repair of the Fallopian Tubes Ever Appropriate. Rev ObstetGynecol, 2(3): 176-185.

Saunders RD, Shwayder JM, Nakajima ST. (2011). Current methods of tubal patency assessment. FertilSteril, 95(7):2171–2179.

Zhou L, Zhang X, Chen X, Liao L, Pan R, Zhou N. (2012). Value of three-dimensional hysterosalpingo-contrast sonography with SonoVue in the assessment of tubal patency. Ultrasound ObstetGynecol, 40(1):93–98.