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COMPARISON OF HYSTEOSALPINGOGRAPHY WITH DIAGNOSTIC LAPAROSCOPY IN THE EVALUATION OF TUBAL PATENCY

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Abstract

Background: infertility considered an important and common problem confronting the gynecologists mainly in developing countries. Tubal factor is found to be one of the most common causes of infertility. HSG and Laparoscopy are the most requested procedures required for the diagnosis of tubal patency. **Aims and Objectives:** evaluation and comparison of diagnostic accuracy of HSG with Laparoscopy in the assessment of tubal patency. **Materials and methods:** a prospective study was made in Azady teaching hospital in Duhok city/ north of Iraq. HSG and Laparoscopy were performed for 100 women complaining of infertility. The tubal patency findings in HSG were compared with Laparoscopic findings as its considered the Gold standard. **Results:** the overall mean age was 29.4 - years with standard deviation (SD) OF 7.0. The Sensitivity, Specificity, Positive predictive value and Negative predictive value of HSG in assessing tubal patency were 77.8 (95% CI 67.8, 85.9), 80.0 (95% CI 44.4, 97.5), 97.2 (95% CI 90.3, 99.7), 28.6 (95% CI 13.2, 48.7), respectively. There were no statistical significant differences in detecting tubal with HSG between primary and secondary infertility with p-value of 0.4138, 0.4762 and 0.1125 for bilateral, unilateral and any patency, respectively. False positive and false negative results for any tubal patency detected by HSG were 20.0 (95%. CI 2.5, 55.6) and 22.2 (95% CI 14.1, 32.2) respectively. Laparoscopy remains superior to the HSG in detecting pelvic adhesions, endometriosis and ovarian pathologies which cannot be detected by HSG. **Conclusion:** HSG is considered to have a high sensitivity and specificity. HSG and laparoscopy are not alternative but are the complementary methods in the examination of tubal patency.

Keywords: HSG, Laparoscopy, Infertility.

References

- 1- Ugwuek T.N and Ibrahim I.A. Effect of Obesity on Hormonal Profile and Semen Parameters of Male Partners of Infertile Couples in Kwara State Nigeria. *British Journal of Medicine and Medical Research* 2014;4:5284-5292.
- 2- Omoaregba JO, James BO, Lawani AO, Morakinyo O, Olotu OS. Psycho-social characteristics of female infertility in a tertiary health institution in Nigeria. *Ann Afr Med.* 2011;10(1):19-24.
- 3- Bushnik T, Cook JL, Yuzpe AA, Tough S, Collins J. Estimating the prevalence of infertility in Canada. *Hum Reprod.* 2012;27(3):738-46.
- 4- de Graaf A. *Onderzoek gezinsvorming 2003*. Voorburg/Heerlen: Centraal Bureau voor de Statistiek, 2004.
- 5- Guttmacher A: Factors affecting normal expectancy of conception. *JAMA* 161:855, 1956 [PMID: 13319020].
- 6- teVeldeER, Eijkemans R & Habbema HDF (2000) Variation in couple fecundity and time to pregnancy, an essential concept in human reproduction. *Lancet* 355, 1928–9.
- 7- Inhorn MC. Global infertility and the globalization of new reproductive technologies: illustrations from Egypt. *Soc Sci Med.* 2003;56(9):1837-51.
- 8- Kanal P, and Sharma S (2006) Study Of Primary Infertility In Females By Diagnostic Laparoscopy, *Internet Journal of Medical Update* 1:7-9.
- 9- Wilkes S, Chinn DJ, Murdoch A, Rubin G (2009) Epidemiology and management of infertility: a population-based study in UK primary care. *Fam Pract* 26: 269-274.
- 10- Abma J, Chandra A, Mosher W, et al: Fertility, family planning, and women's health: new data from the 1995 National Survey of Family Growth. *Vital Health Stat* 23:1, 1997.
- 11- Practice Committee of the American Society for Reproductive Medicine: Effectiveness and treatment for unexplained infertility. *Fertil Steril* 86(5)Suppl 1:S111, 2006.
- 12- Templeton A & Shetty A, Ashok P, Bhattacharya S, Gazvani R, Hamilton M, S Macmillan (2000) *The management of infertility for the MRCOG and beyond*. RCOG Press, London ISBN 1-900364-29-8.
- 13- National Institute for Clinical Excellence (NICE) 2004. *Fertility: Assessment and treatment for people with fertility problems-full guideline*. London, RCOG Press. Website: http://www.rcog.org.uk/resources/Public/pdf/Fertility_full.pdf.
- 14- Imaoka I, Wada A, Matsuo M, Yoshida M, Kitagaki H, Sugimura K. MR imaging of disorders associated with female infertility: use in diagnosis, treatment, and management. *RadioGraphics* 2003;23:1401–1421.
- 15- Steinkeler JA, Woodfield CA, Lazarus E, Hillstrom MM. Female infertility: a systematic approach to radiologic imaging and diagnosis, *Radiographics* , 2009, vol. 29 (pg. 1353-1370).
- 16- Westrom L. Incidence, prevalence, and trends of acute pelvic inflammatory disease and its consequences in industrialized countries. *Am J Obstet Gynecol* 1980;138:880–892.
- 17- Rosenfeld DL, Seidman SM, Bronson RA, et al. Unsuspected chronic pelvic inflammatory disease in the infertile female. *Fertil Steril* 1983;39:44–48.
- 18- Crosignani PG, Rubin BL. Optimal use of infertility diagnostic tests and treatments. The ESHRE Capri Workshop Group, *Hum Reprod* , 2000, vol. 15 (pg. 723-732).

- 19- National Collaborating Centre for Women's and Children's Health, Fertility: Assessment and Treatment for People with Fertility Problems , 2009 London: RCOG press, 2004, p. 236.
- 20- Lanzani C, Savasi V, Leone FP, Ratti M, Ferrazzi E. Two-dimensional HyCoSy with contrast tuned imaging technology and a second-generation contrast media for the assessment of tubal patency in an infertility program, *Fertil Steril* , 2009, vol. 92 (pg. 1158-1161).
- 21- Robabeh M, Roozbeh T. Comparison of hysterosalpingography and laparoscopy in infertile Iranian women with tubal factor. *Ginekol Pol.* 2012;83(11):841-3.
- 22- Mackey RA, Glass RH, Olson LE, Vaidya R. Pregnancy following hysterosalpingography with oil and water soluble dye, *Fertil Steril* , 1971, vol. 22 (pg. 504-507).
- 23- DeCherney AH, Kort H, Barney JB, DeVore GR. Increased pregnancy rate with oil-soluble hysterosalpingography dye, *Fertil Steril* , 1980, vol. 33 (pg. 407-410).
- 24- Schwabe MG, Shapiro SS, Haning RVJr. Hysterosalpingography with oil contrast medium enhances fertility in patients with infertility of unknown etiology, *Fertil Steril* , 1983, vol. 40 (pg. 604-606).
- 25- Pittaway DE, Winfield AC, Maxson W, et al. Prevention of acute pelvic inflammatory disease after hysterosalpingography: efficacy of doxycycline prophylaxis. *Am J Obstet Gynecol* 1983;147:623–626.
- 26- Stumpf PG, March CM. Febrile morbidity following hysterosalpingography: identification of risk factors and recommendations for prophylaxis. *Fertil Steril* 1980;33:487–492.
- 27- Krynicki E, Kaminski P, Szymanski R, et al. Comparison of hysterosalpingography with laparoscopy and chromopertubation. *J Am Assoc Gynecol Laparosc* 1996;3:S22–23.
- 28- Reis MM, Soares SR, Cancado ML, et al. Hysterosalpingo contrast sonography (HyCoSy) with SH U 454 (Echovist) for the assessment of tubal patency. *Hum Reprod* 1998;13:3049–3052.
- 29- Stumpf PG, March CM. Febrile morbidity following hysterosalpingography: identification of risk factors and recommendations for prophylaxis. *Fertil Steril* 1980;33:487-492.
- 30- Mohammadbeigi R, Tanhaeivash R. Comparison of hysterosalpingography and laparoscopy in infertile Iranian women with tubal factor. *Ginekol Pol* 2012;83:841-843.
- 31- Hart D, Hillier MC, Wall BF. HPA-RPD-029—doses to patients from radiographic and fluoroscopic X-ray imaging procedures in the UK—2005, Review , 2009, vol. 2010 pg. 95.
- 32- Bendick AJ. Present status of hysterosalpingography, *J Mt Sinai Hosp N Y* , 1947, vol. 14 (pg. 739-742).
- 33- Soules MR, Spadoni LR. Oil versus aqueous media for hysterosalpingography: a continuing debate based on many opinions and few facts, *Fertil Steril* , 1982, vol. 38 (pg. 1-11).
- 34- Watson A, Vandekerckhove P, Lilford R, et al. A meta-analysis of the therapeutic role of oil soluble contrast media at hysterosalpingography: a surprising result? *Fertil Steril* 1994;61:470–477.

- 35- Schuitemaker NW, Helmerhorst FM, Tjon a Tham RT, van Saase JL. Late anaphylactic shock after hysterosalpingography. *Fertil Steril* 1990;54:535-536.
- 36- Pittaway DE, Winfield AC, Maxson W, Daniell J, Herbert C, Wentz AC. Prevention of acute pelvic inflammatory disease after hysterosalpingography: efficacy of doxycycline prophylaxis. *Am J Obstet Gynecol* 1983;147:623-626.
- 37- Simpson WL, Beitia LG, Mester J. Hysterosalpingography: a reemerging study. *RadioGraphics* 2006; 26:419-431.
- 38- World Health Organization 1999. WHO laboratory manual for the examination of human semen and semen-cervical mucus interaction, 4th ed., Cambridge University Press.
- 39- Sakar MN, Gul T, Atay AE, Celik Y. Comparison of hysterosalpingography and laparoscopy in the evaluation of infertile women. *Saudi Med J*. 2008;29(9):1315-8.
- 40- Jansen FW, Kapiteijn K, Trimbos-Kemper T, Hermans J, Trimbos JB. Complications of laparoscopy: a prospective multicenter observational study. *Br J Obstet Gynaecol* 1997;104:595-600.
- 41- Rzymiski P, Wosniak J, Opala T, Wilczak M, Sajdak S. Anaphylactic reaction to methylene blue dye after laparoscopic chromopertubation. *Int J Gynaecol Obstet* 2003;81:71-72.
- 42- Kratochwil, A., Urban, G., and Friedrich, F. Ultrasonic tomography of the ovaries. *Ann Chir Gynaecol Fenn*. 1972; 61: 211-214.
- 43- Balen, F.G., Allen, C.M., Siddle, N.C., and Lees, W.R. Ultrasound contrast hysterosalpingography—evaluation as an outpatient procedure. *Br J Radiol*. 1993; 66: 592-599.
- 44- Brown, S.E., Coddington, C.C., Schnorr, J., Toner, J.P., Gibbons, W., and Oehninger, S. Evaluation of outpatient hysteroscopy, saline infusion hysterosonography, and hysterosalpingography in infertile women: a prospective, randomized study. *Fertil Steril*. 2000; 74: 1029-1034.
- 45- Sokalska, A., Timmerman, D., Testa, A.C., Van Holsbeke, C., Lissoni, A.A., Leone, F.P. et al. Diagnostic accuracy of transvaginal ultrasound examination for assigning a specific diagnosis to adnexal masses. *Ultrasound Obstet Gynecol*. 2009; 34: 462-470.
- 46- Mitri, F.F., Andronikou, A.D., Perpinyal, S., Hofmeyr, G.J., and Sonnendecker, E.W. A clinical comparison of sonographic hydrotubation and hysterosalpingography. *Br J Obstet Gynaecol*. 1991; 98: 1031-1036.
- 47- Richman, T.S., Viscomi, G.N., deCherney, A., Polan, M.L., and Alcebo, L.O. Fallopian tubal patency assessed by ultrasound following fluid injection. *Work in progress. Radiology*. 1984; 152: 507-510.
- 48- Hamilton, J.A., Larson, A.J., Lower, A.M., Hasnain, S., and Grudzinskas, J.G. Evaluation of the performance of hysterosalpingo contrast sonography in 500 consecutive, unselected, infertile women. *Hum Reprod*. 1998; 13: 1519-1526.
- 49- Ayida, G., Kennedy, S., Barlow, D., and Chamberlain, P. A comparison of patient tolerance of hysterosalpingo-contrast sonography (HyCoSy) with Echovist-200 and X-ray hysterosalpingography for outpatient investigation of infertile women. *Ultrasound Obstet Gynecol*. 1996; 7: 201-204.

- 50- Papaioannou, S., Bourdrez, P., Varma, R., Afnan, M., Mol, B.W., and Coomarasamy, A. Tubal evaluation in the investigation of subfertility: a structured comparison of tests. *BJOG*. 2004; 111: 1313–1321.
- 51- Dechaud H, Daures JP, Hedon B. Prospective evaluation of falloposcopy. *Hum Reprod* 1998;13:1815–1818.
- 52- Swart P, Mol BW, Van der Veen F, Van Beurden M, Redekop WK, Bossuyt PM. The accuracy of hysterosalpingography in the diagnosis of tubal pathology: a meta-analysis. *Fertil Steril*. 1995; 64(3): 486-91. PubMed | Google Scholar.
- 53- Mol BW, Collins JA, Burrows EA, Van der Veen F, Bossuyt PM. Comparison of hysterosalpingography and laparoscopy in predicting fertility outcome. *Hum Reprod*. 1999; 14(5): 1237-42. PubMed | Google Scholar.
- 54- Wheelles CR, Katayama KP. Laparoscopy and Tubal sterilization. In: John A, Thompson A, editors. *Telinde's Operative Gynaecology*. 6th ed. Philadelphia(PA): JB Lippincott;1985.p.411.
- 55- Lavy Y, Lev-Sagie A, Holtzer H, Revel A, Hurwitz A. Should laparoscopy be a mandatory component of the infertility evaluation in infertile women with normal hysterosalpingogram or suspected unilateral distal tubal pathology? *Eur J Obstet Gynecol Reprod Biol*. 2004; 114(1):64-8. Google Scholar.
- 56- Mol BW, Swart P, Bossuyt PM, van Beurden M, Van der Veen F. Reproducibility of the interpretation of hysterosalpingography in the diagnosis of tubal pathology. *Hum Reprod*. 1996; 11(6):1204- 08. PubMed| Google Scholar.
- 57- Tvarijonavičienė E, Nadišauskienė RJ. The value of hysterosalpingography in the diagnosis of tubal pathology among infertile patients. *Medicina (Kaunas)*. 2008;44(6):439-48.
- 58- Foroozanfard F, Sadat Z. Diagnostic Value of Hysterosalpingography and Laparoscopy For Tubal patency in Infertile Women. *Nurse Midwifery Stud*. 2013;2(2):188-92.
- 59- Goynumer G, Yetim G, Gokcen O, Karaaslan I, Wetherilt L, Durukan B. Hysterosalpingography, Laparoscopy or Both in the Diagnosis of Tubal Disease in Infertility. *WJOLS*. 2008; 1(2): 23-6. PubMed| Google Scholar.
- 60- Duchene AH. Anything you can do I can do better? Or differently!. *Fertil Steril*. 1987; 48(3): 374-6. PubMed | Google Scholar.
- 61- Riskey F, Confino E. transcervical tubal cannulation, past, present and future. *Fertil steril*. 1993; 60(2): 211-26. PubMed | Google Scholar.
- 62- Mol BW, Collins JA, Burrows EA, Van der Veen F, Bossuyt PM. Comparison of hysterosalpingography and laparoscopy in predicting fertility outcome. *Hum Reprod*. 1999; 14(5): 1237-42. PubMed | Google Scholar.
- 63- Siegler AM. Hysterosalpingography. *Fertil Steril*. 1983; 40(2):139-58. PubMed | Google Scholar.
- 64- Waheed S, Mazhar R, Khan N, Rafi M. The Comparison of Hysterosalpingography and Laparoscopy in Predicting Fertility. *Annals of King Edward Medical University*. 2007;13(3):202.
- 65- Sakar MN, Gul T, Atay AE, Celik Y. Comparison of hysterosalpingography and laparoscopy in the evaluation of infertile women. *Saudi medical journal*. 2008;29(9):1315-8.