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A COMPARATIVE RESEARCH TO DETERMINE TRANS-VAGINAL AND TRANS-ABDOMINAL ULTRASONOGRAPHY ACCURACY TO DETECT ECTOPIC GESTATION

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Abstract:

Objective: The purpose of the research was to determine Tran's abdominal ultrasonography correctness in the detection of ectopic gestation verified on Tran's vaginal sonography.

Material and Methods: This comparative research was carried out at Services Hospital, Lahore from October 2017 to July 2018. The number of patients enrolled for research was one-hundred & ninety-six having sixteen to forty years of age with the suspension of ectopic gestation. Those patients having the immature rupture of the membrane, gynecological tumour and urogenital abnormality were not included in the research. At the start, entire patients were passes through Transabdominal and Tran's vaginal sonography. The results of Tran's vaginal ultrasonography were compared with the results of Tran's abdominal sonography.

Results: Age range in our research was from sixteen to forty years with (26.89 ± 5.43) of average years. Maximum numbers of the patients (52.55%) were less than sixteen weeks of gestational age with (13.33 ± 2.12) weeks of average pregnancy age. Those patients who were presented positive through Tran's abdominal sonography, one-hundred & seventeen (59.69%) had ectopic gestation whereas thirteen (6.63%) had no ectopic gestation on Transvaginal ultrasonography. Moreover, among sixty-six patients which were shown negative through Transabdominal sonography, fifteen (7.65%) had ectopic gestation, as well as fifty-one (26.02%), had no ectopic gestation on Transvaginal ultrasonography. Therefore, the correctness of trans abdominal ultra-sonography accuracy, positive foretell value, sensitivity, negative foretell value and specificity in ectopic gestation or 85.71%, 90%, 88.64%, 77.27% and 79.69% respectively.

Conclusion: The research determines that the transabdominal ultrasound emerges as trustable, precise, available with ease as well as the cost-effective procedure for the examination of ectopic gestation. Whereas Transvaginal ultrasound is not admissible and comfortably accessible to the common population.

Keyword: Ectopic Pregnancy (EP), Tran's Abdominal Sonography, Trans Vaginal sonography (TVS), Accuracy.

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INTRODUCTION:

Eccyysis or ectopic gestation is gestational complicity in which the embryo embeds exterior to the uterine cavity multiple of gestation take place in the fallopian tube “so-called tubal gestation”, however, impregnations could also happen in the ovary cervix as well as abdomen [1]. In average gravidity, the impregnated eggs penetrate into the uterus and adjust into the uterine lining where it has enough space for multiply as well as develop. Almost one percent of gestation is in an ectopic position with impregnation not taking place within the womb and off d98% taking place in the fallopian tube [2]. EP is a leading health complication for females of parturition age as well as man factor of pregnancies concerning diseases in the initial trimester step. Currently reduce the demise rate is because of advancement in detection by modifying the ultrasound apparatus and capability to compute the level of serum beta HCG [3]. The most cleared prove of EP is that ultrasound which shows gestational SAC along with fetal heart in the fallopian tube [4]. Because of ultrasound vast availability, less cost, better resolution as well as deficiency of ionizing radiation. It plays a very important task in the examination of gynaecological patients. Ultrasonography analysis while reproductive interval in married woman is most frequently conducted by Transvaginal path, it can also be accomplished by Transperineal, Transabdominal as well as a transrectal way [5]. TVS has been displayed as an acceptable diagnostic process for female attending an initial gestation unit with complication just like ache as well as bleeding in initial gestation [6].

Because of markup accessibility of high resolution of trans vaginal sonography an initial trimester, more than 80% of elliptic pregnancy are now diagnosed prior to rapture as well as more than 50% are detected in the symptomless female by ultrasound alone [7, 8]. It has been displayed to be an exact detection test for EP with huge specificity of (94% - 99.9%) and sensitivity of (87% - 99%) [9, 10]. EP diagnostic sensitivity through Transabdominal scan is (82-91%) with (72-93%) specificity [9, 11]. While Transvaginal ultrasound is expressed as a gold standard however its patient might go through with additional malaise as well as the process may be a little bit mortifying as compare to Transabdominal sonography. The purpose of the research was to determine Tran’s abdominal ultrasonography correctness in the detection of ectopic gestation verified on Tran’s vaginal sonography so the patient could be provided cost less, comfortably assessable, additional relax and satisfactory. An alternate procedure for Tran’s

vaginal sonography for detecting and screening EP in huge hazardous patients to take in time appropriate management in these specific patients with the objective of decreasing the parental faculty and bitterness.

Appearance of pelvic free fluid, ambro with cardiac activity, adnexal mass, gestational SAC, extrauterine gestational SAC an ultra-sonography was established positive is called ectopic pregnancy (EP) the appearance of EP on trans vaginal ultrasound along with trans abdominal ultrasound or the nonappearance of EP on trans vaginal ultrasound along with trans abdominal ultrasound is called accuracy.

MATERIAL AND METHODS:

This comparative research was carried out at Services Hospital, Lahore from October 2017 to July 2018. The numbers of patients enrolled in research are one-hundred & ninety-six. All the patients which are medically doubtful of EP that is amenorrhea succeeded by pelvic ache and vaginal bleeding with positive gestation test and serum beta HCG are > 1500IU/ml and having sixteen to forty years of age were marked for research. All those females having age more than forty years, an immature burst of the membrane, bleeding related with familiar placenta praevia, unwilling patients for Tran’s vaginal ultrasounds, recognized urogenital as well as gynaecological abnormality were not included in the research.

Written approval was taken from entire patients and then transabdominal ultrasounds were accomplished by utilizing a probe of (3.5 Mhz) with positioning the patient lying face upon investigation table and the transducer pushed tightly opposite to the skin and sweep it forward and backwards over the area of concern in the pelvic zone. Tran’s abdominal ultrasound was conducted by utilizing a complete maternal urinary bladder or auditory window which gives a broad area of view as well as the utmost depth of view. The acoustic or auditory linking gel was utilized to assist the transducer to be in safe approach with the body and remove air pockets between skin and transducer. Instantly just after this, Transvaginal ultrasounds were performed with the probe of (7MHZ) in each patient after evaluating their urinary bladder. In Transvaginal sonography, the patients were visualized in the position of dorsal lithotomy with her feet protect with base and her perineum with the edge of the analysis table. Prior to entering of transducer smoothly into the vaginal, it was secure with a

condom to escape the hazards of infection transference among chosen individuals. The uterus was visualized in the ocular as well as horizontal planes endometrial stripe computation was achieved on midplane fine image. The carvex was asses to establish if the bone jaws were unclosed or compact as well as the presence of fluid in the endocervical canal was ensured. The adnexa was deliberately examined and ovaries computations were achieved in the transverse sagittal planes. If a mass was recognized inside the adnexa, through probe pressure was given inwardly and through the hand outwardly. On the interior abdominal wall to assess, if the mass was rising from the ovary or was too detached from it. For all confirmation of free fluid, the cul-de-sac was developed.

Meanwhile Ultrasound evaluation, the specific note was made of the existence of pelvic free fluid, extrauterine, gravitational SAC, adnexal mass and gravitational SAC along with embryo with cardio activity. Every ultrasound result was thoroughly explicated by one senior radiologist having minimum five years of experience. The appearance of pelvic free fluid, ambro with cardiac activity, adnexal mass, gestational SAC, extrauterine gestational SAC an ultra-sonography was established positive is called ectopic pregnancy (EP). The TVS findings were compared with the results of transabdominal ultrasounds for accuracy that is the existence of EP on Tran’s abdominal ultrasound along with TVS or the nonappearance of EP on both TVS and transabdominal sonography. The special Performa containing two parts are made for the purpose of recording facts. The demographic characteristics of the patients were contained in part one whereas Part II contained research variables.

Compared facts were examined via SPSS software. SD and average were computed for quantitative variables such as age and pregnancy age. Moreover, for qualitative variables frequency and the percentage was computed i.e. occurrence of EP (yes/no), partially, area of EP. Entire findings were demonstrated in the table as well as in chart form. The contingency table of 2x2 was utilized to measure transabdominal ultrasound accuracy in detecting EP verified on TVS. Results modifiers such as age, pregnancy age as well as area of gestation, parity, age were ménage via stratification as well as post-stratification; chi-square was used to look their effects on results variables. P value ≤ 0.05 was assumed as important.

RESULTS:

The age range in our research was from sixteen to forty years with (26.89 ± 5.43) of average years. Maximum numbers of the patients (52.55%) were less than sixteen weeks of gestational age with (13.33 ± 2.12) weeks of average pregnancy age. The percentage of patients identified with a tubal gestation was (89.21%) along with with (10.71%) non tubal pregnancies. Entire patients are initially experiencing transabdominal ultrasonography and after that TVS. The numbers of patients having EP detected through transabdominal sonography were one-hundred & thirty (66.33%). Whereas TVS has displayed EP in one-hundred and twenty-two (67.35%) patients and sixty-four patients displayed no EP. Therefore, the correctness of trans abdominal ultra-sonography accuracy, positive foretell value, sensitivity, negative foretell value and specificity in ectopic gestation or 85.71%, 90%, 88.64%, 77.27% and 79.69% respectively.

Table – I: Age Distribution

Age	Number	Percentage
16 – 20 Years	34	17.35
21 – 30 Years	109	55.61
31 – 40 Years	53	27.04
Mean ± SD	26.89 ± 5.43	

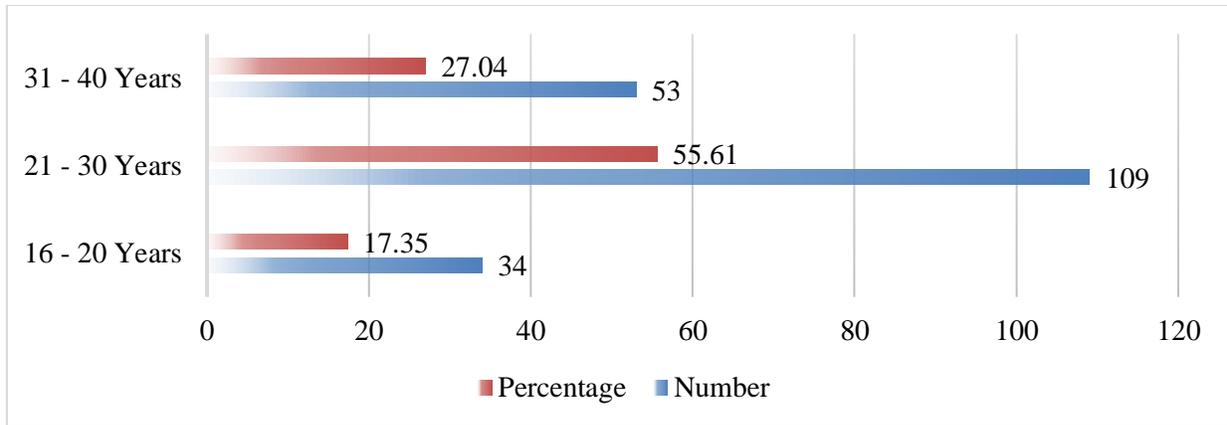


Table – II: Gestational Age

Gestational Age	Percentage
< 16 Weeks	52.55
> 16 Weeks	47.45

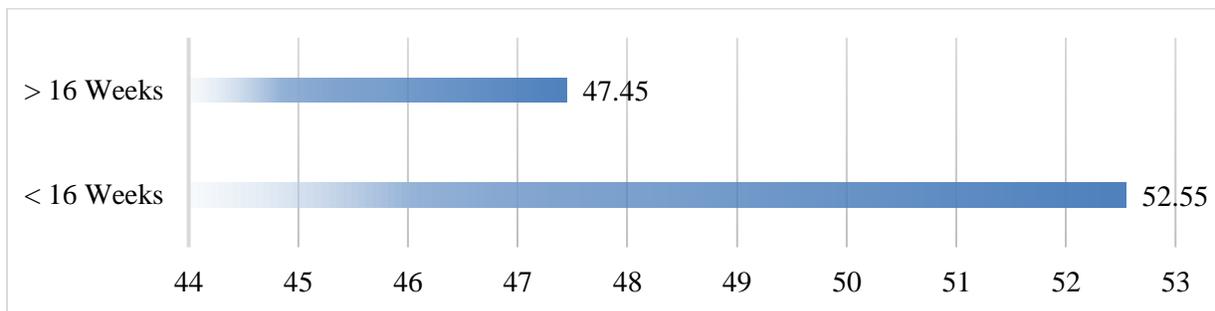


Table – III: Parity Status

Parity	Number	Percentage
Nullipara	48	24.49
1	62	31.63
2	51	26.02
3	35	17.86
Total	196	100



Table – IV: Site of Ectopic Pregnancy

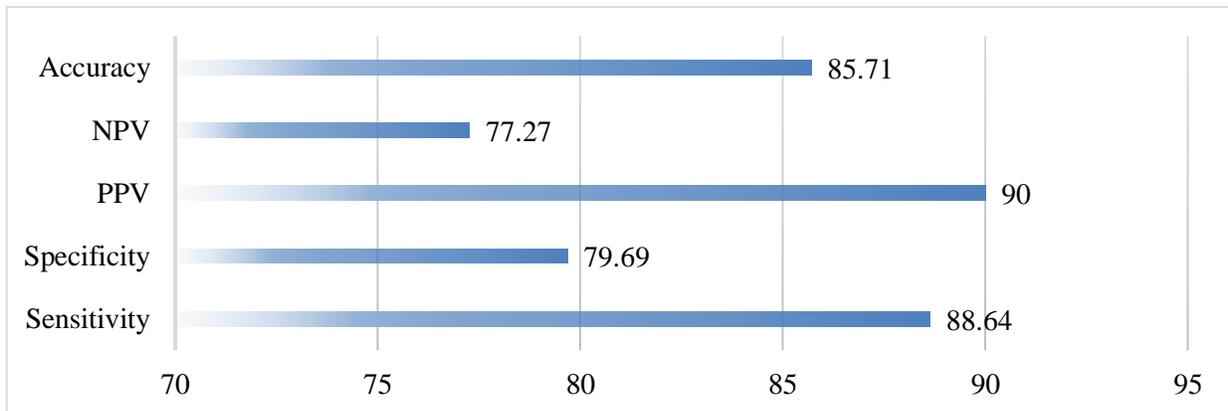
Site of Ectopic Pregnancy	Percentage
Tubal	89.29
Non-Tubal	10.71

Table – V: Trans-Vaginal/Abdominal USG Outcomes

Trans-Vaginal/Abdominal USG Outcomes	Positive	Negative
Positive	117 (TP)*	15 (FN)***
Negative	13 (FP)**	51 (TN)****

Table – VI: Trans-Abdominal USG Evaluation

Trans-Abdominal USG Evaluation	Percentage
Sensitivity	88.64
Specificity	79.69
PPV	90
NPV	77.27
Accuracy	85.71



DISCUSSION:

The age range in our research was from sixteen to forty years with 26.89 ± 5.43 of average years which is uniform with the research of Winder & Malik SA et al who presented twenty-six & twenty-seven years respectively [5, 12]. Moreover, the research conducted by Muhammad MZ et al presented much higher average age i.e. thirty years, with respect to our research [10]. In our research, the maximum number of patients (55.61%) was between twenty-one to thirty years of age. These findings are very much closer to the finding of the research conducted

by Ahmed M et al & Malik S et al who also identified a maximum of the patients in uniform age category [5, 13]. Maximum numbers of the patients (52.55%) were less than sixteen weeks of gestational age with (13.33 ± 2.12) weeks of average pregnancy age which is too higher with respect to the research conducted by Wong TW et al who had identified average pregnancy age of nine weeks at diagnosis time [11]. The dissimilarity is due to non-availability of the ultrasonography at the circumference and educational backwardness for the antenatal tour as well as viewing for any adverse occurrence

meanwhile gestation. Therefore, the correctness of trans abdominal ultra-sonography accuracy, positive foretell value, sensitivity, negative foretell value and specificity in ectopic gestation or 85.71%, 90%, 88.64%, 77.27% and 79.69% respectively.

In a research conducted by Ahmed M et al, the diagnostic sensitivity of suspicious EP through trans abdominal sonography search as (82.3%), positive foretelling value (48.2%) and (84%) accuracy [13]. Braff man BH et al in his research examine the pelvic sonography potency in fourteen hundred and twenty-seven patients as a screening test for EP in the department of emergency care and identified sensitivity as well as specificity of screening sonography for EP was (99%) & (84%) respectively [14]. Mohsin F et al performed prospective research in 2001, in which pelvic sonography effectiveness was examined in four hundred patients as a screening test for “EP” [15]. In his research, he had established that ultrasound analysis was clearly diagnostic in (96.3%) patients in the absence of beta HCG assistance. However, these findings in both the research were consolidated TVS and transabdominal despite Trans abdominal alone. A research performed by Dashefsky in 1988 and establishes transabdominal sonography diagnostic accuracy for EP diagnosis is (67%). He had also established that both TVS and Trans abdominal expressively expand the diagnostic accuracy for EP from (60% to 83%) [16]. However, TVS is eminent to trans abdominal sonography as there is a higher in a number of diagnostic research and decline in indeterminate research number, TVS may be drop on EP which is positioned in the elevated location beside its view [15]. Kivikoski et al also established the diagnostic accuracy of Tran’s abdominal sonography in EP as (68%) [17]. the Trans abdominal diagnostic accuracy recorded in these researches was too less with respect to our research. The findings presented in our research for trans abdominal sonography diagnostic accuracy in EP are too much uniform to the finding presented by Malik S A et al & Nausheen F et al who had established (84%) & (82%) respectively [5, 18].

Training, as well as radiologists’ experiences, are much significant element in diagnosing EP on ultrasounds. Similarly, trustable statistical data of ultrasonography detection value is also associated with the free base of reference. Concerning to pelvic ultrasonography, in multiple types of research, histopathology is reference base whereas in current research we have utilized TVS as the reference base. This assumes that TVS is (100%) correct and utilized for detection of each possible EP. There is no doubt

that Trans abdominal sonography is an excellent diagnostic procedure, but it has few drawbacks among them one is a dependency on the operator. An experienced can get appropriate results which could be missed by anyone else. Additionally, it could leave any pathology if it is not achieving an acoustic window in the existence of air just like bowel gases. This is the most significant element for examining patients via Tran’s abdominal procedure. Those patients having empty bladder pelvic structure view has been obscured by bowel loop.

CONCLUSION:

The research determines that the transabdominal ultrasound emerges as trustable, precise, available with ease as well as cost effective procedure for the examination of ectopic gestation. However, Tran’s vaginal ultrasound is not admissible and comfortably accessible to the common population.

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