DISCUSSION

Preterm birth is a leading cause of neonatal morbidity and mortality. Previously, medical efforts have focused on the management of prematurity rather than preventing its occurrence, Despite advances in obstetric care, fewer advances have been made in primary prevention of preterm birth and effective tocolysis.[139,144]

The rate of preterm birth has not decreased over the past 40 years, with increased prevalence reported in developed countries. For this reason, the focus of preterm birth management has changed from tocolysis to primary prevention.[139,145]

The aim of this study was to compare between the different methods of assessment of cervical length (trans-abdominal [full and half-full bladder], trans-vaginal, and trans-perineal) during pregnancy as a possible screening of preterm birth.

The study was performed on 200 cases who attended at Elshatby hospital. At gestational age from 20 to 26 weeks the was no significant to demographic data as (maternal age, parity,…etc).

The route of examination was started according to urinary bladder fullness at admission. Accordingly, the patient was not instructed to void if she had full bladder, rather we started by transabdominal route. If she had empty bladder at the time she presented we started by transperineal then transvaginal route, The four measurements were compared to each other and the difference between them calculated.

Transvaginal route gave the longest cervical measuremets followed by transperineal route then abdominal route [full bladder] and finally tansabdominal route[half-full bladder]. Our results indicate that there is a significant positive correlation among the four methods of measuring cervical length in that gestational ages.

Hyun et al. (2013) showed that transvaginal cervical length assessment is helpful to predict preterm birth. However, transvaginal sonography could be painful or inconvenient to the patient. In their study trans-abdominal and transvaginal cervical lengths were measured in 255 pregnant women between 20 and 29 gestational weeks. They found that, the mean cervical lengths were not significantly different between the two routes, mean ± SD, 3.88 ± 0.73 cm on transabdominal sonography and 3.93 ± 0.72 cm on transvaginal sonography. The 5th-percentile transabdominal cervical length was 26.0 mm, and the transvaginal length was 27.8 mm. [161]

Agreeing with our work, they stated that trans-abdominal cervical length measurements were correlated with transvaginal measurements overall, and the measured trans-abdominal length is consistently shorter than the transvaginal length in cases with discrepancies. Trans-abdominal sonography could be used as a cervical length screening tool.

In this study, The relationship between the method of transperineal measurement of cervical length as independent variable [X] and the method of transvaginal as dependent variable [Y] represented by equation 4th Degree Polynomial:

$$Y=54.32-42.64X+13.1658(X)^2-1.76(X)^3+0.087(X)^4\text{"}$$

Where the values of the transvaginal measurements are calculated by the values of the transperineal measurements with determining factor equal 0.97.

The relationship between the method of transabdominal measurements with full bladder as independent variable [X] and the method of transvaginal measurements as dependent variable [Y] represented by equation:

$$Y=1/(-0.038X +0.36504338)$$

Where values of the transvaginal measurements are calculated by the values of the trans-abdominal the measurements with full bladder with determining factor equal 0.95.

The relationship between the method of transabdominal measurements with half full bladder as independent variable and the method of transvaginal measurements as dependent variable represented by equation:

$$Y=1/(-0.04X+0.36019382)$$

Where the values of the transvaginal measurements are calculated by the values of the transabdominal half full bladder with determining factor equal 0.96

The mean cervical length on transabdominal sonography was consistently less than the length on transvaginal sonography, even in the patients with significant discrepancies between the two lengths. This finding implies that trans-abdominal sonography may be used safely for the initial measurement of cervical length. In 2010, Stone et al [159] noted that transabdominal measurements were consistently shorter than transvaginal measurements. They also suggested that transabdominal sonography could be used to assess cervical length in most cases initially.[159]

Determination of the cutoff value for prediction of preterm labor is important for practical use of transabdominal cervical assessment. Stone et al[21] proposed a transabdominal cervical length less than 27 mm as the cutoff value for indicating preterm labor, which correlates with the 5th-percentile transvaginal measurement[159].

In this study, the 5th- and 10th-percentile transabdominal measurement values were 26.0 and 30.0 mm, respectively, and the 5th-and 10th-percentile trans vaginal values were 27.8 and 30.0 mm. There were 3 cases with cervical lengths less than 25 mm (21.0, 22.0, and 24.0 mm) trans vaginally, which is generally recognized as being in a high-risk group for preterm birth. Their cervical lengths on trans abdominal sonography were 24.0, 25.0, and 25.0 mm. Although for these 3 cases, the trans vaginal measurements were less than the trans abdominal measurements, the trans abdominal measurements were all below the 5th percentile; therefore, the cases were positive by trans abdominal screening.

The evidence for the clinical application of cervical length screening using trans abdominal sonography is still insufficient. It is necessary to determine a trans abdominal sonographic measurement threshold and to follow patients until they deliver. However, on the basis of our study, trans abdominal assessment could be used initially for cervical length screening, considering the maternal and fetal condition.

Then, if the need arises, trans vaginal sonography could be used. This step-by-step approach may be more convenient and useful to both patients and physicians for cervical length screening.

SUMMARY

Preterm birth (PTB) is defined as delivery before 37 weeks of gestation. This occurs in 5% to 11% of all pregnancies, with a range as low as 4.5% in Ireland and as high as 15% in the United States.[1]

PTB is the leading cause of neonatal morbidity and mortality not attributable to congenital anomalies or aneuploidy. If an infant is born preterm the risk of death in the first year of life is 40-fold greater compared with an infant born at term.

The aim of the work is to compare between the different methods of assessment of cervical length (trans abdominal, trans vaginal, and trans perineal) during pregnancy as a possible screening of preterm birth.

This study was conducted on 200 pregnant women from El-Shatby Maternity University Hospital. All the patient undergo ultrasound examination by the four methods (trans abdominal with full and half full bladder, transperineal,transvaginal).

The results can be summarized as follows:

- The gestational age of patients ranged from 20-26 weeks of pregnancy.

- Transvaginal routegave the longest cervical measurements followed by transperineal route then abdominal route [full bladder] and finally tansabdominal route[semi-full bladder].

- Our results indicate that there is a significant positive correlation among the four methods of measuring cervical length in that gestational ages.

- In our study, The relationship between the method of transperineal measurement of cervical length as independent variable [X] and the method of transvaginal as dependent variable [Y] represented by equation 4th Degree Polynomial:

  $$Y=54.32-42.64X+13.1658(X)^2-1.76(X)^3+0.087(X)^{4"}$$

- $Y=1/(-0.038X +0.36504338)$ with variable [x] transabdominal measurement with full bladder

- $Y=1/(-0.04X+0.36019382)$with variable[x]transabdominal with half full bladder.