#385 Relationship Between Pregnancy-Related Pelvic Girdle Pain and Symphysis Pubis Distention

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Hypothesis / aims of study

Pregnancy-related pelvic girdle pain (PPGP) is a common musculoskeletal disorder that localized from the level of posterior iliac crest and the gluteal fold over the anterior and posterior elements of the bony pelvis.
PPGP is affect approximately 20% of all pregnant women (1). The exact development mechanisms of PPGP is uncertain. Some theories about development of PPGP are related to hormonal, biomechanical, traumatic, metabolic, genetic and degenerative mechanisms . The levels of relaxine and progesterone have not been shown to correlate with the degree of PPGP. The biomechanical theory is separation of the symphysis pubis (≥10
mm) as an important threshold (2). The symphysis pubis joint is a fibrocartilaginous structure which holds the pelvis together and keeps them steady during activity.
Symphysis pubis dysfunction occurs when the joint becomes relaxed to allow instability in the pelvic girdle and symphysis pubis may rupture in severe cases . The distance of non pregnant woman's symphysis pubis is 4–5 mm and widening of 2–3 mm is normal during last trimester of pregnancy. The average distance of symphysis pubis during the last two months of pregnancy is 7,7 mm with a range of 3 –20 mm; 24% of women have a gap greater than 9 mm. The gap increases to more than 10 mm is known as diastasis of the symphysis pubis (5,2). The aim of the study was to investigate relationship between severity of pregnancy-related pelvic girdle pain and symphysis pubis diastasis by three-dimensional (3D) trans perineal ultrasound imaging..

Methods and Materials

This cross sectional observational study was conducted at the Univesity hospital. Institutional ethics committee approval was obtained for our study. All patients who suffered from PPGP during the study period were potentially eligible for inclusion in the study. Parameters such as age, weight, height, body mass index, and gestational week were recorded in each patient. Women who were less than 18 years of age and had a history of major systemic bone disease and/or pelvic trauma were excluded.
Severity of pregnancy-related pelvic girdle pain is determined by The Pelvic Girdle Questionnaire. 3D transperineal ultrasound examinations which is described by Aydın S. et. al. are performed using a GE Voluson 730 equipped with RAB 4- to 8-MHz curved array 3D transducer (3). Women were placed in a supine position with an empty bladder. The probe was covered with a sterile film and placed on the perineum with minimal pressure in the midsagittal plane. Then the probe was moved over the symphysis pubis. When we obtained the whole echo of the pubic shaft, we obtained the 3D images. Images are completed with an acquisition angle of 85° and a maximum field of view of 70° in the sagittal plane. The distance between the two pelvic bones was measured by two points of the SP joint: widest and narrowest parts of the joint. significant.

All the statistical analyses in this study were performed by SPSS version 21.0 (IBM Crop., Armonk, NY, USA) statistical software. Distribution of data was assessed with histogram analysis. Student t test was used for comparisons of continuous variables. Chi-square test was used to compare the proportion of categorical variables. Pearson's correlations were used to assess correlations between SP measurements and The Pelvic Girdle Questionnaire score. Spearman's correlation was applied in cases where the normality of the data was questionable,and p values < 0.05 were considered statistically

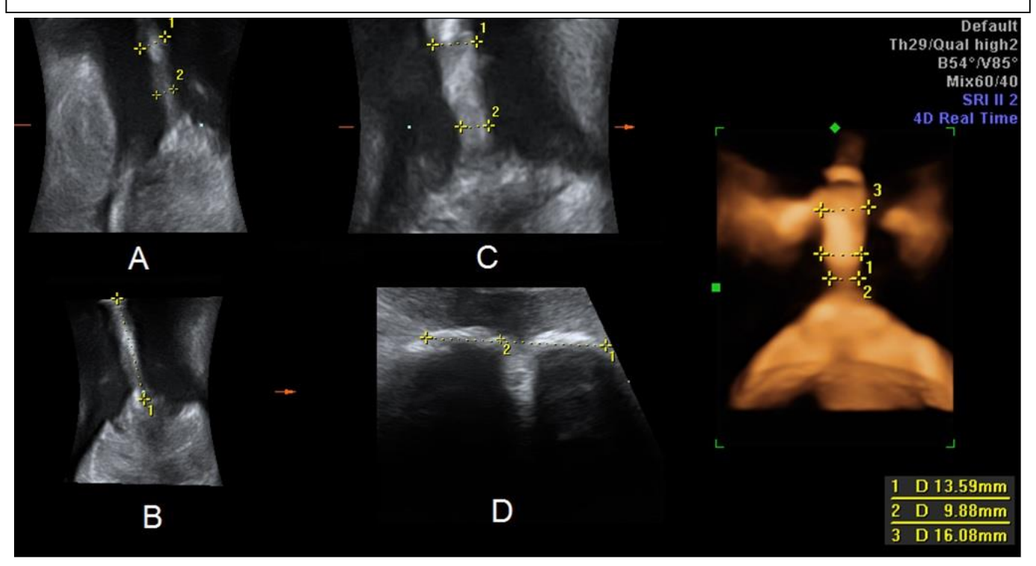


Figure 1. Three dimensional (3D) views of symphysis pubis (SP). (A, C) measurement of the wide and narrow SP distention; (B) SP length; (D) superior pubic ligament (SPL). Four dimensional (4D) views of symphysis pubis (SP) joint and measurement of the wide and narrow SP distention

Results

The 30 participants are included in this study and divided into two groups according to suffer from PPGP or not. Age, parity, weight of women, body mass index (BMI), gestational week and The Pelvic Girdle Questionnaire score were similar for two groups. Weight (75.6 kg ±7.3, 68.9 kg ±8.3; p=0.03), BMI (28.8
±3.3, 26.6 ±2.4; p=0.04), and widest diastasis of sypmphysis pubis (9.94 mm ±1.05, 8.54 mm ±1.4; P=0.04) were significantly higher in group suffering from PPGP comparing to control group. In the correlation analysis wide SP width is significantly correlated with The Pelvic Girdle Questionnaire score (r:0.49, p=0.005). BMI and weight of pregnants were not correlated with PPGP

Table 1. Comparasion of sypmphysis pubis measurements between PPGP and control groups. PPGP; Pregnancy related Pelvic Girdle Pain, SP; symphysis pubis, SPL; superior pubic ligament. Bolding indicates statistical significance.

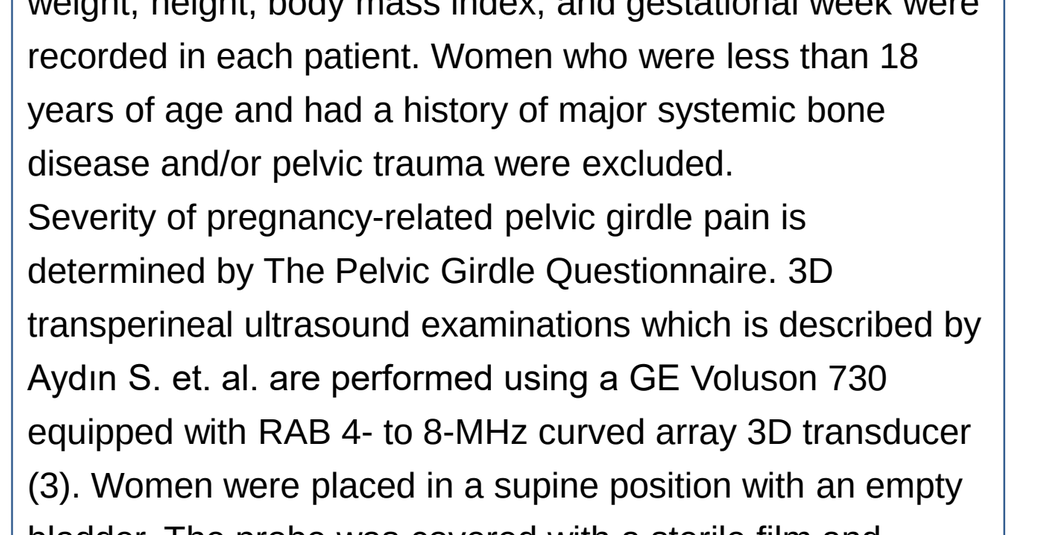
	PPGP Group N:15	Control Group N:15	p value
Wide SP width, mm (mean±SD)	9.94±1.05	8.54±1.4	0.04
Narrow SP width, mm (mean±SD)	7.13±1.66	6.54±1.1	0.2
SPL length, mm (mean±SD)	37.61±9.54	41.93±8.13	0.2
SP height,mm (mean±SD)	37.24±7.13	39.06±6.79	0.7

Interpretation of results

Wide SP width was significanly wider in woman with PPGP. Width of SP diastasis was correlated with PPGP scores. Changes in pregnancy that causes distension in sypmhysis pubis may be related with PPGP. Stabilization of joint can help to reduce or prevention of pelvic girdle pain

Concluding message

In conclusion, our study suggests that pregnant women which had high pelvic girdle pain score have wider symphysis pubis. Widening of symphysis pubis could explain the PPGP pathophysiology.



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