Prevalence of Diastasis Recti among Pregnant Females Presenting at Holy Family Hospital Rawalpindi

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Abstract

Objective: a descriptive study was conducted to find the frequency of diastasis recti in pregnant female presenting at gynae OPD at Holy Family Hospital Rawalpindi

Material & Method: Cross sectional survey was conducted at Gynae OPD Holy Family Hospital Rawalpindi from November 2012 to April 2013. 100 subjects were tested manually by the primary author. Diastasis was classified as present or absent according to Noble's criteria. Noble's criteria are based on the normal anatomical arrangement of the rectus abdominis muscle bellies lying about 2 cm, or about two fingertips' width, apart above the arcuate line and slightly closer below it.

Results: In the study population out of 100 females, 64 females had diastasis recti and it was absent in 36 females, 42(65.6%) of the cases of diastasis recti abdominis were located at the umbilicus, in 3(4.7%) were located above the umbilicus at xiphi sternum level, 1(1.5%) were located below the umbilicus, 13(20.4%) have diastasis recti present at both xiphi sternum and umbilicus level, 1(1.5%) have at xiphi sternum& below umbilicus and 4(6.3%) have at all the three levels

Conclusion: The results of this study indicate that diastasis recti is prevalent among pregnant females during third trimester and also the incidence increases with increasing gravida.

Keyword: Pregnancy. Diastasis recti, Gravid uterus

Introduction:
The abdominals consist of several different muscle groups; Rectus abdominis, External and Internal oblique and Transverse abdominis. While the Transverse abdominis muscles wraps around the front of the trunk horizontally from one side to other side, the Rectus abdominis and the Oblique muscles are vertically separated along the midline of the abdomen by a fibrous connective tissue called Linea alba.\(^1\) During pregnancy a hormone called “Relaxin” is released which causes body tissues such as ligaments to loosen up, allowing for necessary changes in pregnant women’s bodies due to the growing uterus. One of these changes is the shift of the abdominals as the uterus grows and starts putting pressure on the abdominal wall. The Rectus abdominals and the Oblique muscles are stretched out and shift to lateral side (sideways) from the midline of the body as pregnancy progress. This may cause a separation of the Linea Alba which is called Diastasis Recti. (Figure I) Noble believes that during pregnancy or the postpartum period women are predisposed to develop diastasis recti abdominis.

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because of the hormonal and biomechanical changes they undergo.\textsuperscript{[1]}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{diastasis_recti.png}
\caption{Diastasis Recti}
\end{figure}

The diastasis may be slight or severe, sometimes resulting in herniation of the abdominal viscera\textsuperscript{[1]}. It is believed that a very large diastasis recti abdominis jeopardizes any of the functions of the abdominal wall including its role in posture, respiration, trunk stability, delivery of a fetus, and trunk flexion, rotation, and side bending. Any distortion of the abdominal wall musculature or of the rectus sheath has potential consequences to these activities. To date, no electromyography studies have been conducted on diastases of greater than 2.0 cm; therefore, no data are available to substantiate theories of the effect of diastasis on the functions of the abdominal musculature. Low back pain may occur as a result of the incorrect posture and biomechanics attributed to abdominal muscle weakness.\textsuperscript{[2,3]} Additionally, cosmetic defects may result from a diastasis\textsuperscript{[4]}.

The limited amount of research on diastasis recti abdominis has been conducted on women during pregnancy or in the postpartum period. This condition is not exclusive to the childbearing year, but is commonly seen among this population. This condition is dangerous for the well-being of the mother and has a lot of risk associated with it\textsuperscript{[7]}; there has not been much research done on this topic. The incidence of diastasis recti abdominis among women throughout the childbearing year has not been much documented previously in the literature. Immediate postpartum estimates range from 50% to 60% of women tested. This study is a logical beginning to meet the need for the data on this subject and to substantiate the clinical findings of diastasis recti abdominis as a common condition that does not always resolve spontaneously during the postpartum period.

The physical therapist specializing in obstetrics or gynecology, to date, has had little research-founded knowledge on which to base the prevention or treatment of diastasis recti abdominis. Its presence has been noted clinically, but data supporting the current interest in this condition have, until now, been unavailable. This study was undertaken to determine the incidence of diastasis recti abdominis...
in women during the childbearing year and, to warrant the attention of the medical community. There has been very few researches done to find the frequency of diastasis recti in pregnant females and no such research has been carried out in this region of Pakistan so this research will establish the trend among pregnant women and diastasis recti frequency and will create awareness among doctors and pregnant females about it.

**Methodology:**
All 100 subjects were tested by the primary author. After completing a consent form and answering a personal data questionnaire, the subject assumed a supine hook-lying position on the examination table. The subject was asked to lift her head and shoulders off the table with arms extended, reaching toward the knees until the spine of the scapula left the table, as palpated by the examiner’s hand. When the subject was in this position, the examiner measured for diastasis recti abdominis by placing her fingers horizontally across the linea alba determining how many fingers fit into the space between the borders of the two rectus abdominis muscles. Measurements were taken 4.5 cm above, 4.5 cm below, and at the umbilicus. The measurement for diastasis recti abdominis was standardized by counting the number of fingers that hooked into the umbilicus and above and below it. Diastasis was classified as present or absent according to Noble’s criteria. Any separation above, below, or at the umbilicus of two finger widths or less was considered normal; greater than two finger widths constituted a diastasis recti abdominis. Noble's criteria are based on the normal anatomical arrangement of the rectus abdominis muscle bellies lying about 2 cm, or about two fingertips' width, apart above the arcuate line and slightly closer below it.

**Results:**
In this study 64 female out of 100 had diastasis recti present and 36 were negative for the presence of diastasis recti. 42 (65.6%) of the cases of diastasis recti abdominis were located at the umbilicus, 3(4.7%) were located above the umbilicus at xiphisternum level, 1(1.5%) were located below the umbilicus, 13(20.4%) have diastasis recti present at both xiphisternum and umbilicus level, 1(1.5%) have at xiphisternum & below umbilicus and 4(6.3%) have diastasis recti at all the three levels. The frequency of diastasis recti increases with increasing gestational age. (Figure III) It is most prevalent at umbilicus level and least at below umbilicus level. The incidence is greatest at umbilicus level at third trimester. (Figure: II)
Discussion:
The data indicate a significant relationship between a woman's gestational age and the presence or absence of diastasis recti abdominis. As expected, an increase in the incidence of the condition occurred as pregnancy advanced. Diastasis recti abdominis was first found in the first trimester group, and the incidence peaked in the third trimester group. The data suggest that advancing pregnancy influences the integrity of the linea alba and in many cases it results in a separation of the two bellies of the rectus abdominis. The third trimester group demonstrated the greatest incidence of the condition.
is not surprising, because the gravid uterus has exerted a great deal of continuous stress on the soft tissues of the abdominal wall by this point in pregnancy.\textsuperscript{[2,5]}

Additional data were collected to discover where, along the length of the linea alba, diastasis recti abdominis was most likely to occur. All subjects were measured 4.5 cm above, 4.5 cm below and at the umbilicus. The data indicate that only 1.5% of the subjects evidenced a diastasis recti abdominis below the umbilicus. Only four subjects demonstrated the condition at all the three levels, and all were in their third trimester of pregnancy. The majority of diastases were seen at the umbilicus (65.6%), although few of women also demonstrated one above the umbilicus (4.7%). Both placements occurred alone as well as together. Only 1.5% of the diastases were found below the umbilicus. The anterior aspect of the rectus sheath is presumed to be stronger below the umbilicus because the aponeuroses of all four muscles of the anterior abdominal wall cross in front of the rectus abdominis muscle below the arcuate line.\textsuperscript{[1]} This increased reinforcement might be enough to prevent separation in this area. Another factor that might account for the scarcity of diastasis recti abdominis below the umbilicus in this study is the use of the criteria advanced by Noble, which assume that the condition is present if the separation is greater than two finger widths.\textsuperscript{[3,8]} Above the arcuate line, the two sides of the rectus abdominis muscle are about 2 cm apart, but below that line they are only about 1 cm apart. The two bellies of the rectus abdominis musculature resemble a "v" as they approach their insertion at the pubis. The criterion of greater than two finger widths, therefore, may not be appropriate below the arcuate line (i.e, below the umbilicus). A separation of greater than one finger width might be indicative of significant change below the umbilicus.\textsuperscript{[9,10]}

The issue of exercise proved interesting in this study. It was noted that women who at the time of testing fit the criteria as nonexercisers, but who had exercised vigorously before pregnancy or months before testing, still demonstrated well toned, strong abdominal walls.\textsuperscript{[6,7]} Diastasis recti abdominis was absent in all of those women who had been conscientious exercisers before the onset of pregnancy. The absence of the condition in women who exercised before pregnancy (although exercise was an uncontrolled variable in this study) does indicate that a correlation may exist between the presence of the condition and weak abdominal muscles. Thus, prevention of diastasis recti abdominis may depend on adequate abdominal muscle strengthening before or in the first trimester of pregnancy.

**Conclusion:**

The results of this study indicate that presence or absence of diastasis recti abdominis is influenced by a woman's placement in the childbearing year, a women bearing more pregnancies will have more chance of having diastasis recti and its frequency increases with gestational duration.

**Limitation:**

The study was carried out by manual testing, nowadays with the availability of latest and hi tech diagnostic tools it can be assessed with better accuracy like by using ultra sound the size of separation of rectus abdominis muscle can be assess accurately. More accurate information can be gathered by latest methods.
References: