



HOW TO TREAT DIASTASIS RECTI ABDOMINIS WITH PHYSICAL THERAPY: A CASE REPORT



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ABSTRACT

An increased inter-recti distance is a common problem in late pregnancy and during postpartum period. According to researches diastasis recti abdominis' occurs in 35-60% of the cases. There are only assumptions about the risk factors, treatment and consequences. The aim of this study was to determine the effect of the treatment in the postpartum period using a single case study. A 33-year-old woman, six weeks after her first delivery, was recruited to the research. She complained about abdominal muscle weakness and low back pain. The patient got a three-months-long physical therapy in which the strengthening of the transverse abdominal muscles was primary. After the intervention the pathological inter-recti distance achieved the normal range almost at each reference point. This study found that the inter-recti distance was reduced when isometric contraction of the transverse abdominal muscle was performed. This suggests that this type of exercise could be effective in treating the postpartum diastasis recti and preventing the possible sequelae.

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Keywords: Diastasis recti abdominis, Inter-recti distance, Abdominal wall, Postpartum period, Physiotherapy, Treatment, Low back pain.

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Contribution/ Originality

This study contributes in the existing literature with the observations of a single case treatment. It is unique because nobody in Hungary has investigated diastasis recti abdominis yet, in consequence a new country appeared which can be active in researches in obstetric and gynecologic physiotherapy.

1. INTRODUCTION

The rectus abdominis muscle is a part of the trunk muscles, hereby it has a big role in the stabilization and moving of the spine. Diastasis recti abdominis (DRA) is the separation of both rectus abdominis muscles along the linea alba, which occurs generally at the third semester of the pregnancy [1, 2]. In the literature, there is a valuation that 35-60% of the women can be affected by DRA during the postpartum period [3-5]. The cause of this wide range can be the different reference points for the diagnosis [2, 3, 6-9] and the use of different measurement methods. Most

researchers have used palpation for the measurement [1-3, 6, 10, 11] but this can be unreliable because of the different finger widths. Another option can be the caliper [9, 12-15] though it is still less reliable than the ultrasonography [5, 9, 16, 17].

A lot of potential risk factors (e.g. age, height, BMI, abdominal circumference, hormonal changes, weight gain during pregnancy, gestational age at delivery, method of delivery, birth weight, rates of multiple pregnancy) were examined which can cause an enlarged inter-recti distance (IRD) but none of them was squarely proven [4, 5, 18]. The therapy can be determinate by the size of the enlarged inter-recti distance: a small diastasis can be healed naturally [13] but a bigger one, which was not treated, can persist for longer time and therefore can cause some other problems, such as decreased quality of life [19] poor posture [2] low back pain [14] and urinary incontinence [6, 20].

To prevent these sequelae the literature suggests two optional treating methods. The first one is the abdominal crunch exercise in supine position [11, 21] which activates the rectus abdominis muscles. The second one is the drawing-in exercise, in which the transverse abdominal and the internal oblique muscles are mainly activated [5, 10, 16, 19]. Several researchers have recommended this drawing-in exercise because it is more effective and less exacting than the abdominal crunch.

The aim of the present study was to determine the effect of a treatment in the postpartum period using a single case study. It was hypothesized that there would be a decrease in IRD at each measurement points after the three-months-long physical therapy.

2. CASE REPORT

2.1. Patient Assessment

A nulliparous woman was recruited from a sample of convenience from the Obstetrics and Gynecology Clinic in Pécs, Hungary. She was 33 years old and gave birth to her child six weeks before she was recruited. She delivered by cesarean section on the 39th gestational week because the fetus was in breech birth. There were not any immediate or postpartum complications by the mother. The newborn's weight was 2700 g and he was 48 cm long. After delivery the patient complained about abdominal muscle weakness and about low back pain. In addition, she had a poor posture with hyperlordosis. More personal data and details of the delivery outcome are presented in Table 1.

Table-1. Personal data and details of the delivery

Age	33
Height (m)	1,65
Weight before/ during/ after pregnancy (kg)	80 / 90 / 89
Body mass index (BMI) after delivery	32,69
Abdominal circumference before/ during/ after pregnancy	100 / 118 / 108
Gestational age at delivery (weeks)	39
Birthweight (g)	2700
Length (cm)	48
Type of anaesthesia	epidural

Source: Self edition

The participant gave her signed written informed consent before taking part. This study was approved by the University of Pécs Regional and Institutional Research Ethics Committee of Medical Center (allocation number 6303/2016).

2.2. Objective Assessment

A nylon digital caliper (ISS carbon digital caliper, 0-75 / 0,01 mm) was used to measure the inter-recti distance. The subject was positioned in a crook lying position on a portable floor mat without a pillow under her head, knees flexed to 90 degrees and hands relaxed on her thigh. Before the measurement the investigator marked the reference points with a tape measure and a removable pen on the abdominal wall: at the superior border of the umbilicus; 5 cm and 10 cm above the umbilicus; 2,5 cm and 5 cm below the umbilicus. Then while the subject was exhaling, she was instructed to lift her head and shoulders up, slide her hands towards her knees, until the inferior angle of scapulae were just off the mat. She maintained the curl-up for three seconds while the measurement was taken. Meanwhile the instructor palpated the medial borders of the rectus abdominis muscle, put the caliper to the measurement point and measured the IRD. One minute resting period was allowed between each trial, to avoid muscle fatigue.

2.3. Treatment and Progress

During the three-months-long physical therapy we have met the patient twice a week for one hour. Every week she got new exercises, which she had to train at home on those days, when she did not meet the physiotherapist. Education was stressed: we taught her how to sit, stand, arise, lift and breastfeed in a proper position. The exercise program focused on the strengthening of the core muscles, especially the transverse abdominal muscle, the pelvic floor muscles, the superficial and deep back muscles and the gluteus maximus muscle. We severely kept the principle of progressive overload in our mind: supine lying position was followed by sitting next to the wall, finally standing position was used. Every exercise was synchronized with breathing. For activation of transverse abdominis in any position the patient was instructed to inhale and, while exhaling, to draw in the abdominal wall towards the spine. Any kind of other training during the treatment was not allowed. The IRD at each reference point before and after the therapy is shown in Figure 1.

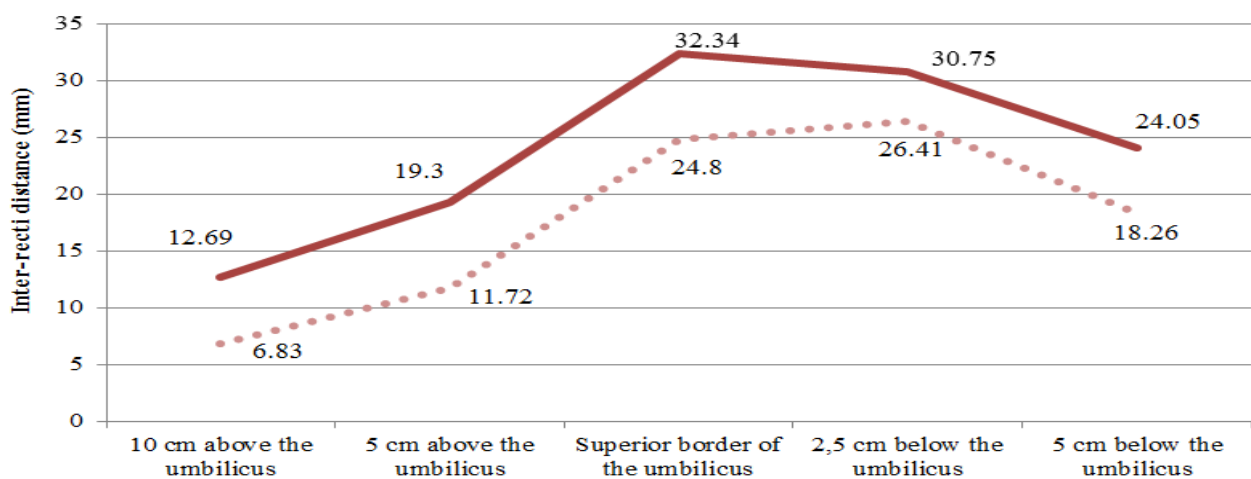


Figure-1. Inter-recti distance before (solid line) and after the treatment (dashed line)

Source: Self edition

The average of the achieved decrease was 6, 22 mm, which is a 26% reduction, and the subject's low back pain was ceased too. After the three-months-long intervention the abnormal IRD achieved the normal range almost at each reference point.

3. DISCUSSION

According to Beer, et al. [7] 22 mm is the normal width of the linea alba at the reference point 3 cm above the umbilicus in nulliparous women. The inter-recti distance increases with the first pregnancy as Liaw, et al. [8] states

and had not returned without treatment to normal values six months after delivery. Researchers talk about a diastasis recti in postpartum women when the inter-recti distance exceeds 2 cm [22] or 2, 5 cm [4] or greater than 2 fingers width (~ 3 cm) [1, 3, 10] when measured in a crook lying position. This difference can be because of the variable reference points, where the measurements were taken. The widest range between the rectus abdominal muscles can be found at the umbilicus [8, 12, 15]. The area of navel button could be the weak point of the linea alba.

There is scant knowledge in the literature about how to treat diastasis recti abdominis properly. This case study found that the inter-recti distance can be reduced by isometric contraction of the abdominal muscles. These results are in line with Sheppard [10] with Pascoal, et al. [16] and with Mota, et al. [5] who reported about a narrower IRD after drawing-in exercises. Sancho, et al. [21] wrote about the positive effects of abdominal crunch exercises on diastasis recti. In our therapy we choose the drawing-in exercises because it is more effective and gentler than the abdominal crunches. On the other hand according to Boissonnault and Blaschak [2] women with diastasis recti should avoid performing abdominal crunches in crook lying position because it has been suggested that this type of exercise could widen the inter-recti distance.

This study found that the inter-recti distance was reduced when isometric contraction of the transverse abdominal muscle was performed in crook lying position and also in other positions during the three-months-long therapy. This suggests that this drawing-in type of exercise could be effective in treating the postpartum diastasis recti and preventing the possible sequelae. Further researches are needed to investigate the effect of a longer intervention during the pregnancy and in the postpartum period.

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