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Research Article

**ANALYSIS OF BELT IN PREGNANT WOMEN SUFFERING
FROM PELVIC GIRDLE PAIN**¹Dr Muhammad Adeel Ahmed, ²Dr Fawad Afzal Abbasi, ³Dr Haseeb Ahmed Khan¹MBBS, Azad Jammu and Kashmir Medical College, Muzaffarabad., ^{2,3}MBBS, University
College of Medicine and Dentistry, The University of Lahore, Lahore.**Article Received:** October 2020**Accepted:** November 2020**Published:** December 2020**Abstract:**

Half of the pregnant women suffer from pelvic girdle pain. The most common cause of sick leave during pregnancy is pelvic girdle pain which touch approximately 37%. PGP is defined as posterior region of the pelvis, defined as "a pain between the posterior iliac crest and the gluteal fold, particularly in the vicinity of the sacroiliac joint (SIJ). The pain may radiate in the posterior thigh and can also occur in conjunction with/or separately of pain in the symphysis". In bipedal position endurance capacity while walking is impaired. The "self-locking" mechanism is a model where shear in the SIJ is prevented by increased friction due to a combination of two factors: the first is a specific anatomic arrangement that increases the friction coefficient (form closure) and the second is the tension of muscles and ligaments crossing the SIJ that lead to higher friction and hence stiffness.

The literature tends to favor flexible belts that seem to have a greater impact on pain. However, although no significant difference between groups was seen, the narrow flexible belt allowed a significant decrease of SIJ and global pain, which tends to support previous findings. After the use of the broader and more rigid belt a decrease in back pain was found, suggesting the possibility of a differential benefit of both types of belts.

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INTRODUCTION:

Half of the pregnant women suffer from pelvic girdle pain. The most common cause of sick leave during pregnancy is pelvic girdle pain which touch approximately 37%. PGP is defined as posterior region of the pelvis, defined as “a pain between the posterior iliac crest and the gluteal fold, particularly in the vicinity of the sacroiliac joint (SIJ). The pain may radiate in the posterior thigh and can also occur in conjunction with/or separately of pain in the symphysis”. In bipedal position endurance capacity while walking is impaired. The “self-locking” mechanism is a model where shear in the SIJ is prevented by increased friction due to a combination of two factors: the first is a specific anatomic arrangement that increases the friction coefficient (form closure) and the second is the tension of muscles and ligaments crossing the SIJ that lead to higher friction and hence stiffness. To maintain the stability of joints the combination of both is needed. There are many hormonal and mechanical changes during pregnancy such as symmetric laxity of the SIJ, changes in collagen metabolism of ligaments and altered motor control could be among the factors that lead to pelvic instability by a decrease of “force closure” leading to PGP. To maintain the pelvic stability pelvic belt is used. A study has reported that by using pelvic belt the pelvic morphometry was unaltered. For other studies, the pelvic belt may press the joint surfaces of the SIJ together and may provide SIJ and pelvic girdle stability by an increase of “force closure” although this remains controversial. According to the biomechanical model, application of a 50N medial compression force at the anterior superior iliac spine improves SIJ stability. A small force applied to a belt seemed sufficient to recreate the “self-locking”. Two belt positions are reported in the literature: a high position at the level of the anterior superior iliac spine and a low position, close to the greater trochanter and the pubic joint. The position of belt could have various impacts on the musculoskeletal structure. The performance of flexible belt has better on pain as compared to rigid belt. Though different types of belt could enhance functional ability and minimize the pain. The use of pelvic belt during pregnancy decreases the pain and improves the daily activities. But other studies have not observed a decrease in pain by wearing a pelvic belt. However, limited data states that wearing pelvic belt minimizes the pelvic girdle pain. There is no good quality evidence to support the use of pelvic belt because of various study methods, belts and tools.

Nevertheless, it is clinically important to know the effect of the belts to scientifically validate their

recommendation for PGP prevention and management during pregnancy. The aim of this study was to analyze pain and functional capacity during pregnancy in pregnant women with PGP.

METHODS:

It was a cross sectional study with pregnant women suffering from pelvic girdle pain age ranges from 25-35 years. The inclusion criteria were pregnant women from 18th week of pregnancy, women having pain in sacroiliac joints or pubic region which was verified by positive test (posterior provocation test) Patrick Faber’s test, Trendelenburg modified test, pain provocation tests and Active straight leg raise test) during their clinical examination. The exclusion criteria were the presence of lumbar -pelvic pain before the pregnancy. Twin pregnancies and pregnancies with complications were also exclusion criteria.

The women were divided into the two groups (group A and group B).

In group (A) there were women who had a belt during pregnancy and Group B, those who did not wear a belt. Group A was further divided into sub-groups (A1 / A2) in order to analyze the types of belt: A1 wore belt 1 and A2 belt 2. All the participants were given informed consent before recruiting into the study. For assessment of quantitative pain, visual analogue scale (VAS) was used. Quebec pain disability scale was used to measure the functional capacity. The χ^2 test was used to compare the relationship between several variables. For continuous data, an analysis of variance for repeated measures (ANOVA) was performed for comparison of all variables between different time points (within group factor) and groups (between groups factor) evaluated. When a significant effect was found, the LSD post hoc test was applied. The statistical level of significance was set at 0.05.

RESULTS:

A total of 5 pregnant women with PGP were included. For 22% of women, pain started early in pregnancy. For others, symptoms appeared in the 4th month of pregnancy \pm 2 months. In the evening, pain was significant (91%). In contrast, only 56% of the sample showed pain in the morning. Pain was experienced as deep (63%), diffuse (56%), and irradiating (34%). PGP concerned the SIJ (54%), the gluteal region (43%), the iliac crest (43%), the groin (19%) and the pubic area (17%). Furthermore, 59% of our subjects also suffered from back pain. The activities that caused or increased pain were prolonged standing (58%) or sitting (52%), walking (56%) and all activities (50%). Pain was described as

intense for SIJ (VAS: 60 ± 30 mm) and as average for the spine (VAS: 20 ± 30 mm) and the pubic joint (VAS: 10 ± 30 mm). Global VAS (any pain) was 60 ± 20 mm. The QBPDS had a mean score of 42/100: women had significant disabilities in their daily activities, but only 15% of women used an analgesic treatment. No difference was found between belt 1 and belt 2. In most cases, belts were used regularly: 68% of women used the belt several times a week. On average, belts were used 4 days a week and $\pm 2h30$ per day. 47% of women wore the belt in the morning, 68% in the afternoon and 31% in the evening. Women used the belt for daily activities (55%), going out (42%) and gait (37%). With the belt, 48% of women saw their pain decrease and 63% felt supported. The level of support was evaluated at 8/10. 57% of women were satisfied with their belt, 18% found it excellent and 13% were not satisfied. The global assessment was very good with a score of 8/10. It was the same for deep pain, which decreased by 18% ($p = 0.025$). A decrease by 37% ($p = 0.005$) was observed for the number of women with pain on the SIJ. Pain provocation during standing decreased by 42%. The VAS at the SIJ decreased from 60 ± 30 mm to 40 ± 40 mm ($p = 0.025$). A similar result was observed for global VAS from 60 ± 20 mm to 40 ± 30 mm ($p = 0.004$). there was no difference in pain between belt 1 and belt 2. However, VAS scores displayed differential evolution. In group A1, a significant decrease of global pain intensity and pain intensity at the SIJ ($p=0.003$), whereas in group A2, spine pain intensity decreased significantly.

DISCUSSION:

Pelvic girdle pain can start at the beginning of pregnancy, but in most cases of the present study sample (78%), it started between the 14th and 21st week of pregnancy. PGP was located at the SIJ, the gluteal region, the iliac crest, the inguinal angle and the pubic area, consistently with studies. In the present study, 59% of women also suffered of back pain. Wu *et al.* (2004), in a meta - analysis, reported a lower prevalence of combined PGP and LBP (45%). The lack of uniformity of terms in the literature makes it difficult to compare results. Pelvic girdle pain was experienced as deep, diffuse and irradiating. In the literature, it is perceived as a stab deep, diffuse and bright pain that can radiate to the spine or lower limbs. Such radiation could perhaps explain why some women report combined pain, making it difficult to differentiate between PGP and back pain . Pelvic girdle pain was a significant pain with a VAS at 60 ± 30 mm for the SIJ and 10 ± 30 mm to the

pubic joint. For back pain, VAS at the spine was 20 ± 30 mm. Low back pain is very common, but pain intensity is lower than PGP. Pelvic girdle pain is more intense and disabling than low back pain. Kristiansson *et al.* (1996) obtained a good correlation between VAS and disability scales. Despite an absence of pain, women may have some difficulties to perform tasks, but difficulties increase with the increase of VAS. that pain started or increased after activities. Standing or sitting, walking or daily activities (cleaning, shopping, child care) increased PGP. These results are in line with the literature. Pain was continuous, chronic and latent where 15% of women had pain without performing any activity. For all women, belts have been used for daily tasks , going out as well as for walking. With the belt, pain decreased in 48% of women and 63% felt more support. Pelvic belts appear an easy tool to use, very well accepted by patients and without adverse effects. Women rated the ease of used the belts at 8/10. Furthermore, 47% of women were satisfied by the belt, 18% found them even excellent and only 13% were dissatisfied. The women who used a belt experienced a decrease in pain between the two moments of evaluation. Pain was less diffuse and less deep. The global and SIJ VAS decreased by 20 mm on average. Also, pain at the iliac crests decreased. Kalus *et al.* (2008) showed with compression belt, a decrease in pain by about 20 mm. Carr (2003) and Flack *et al.* (2015) observed a decrease in the intensity and duration of pain with the use of belt on the short term . In our study, as a consequence of a longer use of pelvic belts (approximately 9 weeks), at the second evaluation , although women were more advanced in their pregnancy, fewer women reported pain associated with daily activities (standing, sitting and walking). Pelvic belts appear thus effective in reducing the pain and improving the activities of daily living during pregnancy. We suggest the hypothesis that they have an analgesic effect based on two principles. First, they could have a proprioceptive effect at 2 levels: 1. Depending on the direction of the deformation, related receptors may be stimulated (Shaffer and Harrison, 2007). Therefore, pelvic belts may relieve and stabilize the SIJ and may reduce pain in pregnant women. In the present study, no difference was found between the two types of belts used in our study. The literature tends to favor flexible belts that seem to have a greater impact on pain. However, although no significant difference between groups was seen, the narrow flexible belt allowed a significant decrease of SIJ and global pain, which tends to support previous findings. After the

use of the broader and more rigid belt a decrease in back pain was found, suggesting the possibility of a differential benefit of both types of belts.

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