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Impact of Structured Treatment Protocol with Electrotherapy on Pubic Symphysis Pain In Third Trimester of Pregnancy: A Case Report

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Abstract
Background: pubic symphysis is one of the common problems in second and third trimester of pregnancy. As pubic symphysis presents with severe pain while performing day to day activities and also affects significantly on quality of life in antenatal period hence it becomes crucial to study effect of different treatment protocols in pubic symphysis pain in third trimester of pregnancy.
Objective: To study the effect of structured treatment protocol with electrotherapy for a female with pubic symphysis pain in third trimester.
Case presentation: A 32 year old primiparous women with 28th week of gestation referred to physiotherapy for pubic symphysis pain and upper back pain with difficulty in doing day to day activities. Structured physiotherapy treatment protocol with electrotherapy was given after complete assessment for four sessions a week for four weeks and Pre post data was collected.
Conclusion: The structured treatment protocol including instrument assisted soft tissue mobilization with electrotherapy seems to be effective in the treatment of pubic symphysis pain and dysfunction associated with it.

Keywords: pubic symphysis, third trimester, pregnancy,

Introduction
During pregnancy there are numerous changes happening in female's body including endocrine, nervous, hormonal, musculoskeletal and physiological changes. The adaptive changes make it possible for proper development of fetus. These changes are more prevalent in osteoarticular and musculo – ligamento–fascial structures.These all changes are meant to have considerable effect on broadening space inside the pelvic ring and it specifically increases the transverse diameter to offer good fetal development and safe, comfortable delivery.[1]
Pubic symphysis joint is considered to be a fibrocartilaginous joint and it is made with two innominate bones of the pelvis. It keeps the joint stiff while doing movements. The joint is also attached with other structures such as ligaments and muscles. Muscles such as rectus abdominus muscle as well as external oblique fibers. It is also attached with four ligaments such as superior pubic ligament, inferior pubic ligament, anterior and posterior ligaments. The superior and inferior ligaments are stronger and provide maximum stability. Superiorly, the two pubic bones connect through superior pubic ligament. The inferior ligament is also known as the arcuate pubic ligament. It connects two pubic bones below forming thick, triangular arch made up of ligamentous fibers. Inferior ligament also forms upper boundary of pubic arch.
The width of pubic symphysis at front is 3-5 mm more than the width from back. The width increases in pubic symphysis in adulthood compared to childhood. Women have greater thickness of this pubic disc which allows more mobility of the pelvic bones. It also provides greater mobility and greater diameter of pelvic cavity during childbirth.
Parting of pubic symphysis means the dislocation of pubic fibrocartilages on either sides of pelvis in pregnancy and external forces.[2] In pregnant or postpartum women, usually because of physiological and musculoskeletal changes there are problems like soft tissue injuries such as widening of pubic symphysis. It can be also associated with pain, trouble in lifting or moving lower limbs as well as

difficulty in day to day activities. If the gap between pubic symphysis which is more than 10 mm and the patient also complaints of clinical symptoms along with it during pregnancy can be considered as pubic symphysis diastasis.[2] Kubitz et al reported an incidence of 1/300 and Kane et al reported an incidence of 1/30000. [3,4]

The common symptoms of pubic symphysis diastasis or dysfunction are pain which is localized in area of pubic bones that gets worse when patient is doing movements like abduction of hip, walking, lifting heavy weights, rolling in bed or stair climbing.[5,6]

Case report:

28 weeks Pregnant 32 year old housewife presented with prepartum anterior pelvic pain in her pubic symphysis which was worse on right side of the joint. Pain was more significant with standing and side turning in bed and in doing hip abduction. Patient also complained about upper back pain. The pain was present since 15 days (two weeks) and was constant throughout the course. She had no prior occurrence of this type of pain in her life. This was her first pregnancy. The pain intensity was 7 out of 10 on visual analogue scale. The pain was aggravating in nature As well as pain was disturbing her day to day activities like ambulation, stair climbing, side lying, rolling over in bed. She feels relieved in supine and crook lying position. There were no diurnal variations present. She also complained about upper back pain which was present in long standing and long sitting positions.

The previous history suggests no musculoskeletal pain. Patient does not complain any history of miscarriage and abortion. Patient is on supplements with vitamin D, calcium and folic acid. Patients also consume diet which is appropriate in antenatal period. She reported no significant medical and surgical history as well as family history.She performs light exercises as stretching, general mobility exercises and walking for 30 minutes five times a week. While doing light exercises she gets pain in abduction. She also experiences pain in side lying while doing side lying exercises. Stair climbing is usually avoided by her as it aggravatesher pain. Assistance is usually not given by family members in doing day to day activities and she herself performs all her activities even if she gets mild pain in pubic symphysis region.

Postural observation suggested that she had forward head posture with rounded shoulders (Protruded posture), exaggerated lumbar lordotic posture, and waddling gait. In the examination part patient had tenderness on palpation on affected site and around the pubic symphysis joint. Active Straight leg raise test was painful and limited Range of motion was present. Patient also showed positive trendelenburg's sign with adductor tightness and abductor weakness. The examination done for upper back pain included local palpation for tenderness in which we found that tenderness was present in upper back region specifically for rhomboids and trapezius muscle. Movement assessment showed restricted range of motion seen in neck and tightness in trapezius muscles. Spasm was also checked showed significant spasm in upper back muscles.

Structured treatment protocol with electrotherapy

Structured treatment protocol included icing for 20 minutes which was given twice a day on pubic symphysis joint. Ice pack was given with store brought cold packs which were reusable. Along with icepacks M^2T blade treatment was given which included release of adductors group of muscles. The strokes or release was given in the direction of muscle orientation. The release was given until the muscle fibre orientation is smooth and without any knots. If redness or irritation was seen and felt by patient the treatment was stopped.Exercises for hip stability, pelvic muscle strengtheningwas given for 10 repetitions followed for 3 sets. Pelvic support belt was used for 7-8 hours a day. The belt was removed while sleeping and during meals. For upper back pain, neck stretches, wall pushups, pectoral stretches, scapular strengthening, shoulder shrugs were given for 10 repetitions followed for 3 sets.

Along with other treatment plan electrotherapy treatment like TENS was given for 15 minutes on pubic symphysis which is proven to be safe during pregnancy. The electrodes were placed directly on either side of the pubic symphysis area and intensity was modulated according to patients tolerance for TENS.

After treatment given for 4 times a week for 4 consecutive weeks the patient was again assessed for pain in pubic symphysis region as well as mobility was checked while doing abduction activities and side lying activities which were better in terms of mobility and patient found reduction in pain. The tightness was also reduced and strength was found to be increased. Upper back pain was also assessed in terms of pain range of motion and spasm and the study found that it was significantly reduced. Movements were better and mobility was improved while performing day to day activities. Long Sitting and long standing activities were not painful while performing activities.

Discussion

In present case report we found that there was significant improvement in terms of pain and movements after structured treatment protocol in pubic symphysis pain in antenatal period. Pain was more on right side and was more significant in doing ambulation, turning in bed and abduction activities. The treatment included M^2T blade Mobilization. M^2T blade is type of IASTM which is double beveled tool and has eight distinct points with 14 different edges.[6]Practitioners can use this instrument for assessment and treatment.[7] IASTM instruments are used in multidirectional stroking patterns to the skin in 30°- 60°angle. This is done to detect soft tissue regularities via the undulation of tool.[8]

According to the study done by Emily R. Howell the symptoms explained were abduction activities, turning in bed, stair climbing, pain in activities of daily living which is similar to complaints given in presented study.[9] The etiology can be varied but in our present study it can be biomechanical strains of the pelvic ligaments and associated hyperlordosis, also it can be associated with increased fetal and pregnancy-related weight gain as in our case report the weight gain was significantly associated with pain. As the pregnancy advanced the intensity of pain was also noticed to be advancing means pain was more in later months of pregnancy. [10]

Structured physiotherapeutic protocol helps to reduce pain and improve the mobility of the patient in terms of activities of daily living. The reason for reduction in pain as well as improvement in mobility can be due to release given by M^2T blade on adductor group of muscles as adductor group of muscles go into tightness because of pain in pubic symphysis region with weakness in abductor group of muscles. While giving treatment with blade we found that the release was successfully given on adductor group of muscle and we also found that abductor group of muscles showed improved strength.

Much of the research states that individualized physical therapy has shown to lead to better functional outcomes and reduction in pain, but many of the articles do not specify what exercises are prescribed, the dose and the reasons they are chosen.[11]

In present study we found the significant reduction in pain and in the study we gave group of exercises such as static exercises, strengthening exercises, as well as stretching exercises for pubic symphysis and upper back pain so in present study we can say that those particular exercises along with other structured protocol with IASTM was helpful and significant and can be given in conditions of pubic symphysis pain.

Conclusion

The structured treatment protocol including instrument assisted soft tissue mobilization with conservative physiotherapeutic with electrotherapy protocol seems to be effective in the treatment of pubic symphysis pain and dysfunction associated with it.

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