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Review Article

PREGNANCY RELATED PELVIC GIRDLE PAIN: A REVIEW STUDY

¹Dr Faizan Rizwan, ²Dr Nurmeen Amber, ³Dr Samira Ashraf, ⁴Dr Abdul Raem

¹MBBS, Central Park Medical College, Lahore, ²MBBS, Sharif Medical and Dental College, Lahore, ³MBBS, Sharif Medical and Dental College, Lahore, ⁴MBBS, Central Park Medical College, Lahore.

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Abstract:

Background: Pelvic girdle pain (PGP) is a common complain during or after pregnancy with pain and disability as most important symptoms. Wide range of clinical presentation experienced with these symptom. Most doctors perceive pregnancy related pelvic girdle pain (PPGP) as 'physiologic' or 'expected during pregnancy', where no treatment is needed. As such women with PPGP mostly experience little recognition.

Objectives: aim of the study is to (1) inform the gynecologist/obstetrician about the etiology, diagnosis, risk factors of PGP.

Methods: electronic databases were used for finding relevant articles and reference lists for recent researches were also checked about the diagnosis, etiology, risk factors and treatment of PPGP.

Results: The many different diagnostic tests can help to make a differentiation diagnosis in the several pelvic girdle pain syndromes and possibly find out the underlying main biomechanical problem. Suitable multidimensional and multidisciplinary management can be guided by this classification. Both care takers can make a preliminary diagnosis of PPGP and should refer to a physiatrist, who can make a definite diagnosis. \ Factors.

Key words: Clinical care path, etiology, pelvic girdle pain, pregnancy, review, treatment.

Corresponding author:

Dr. Faizan Rizwan,

MBBS, Central Park Medical College, Lahore.

QR code



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INTRODUCTION:

Pregnancy-related pelvic girdle pain (PPGP) is a common musculoskeletal disorder affecting approximately 20% of all pregnant women [1]. Women who experience this disorder frequently present with reduced capacity for functional activities [2], and are three times more likely to have postpartum depressive symptoms [3]. Although the etiology of PPGP remains unknown, several studies suggest it is linked to increased pelvic mobility leading to pelvic joint instability and pain [4-6].

Pelvic girdle pain is often perceived as a modern condition and a normal discomfort of pregnancy where no treatment is needed. Pelvic girdle pain (PGP) generally arises in relation to pregnancy, trauma, arthritis and osteoarthritis. Pain is experienced between the posterior iliac crest and the gluteal fold, particularly in the vicinity of the sacroiliac joints. The pain may radiate in the posterior thigh and can also occur in conjunction with/or separately in the symphysis. The endurance capacity for standing, walking, and sitting is diminished. The diagnosis of PGP can be reached after exclusion of

lumbar causes. It is common to examine the problem of pregnancy related pelvic girdle pain (PGP) and pregnancy-related low back pain (PLBP). In reality, both conditions are very common, with around 45% of all pregnant women and 25% of all postpartum women suffering from PGP and/or PLBP. [7] This pain can have an adverse impact on the quality of life (QOL) for women who are affected, and there is some evidence of socioeconomic detriment mainly as a consequence of absenteeism from work.^{8,9} Despite these facts, it appears that health-care workers still lack comprehensive knowledge about the available management strategies and fear the possible harmful effects of treatment on the developing fetus..

Validated biomechanical models of the pelvis support the concept of the sacroiliac joint (SIJ) being stabilized by active and passive structures surrounding the pelvis [10,11]. For instance, it has been shown that pelvic ligaments, such as the long dorsal, the iliolumbar and the sacrotuberous play key roles in pelvic stabilization such as, preventing excessive nutation and contranutation. [12,13]

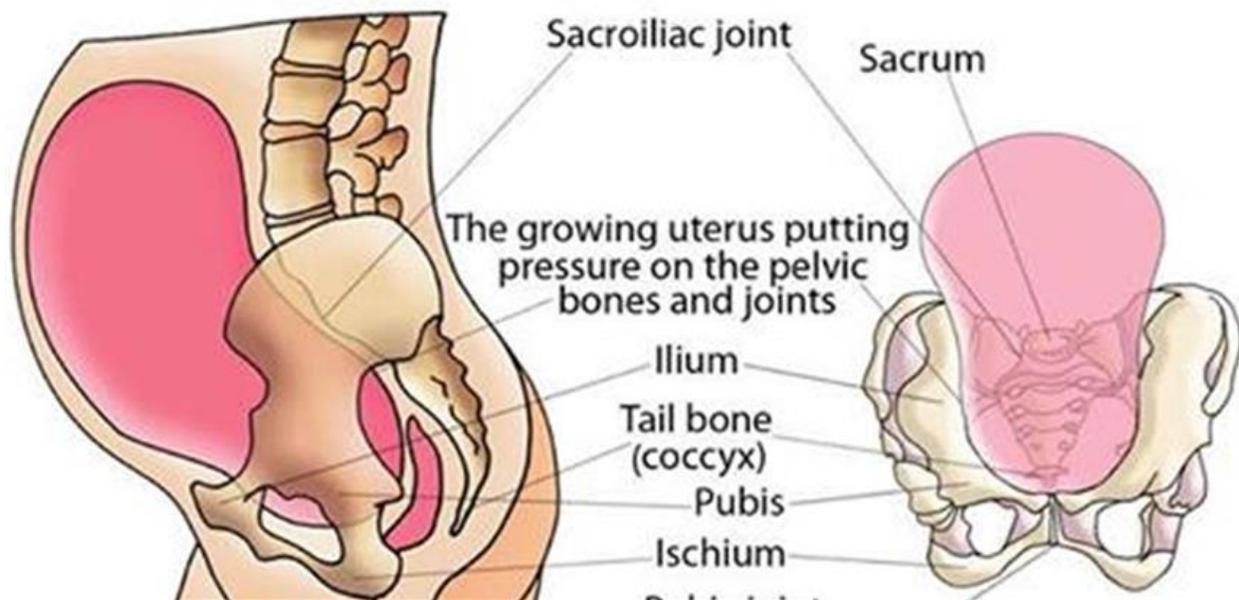


Fig 1: Pelvic girdle anatomy:

METHOD:

The literature search was performed in Medline, PubMed, Google, Embase, Ovid, DAREnet, Cumulative Index to Nursing and Allied Health Literature, and Cochrane library using the search terms listed in Table 1 for the last 30 years. From the review of abstracts, we identified the articles useful for our review. Because of the objective to review recent evidence and due to the important impact of the European Guidelines, published in 2008, only articles are include which are: 1. Published from

2000 until now and refer to these European Guidelines or use a similar description of PPGP as stated in the European Guidelines 2. Executed in Western countries Databases PubMed, Web of Science, Cochrane library are consulted by one reviewer using following search terms: #1: Pregnancy related pelvic girdle pain OR pregnancy related lumbopelvic pain #2: #1 AND (classification OR diagnostic test OR etiology OR risk factor OR treatment) #3: Pregnancy AND (lumbopelvic pain OR pelvic girdle pain).

Table 1. Terminology Used in Literature to Describe PGP

Symphysis pubis dysfunction
 Pelvic girdle pain
 PGP
 Lumbopelvic pain
 Pelvic girdle relaxation
 Pelvic insufficiency
 Pelvic arthropathy
 Backache during pregnancy
 Peripartum pelvic pain
 Symptom-giving pelvic girdle relaxation
 Pregnancy-related pelvic pain
 Posterior pelvic pain after pregnancy
 Relaxation of pelvic joints in pregnancy
 Pelvic instability
 Symphysiolysis

Database	No. of articles	No. of inclusion
PUBMED search in Title/Abstract; #1; Limits: full text available	36	25
PUBMED search in Title/Abstract; #2; Limits: full text available	113	1
PUBMED search in Title/Abstract; #3; Limits: full text available	118	21
WEB OF SCIENCE search in Topic; #1; Language: English; Categories: obstetrics, orthopedics, rehabilitation	57	4
WEB OF SCIENCE search in Topic; #3; Language: English; Categories: obstetrics, orthopedics, rehabilitation	103	13
WEB OF SCIENCE search in Topic; #2; Language: English; Categories: obstetrics, orthopedics, rehabilitation	122	0
COCHRANE LIBRARY search in Title/Abstract/Keyword; #1; Limits: 2000-2012; Trials and review	4	1
COCHRANE LIBRARY search in Title/Abstract/Keyword; #3; Limits: 2000-2012; Trials and review	16	0
Total	569	60

- 75 studies abstract not relevant
 - 3 no western country
 - 1 no English/Dutch/French
 - 16 no free full text available
 - 31 no valuable description of PPGP
 - 14 no distinction between LBP and PGP
 - 369 already included or excluded

+ 5 studies via snowball
 + 3 proceedings

Included articles: n = 68

Fig. 2. — Flowchart search strategy of databases

RESULT:

Etiology:

Numerous etiologic factors are proposed in the development of PPGP: degenerative, metabolic, genetic, hormonal, and biomechanical factors/non-optimal stability. Although the onset of PPGP remains unclear, Non-optimal stability and impaired force

closure Vleeming et al. published in 2008 a definition of optimal stability: “The effective accommodation of the joints to each specific load demand through an adequately tailored joint compression, as a function of gravity, coordinated muscle and ligament forces, to produce effective joint reaction forces under changing conditions. The central nerve system (CNS)

chooses a dynamic or static movement strategy, depending on emotions (i.e. fear, anxiety) and perceptions, which results in specific muscle forces and in coordinated muscle activity. A topic in

etiologic research is the impaired force closure of the myofascial structures of the abdominal canister (Figure 3).

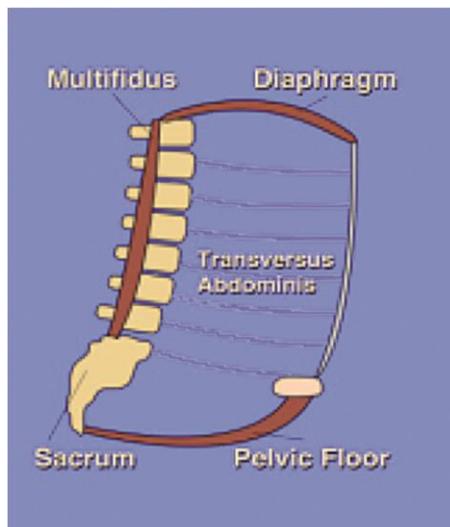


Fig. 3. — Abdominal canister/intern stabilizing unit

Hormonal factors:

The evidence level is low with regard to the possible role of higher relaxing levels and its association with more pelvic joint laxity. Moreover, there is evidence that hormonal changes due to pregnancy are compensated by an adequate sacroiliac force closure. Furthermore, the widening of the symphysis can be seen as physiological when it does not exceed 9,5mm. A greater gap can be defined as pathological and is a result of inadequate sacroiliac force closure. The actual role of hormonal factors can be translated in several propositions. Changing hormones have influence on pain modulation, collagen synthesis and inflammatory processes. Bjelland et al. (2011) stated that an association between early menarche and PPGP. They concluded that this link is suggestive for influence of prepregnancy hormonal factors rather than changing hormones during pregnancy. Nielsen (2010) conducted a research with cases with persistent PPGP 6 till 12 months postpartum and found that the symptoms are negatively influenced during the menstruation and/or ovulation period.

Metabolic factors:

Previous study documented association with metabolic comorbidities such as diabetes, but the underlying etiologic mechanism is not clear.

Genetic factors:

Epidemiologic research elucidate that cases with PGP are more likely to have a mother or sister with PGP. A predisposition for PPGP could be associated with changes in action of relaxin).

Parity-related factors:

In a large cohort study of Bjelland et al. (2010), the impact of increased parity is significantly associated with pregnancy related pelvic girdle syndrome (PPGS) (anterior and bilateral posterior pain). The association with parity for severe PPGS is even stronger. Greater odds ratios (OR) are reported for PPGS versus (vs.) severe PPGS: respectively 2,0 vs. 2,6 (parity 1); 2,6 vs. 3,8 (parity 2); 2,6 vs. 3,6 (parity 3 or more). Their conclusion is that parity-related factors may play a causal role in the development of PPGP.

Diagnosis and classification of PPGP:

PGP is a specific form of Low Back Pain (LBP) which can occur separately or in conjunction with LBP

Specific PGP: trauma and reduced force closure A rupture of the symphysis is mostly associated with childbirth and the prevalence is estimated around 1 out of 300-30000 births The degree of horizontal separation and vertical instability can be measured through radiographic exploration, When the symphysis is ruptured a pop can be heard and the symptoms of symphyseal and sacroiliac pain start after the pop or delivery. A vertical translation of more than 5 mm is defined as a symphyseal instability.

Non-specific PGP: reduced or excessive force closure a wide range of pain and functional

disturbances is observed, most probably as a result of the multifactorial etiology.

Several clinical tests must be performed, because different aspects of PGP are tested (Table 2). There are pain provocation and functional ability tests. Minimize the false negative cases in combine use. It is possible that the LDL test is one of the provoked structures of the P4 test. Previous study suggested that palpation of the LDL is referring to localized pain. Long time straining of the LDL results in a positive P4 test, which means that the pelvic system has been previously overloaded. The ASLR test, is the golden standard for testing the functional ability of the pelvis. In a recent research on a pregnant population, the specificity of this test is 88% and the sensitivity is moderate (54%) when a cut-off score is used between 0 and 1. sensitivity increases till 68% with P4 test.. Both these diagnostic tests are not good for the diagnosis of LBP.

Validated scales:

The use of questionnaires and scales can hereby be helpful. The pelvic girdle questionnaire (PGQ) is a condition-specific questionnaire for patients with

PGP during or after pregnancy, which evaluate the limitation in activities and the symptoms. The PGQ has a good discriminant validity and can be recommended in the assessment of symptoms and disability. The Quebec Back Pain Disability Scale (QBPDS) and Visual Analogue Scale (VAS) are commonly used in the evaluation of functional status and pain.

Classification of severity:

Characteristics for severity are described in Table II. Classification of pain location and prognosis PPGP can be divided in 5 subgroups: symphysiolysis, one-sided SIJ syndrome, double-side SIJ syndrome, the pelvic girdle syndrome (PGS) of which all 3 pelvic joints are affected and a miscellaneous. The miscellaneous group is defined as inconsistent objective findings of daily pain in ≤ 1 pelvic joint. According to Albert and colleagues (2001) the PGS group has the worst prognosis: 21% continue to have pain 2 years after delivery.

Risk factors: various risk factors (RF) are listed in Table 4 and 5.

Table 2. — PGP: Pain and functional ability tests.

TEST NAME	IS EXAMINING
Posterior Pelvic Pain Provocation (P4)	SIJ pain and pelvis load capacity
Patrick's = FABER (flexion, abduction, external rotation)	SIJ pain
Long Dorsal Sacroiliac Ligament (LDL) (2 versions: during or after delivery)	SIJ pain and pelvis load capacity
Gaenslen's	SIJ pain
Symphysis Pain Palpation (SPP)	Symphyseal pain
Modified Trendelenburg	Symphyseal pain
Active Straight Leg Raise (ASLR) + pelvic compression just below anterior superior iliac spine	Pelvic load capacity Sacroiliac force closure

Table 3. — Characteristics for severe PPGP.

SCALE or TEST	FEATURE FOR SEVERE PGP
QBPDS	> 40
VAS for pain	> 5
ASLR test	≥ 4
Location of pain	Pain in all pelvic joints
Thumb-posterior superior iliac spine test	Asymmetric laxity
Heel-bank test	
Abduction test	
ASLR + P4 + LDL test	3 positive tests + ↓ hip abduction and hip adduction

Table 4 — A description of various risk factors (RF) for PPGP.

RF (consistent findings)	History of low back pain (LBP) Previous PPGP Previous trauma of pelvis	Wu et al. 2004; Bastiaanssen et al. 2005b; Vleeming et al. 2008; Vermani et al. 2009; Robinson et al. 2010 a; Kanakaris et al. 2011; Pierce et al. 2012
Probable RF (inconsistent findings)	↑ Workload/physical demanding job, pluripara, parity, ↑ BMI, stress	Wu et al. 2004; Röst et al. 2006; Vleeming et al. 2008 ; Bjelland et al. 2010, 2011; Katonis et al. 2011
No RF (consistent findings)	Smoking, contraceptive pills, age, interval during following pregnancy	Wu et al. 2004; Vleeming et al. 2008
RF for persistence 3 months after delivery (consistent findings)	↑ Disability scores, > 1 positive pain provocation tests (PPPT), combined LBP & PGP, PGS, ↑ symphyseal distention, asymmetric laxity of the SIJ, hypermobility and previous LBP	Björklund et al. 2000; Damen et al. 2002b; Mogren 2006; Gutke et al. 2008b; Ronchetti et al. 2008; Vermani et al. 2009; Robinson et al. 2010b
RF for specific PPGP	Increased intra-abdominal pressure	Mens et al. 2006b

Table 5. Risk Factors Evaluated in Various previous Studies for PGP**Physical Factors**

Age
 Weight
 Height
 Body mass index
 Parity
 Oral contraceptives
 Smoking
 Social conditions

Psychosocial Factors

Stress level
 Work satisfaction
 Strenuous work

During Pregnancy/Labor

Higher fetal weight
 Prolonged second stage of labor
 Traumatic delivery
 Excessive hip abduction

Others

Previous low back pain
 Previous history of PGP or PLBP
 Low back pain during menstruation Trauma to the back

CONCLUSION:

It is common that PPGP is a complicated disorder. Various care disciplines are in contact with PPGP and are important links in the multidimensional management. Aim of this multidimensional and multidisciplinary approach is to increase the women's self-knowledge and self-efficacy, so pain and disability can be minimized. To inform the gynecologist/ obstetrician about the severity, etiology .Because of this recognition timely information can be given and a referral to a physiatrist can be made. Information, education and advice are basic strategies and are the responsibility of all involved care takers.

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