Pregnancy, Childbirth and Axial Pain: The [Still Rather] Silent Epidemic

“The affection [occurs] gradually during pregnancy; and permitting a degree of mobility of the pelvic bones which effectually hinders locomotion, and gives rise to the most peculiar, distressing and alarming sensations.”

F. G. Snelling, MD – 1870

Thirty-four years ago my wife spoke the words that give rise to both joy and angst in every young man’s heart: “I’m going to have a baby.” We didn’t know at the time that she was going to have twins and that back and pelvic pain would result. As earnest students do, we conducted a literature search and found little more than descriptive or epidemiological studies on axial pain in pregnancy. While there has since been a comparative explosion of research on the topic, this ubiquitous problem is still often glossed over and the potential for long-term consequences bypassed altogether.

In 2009, Ashton-Miller and DeLancey thoughtfully noted, “women have been expected to pay a lifelong price for a baby’s birth.”1 The consequences of pregnancy and parturition are multiple, profound and likely compounded by the current cultural phenomenon of an increased average age of women at first pregnancy.2 Evidence is mounting that the reasons why women seek back care at higher rates than men,3 as well as the perception that they are more pain histrionic,4 should be reconsidered.

Is there a Price for Childbearing?

To what extent axial pain in later life is influenced by childbearing has not been well studied. However, that back pain in pregnancy occurs at a significantly higher rate is beyond question.5 The data are compelling. Back pain point prevalence is around 9% across all adults. Among pregnant women, however, this number approaches 50% for low back and pelvic pain.

In 30%, this pain is “significant,” 9% are debilitated and up to 90% of affected primaparous women can anticipate recurrent back and/or pelvic pain with subsequent pregnancies. They are also at higher risk for axial pain three years postpartum.6 While studies have not tracked the incidence of low back and pelvic pain much beyond this point, it is not too great an empirical jump to suggest that this may well be the same group of woman who return with chronic low axial pain in midlife. In light of the significantly greater cost of chronic back and pelvic conditions and their higher incidence in women, the need for further gender-specific data pooling and longitudinal studies is critical.

In addition to complicated delivery and multiparity,7 pregnancy-related pelvic girdle pain (PRPGP) has been correlated with pelvic floor dysfunction.8,9 Urinary incontinence and pelvic organ prolapse, both of which consume staggering health care resources and can devastate quality of life,10 have known association with pregnancy and childbirth. While a relationship between low back pain/ pelvic girdle pain and incontinence is not fully understood, extant research tends to support the empirical interrelationship long reported by clinicians.11,12

The pelvic floor equilibrates intra-abdominal pressure, a known factor in axial stability.13 The increasing load of a gravid uterus adds to pelvic floor stress.14 Labor and delivery (particularly forceps assisted) compound these strains and may result in muscular or
Pregnancy also exerts significant adaptive structural change. Whitcome et al. have identified dimorphism in prehomind lumbar vertebra as a likely accommodation to upright pregnancy which results in a roughly 60% increase in lumbar lordosis and center of mass translation anterior to the hips. In part, the sacroiliac joints and pelvic ligaments resist load shear; these structures are known pain generators.

An association between female gender and degenerative spondylolisthesis (DS) is more clearly established. Imada and colleagues showed a roughly 200% increased risk in parous to nulliparous women. Love et al. noted that facet overload with vertebral slip is potentially related to the weight bearing, hormonal and abdominal wall changes of pregnancy. DS is notably most common at L4-5 and L3-4, as opposed to the lumbosacral junction with its greater ligamentous restraint. The prevalence of DS in women is not a new phenomenon. A fascinating analysis of skeletal remains at sacred Pueblo sites showed a 5:1 female-to-male DS incidence. Is this disproportionality inevitable or modifiable? The personal and societal costs of this frank gender disparity warrant broader scientific inquiry.

While not well studied relative to pregnancy, the hip-spine syndrome has received increasing attention since its first description in 1983. Yoshimoto et al delineated comparative associations between lumbar lordosis, pelvic obliquity and sacral slope in patients with back pain and hip osteoarthritis. More distal effects have also been identified—cross-sectional analysis has shown an association between multiparity and patellofemoral (but not femoral-tibial) cartilage defects. While causal association is currently not explained (and likely multifactorial), these associations are empirically consistent with our clinical experience with multigravida patients and are notable given the greater prevalence and severity of hip and knee osteoarthritis in women.

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tivity compared to diagnostic injection.\textsuperscript{38} Such maneuvers are relatively simple to perform and include: the P4 or Posterior Pelvic Pain Provocation, Patrick/FABERE, Active Straight Leg Raise, Long Dorsal Ligament and Modified Trendelenburg (for symphysis pain), pelvic compression/distraction and sacral thrust tests.\textsuperscript{39,40} Other investigators have shown association with asymmetric hip internal rotation impairment.\textsuperscript{41}

Managing the Problem

The onset of PRLBP and PRPGP usually occurs around week 18 gestational age and peaks in the late second or early third trimester. The risk of developing axial pain is reduced by fitness before pregnancy\textsuperscript{42} and continuing general exercise and during pregnancy. Swimming appears to have a particular pelvis pain protective effect.\textsuperscript{43,44} Failure of early recognition and management of back and pelvic pain can leave women feeling isolated and result in greater disability during pregnancy.\textsuperscript{45}

Treatments for axial pain during pregnancy are limited and scientific inquiry into various options has largely occurred only in the last 20 years. Massage, acupuncture, joint mobilization/manipulation and non-elastic pelvic “SI” support belts all have demonstrated utility.\textsuperscript{46,47} In appropriately selected patients, these measures are simple, safe and cost-justifiable, especially if work absence and the cost and relative risk of interventional procedures can be avoided.

Interest is growing in the potential benefit of structured postpartum rehabilitation. Targeting patients at higher risk for persistent pain will be critical to the effectiveness of such programs. Data indicate that later age at conception, combined back and pelvic pain in early pregnancy, a high number of pain provocation tests and a history of antenatal back pain and/or trauma are predictive.\textsuperscript{48}

Some countries are now implementing practices that could prove effective in mitigating back and pelvic pain later in life. An example is the French health care system which covers postpartum pelvic floor rehabilitation. Cultural disparities aside, rééducation périnéale has been shown to improve postpartum urinary incontinence.\textsuperscript{49} Could it result in positive biomechanical effects as well? We don’t know. In the short-term, broadly applied stabilization exercise showed no greater benefit in reducing pain at one year compared to untreated controls.\textsuperscript{50} However, specific exercises (based on individual characteristics) show greater promise.\textsuperscript{51} From a musculoskeletal perspective, research is lacking on the potential down-stream value of postnatal neuromotor training and axial stabilization exercise (to say nothing of diet, overall fitness and prompt return to normal activity). Further work to target likely responders is a priority. Until then, parsimonious, evidence-sensitive axial and pelvic floor rehabilitation are reasonable for patients reporting back and pelvic pain with each of several pregnancies or back and pelvic pain impairment persisting at routine postpartum follow-up.

No commentary on axial pain can bypass psychosocial factors. As with the general back pain population, a relationship between postpartum pain intensity and kinesiophobia has been established.\textsuperscript{52} Not surprisingly, women with persistent back and pelvic pain are at higher risk for postpartum depression.\textsuperscript{53} A large body of evidence supports back care in a biopsychosocial model. It is intuitive that this patient population equally merits attention to the whole person.

Pregnancy-Related Back and Pelvic Pain: Where Do We Go from Here?

Gender-specific medicine needs to reconstruct an equilibrium in order to understand how different [the] clinical signs, diagnostic procedures and therapeutic needs of diseases are in men and women. This new dimension of medicine needs new investment in research but also reorganization of medical teaching and health policy.\textsuperscript{54} Giovannella Bagio, MD

At what point does postpartum axial pain lose differentiation from other back and pelvic pain? Östgaard and coworkers\textsuperscript{55} showed a persistent association between axial pain and pregnancy at six years. Notably, persistent pain was not similarly present in those women who had received targeted education in anatomy, kinesiology, posture, exercise and relaxation training during pregnancy.

While these results are encouraging, research into the relationship of pregnancy, childbirth and delayed-onset axial problems is embryonic. Existing data adduce to this effect, but burning questions abound. Moms with newborns and young children are naturally busy with other matters. If simply considered “a life-long price,” the biomechanical effects of pregnancy and childbirth may remain unaddressed. However, those of us who care for these women, particularly as they age, must ask. Patients, families and the strained health care system that serves them demand answers. Regrettably, many uncertainties remain.

Does subjective recovery from peripartum axial pain mean that biomechanical normalcy has been restored or are certain women left with suboptimal axial stabilization that leads to “spontaneous” back problems later in life? Is there a relationship between pregnancy and SI joint pain, hip and other joint arthritis and/or chronic pelvic floor dysfunction and, if so, is it modifiable?

A specific example is that of unstable degenerative spondylolisthesis with progressive root compromise. Are these patients on a collision course with surgical fusion (which is currently often their most effective option) or could some combination of pre- and postpartum treatment and rehabilitation be preventive? Perhaps most important, can early identification of risk mitigate chronic pain and disability if timely and effective professional care is made available?

In researching this article, I came across a citation from Physical Therapy Reviews. The author, W.R. Harvey, entitled it simply, “The Need For Physical Therapy In Post-Partum Care.” That paper was published in 1949 and 65 years later, despite all the health care gains that have since been made, the need for coordinated postpartum musculoskeletal care
is increasingly apparent. Women of the 21st century deserve the opportunity to move beyond the foregone conclusion that childbirth must exact a “life-long price.” As is the case in so many other areas of medical research and specialization, gender-specificity is long overdue in spine care! I hope that I have contributed to the conversation.

Oh, and by the way, four pregnancies, five wonderful sons and lots of “dynamic stabilization” training later, my dearest friend and wife Mia qualified for, and completed, the Boston Marathon in 2012 without back pain. She was the impetus for this article.

References


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**Author Disclosure**

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