

# Application of osteopathic manipulative technique in the treatment of back pain during pregnancy

Zastosowanie manualnych technik osteopatycznych w leczeniu bólu pleców u kobiet w ciąży

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## Abstract

*Changes in body posture, musculoskeletal disorders and somatic dysfunctions are frequently observed during pregnancy, especially ligament, joint and myofascial impairment.*

*The aim of the paper is to present the use of osteopathic manipulative treatment (OMT) for back and pelvic pain in pregnancy on the basis of a review of the available literature. MEDLINE and Cochrane Library were searched in January 2014 for relevant reports, randomized controlled trials, clinical and case studies of OMT use in pregnant women. Each eligible source was verified and analyzed by two independent reviewers. OMT procedures appear to be effective and safe for pelvic and spinal pain management in the lumbosacral area in pregnant women.*

Key words: **pregnancy / low-back pain / manual therapy / osteopathic manipulative treatment /**

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## Streszczenie

W trakcie ciąży u kobiet zachodzą zmiany w postawie ciała, układzie mięśniowo-szkieletowym oraz zaburzenia somatyczne. Najczęściej dochodzi do dysfunkcji więzadeł, stawów i powięzi.

Celem pracy jest przedstawienie wykorzystania bezpiecznych osteopatycznych technik manualnych w leczeniu bólu pleców i miednicy u kobiet w ciąży, na podstawie przeglądu dostępnej literatury naukowej. Przegląd literatury przeprowadzono w bazach danych MEDLINE i Cochrane Library w styczniu 2014 roku. Do analizy wybrano prace poglądowe, randomizowane, kliniczne oraz studium przypadku dotyczące terapii manualnej u kobiet w ciąży. Każda praca była weryfikowana i analizowana przez dwóch niezależnych badaczy. Osteopatyczne techniki manualne (OMT) wydają się być skuteczną i bezpieczną terapią w bólach odcinka lędźwiowo-krzyżowego kręgosłupa i miednicy u kobiet w ciąży.

Słowa kluczowe: **ciąża / ból pleców / terapia manualna / osteopatia /**

## Introduction

Numerous changes in body posture and musculoskeletal disorders occur during pregnancy – most commonly involving bodily statics in the pelvic and spinal areas – due to horizontal positioning of the sacrum and increased lordosis in the lumbar area. That, in turn, contributes to irritation of ligaments between the spinous processes (interspinous and supraspinous ligaments). The overload of intervertebral discs at the level of L4/L5 and L5/S1 is observed, as well as vertebrae rotation and muscle contraction causing tension of the ligaments [1, 2]. Other causes include loss of stabilization in the spinal muscles in the lumbar area, increased load on facet joints, and loosening of ligaments in the sacroiliac joint and pubic symphysis. All these processes result in an excessive pelvic mobility [3], and lead to severe pain in the lumbosacral spine during pregnancy [4, 5]. Approximately 50% of pregnant women complain of pelvic and spinal pain in the lumbosacral area, with 25% reporting prevalent pain also postpartum. In the group of women with chronic spinal pain, around 10% report the pain to have appeared during the pregnancy, most commonly between the fourth and the eighth month [3, 6].

Most women consider the discomfort caused by the back pain to be an integral element of pregnancy, and fail to seek medical help. Only about 50% of the women, usually those with high pain intensity measured with the visual analogue scale (VAS), consult a doctor. Out of that group, approximately 70% are treated, in most cases with the use of different methods of therapy [7].

## The aim

The literature cites many contraindications to treating pregnant women with pharmacologic pain therapy and many popular physiotherapeutic methods. Osteopathic manipulative treatment is one of the safe casual methods to manage pain.

The aim of the paper is to present OMT use for back and pelvic pain in pregnancy on the basis of review of the available literature.

## Methods

A search of the English-language literature was performed using MEDLINE and Cochrane Library (January 2014) by two independent reviewers for reports, randomized controlled trials, clinical and case studies on OMT use in pregnant women for back and pelvic pain.

## Osteopathic manipulative treatment for pregnant women

Treatment of chronic back pain, especially in advanced pregnancy, is often challenging. Standard pharmacotherapy carries the risk of adverse fetal effects and because of this a non-pharmacological pain management is advised in case of severe pain [8].

The literature offers different forms of back pain therapies for pregnant women, including physiotherapy, transcutaneous nerve stimulation, stabilizing belts, massage, yoga and other forms of relaxation, acupuncture, localized use of heat and cold, and osteopathic treatment [9, 10].

Osteopathic manipulative treatment is a form of therapy based on the use of relevant manual techniques to reduce tension in the myofascial structures, joints and ligaments. It is one of the therapies treating lumbosacral spine pain in pregnant women and it occupies a special place among manual procedures. OMT can be used in severe lumbosacral spine pain [11, 12].

Some researchers suggest that manual procedures are effective and significantly reduce back pain in pregnancy. Stuge et al., after examining 1350 female patients, found evidence supporting the effectiveness of manual therapy in the prevention and treatment of back and pelvic pain in pregnant women [13]. Manual procedures are a popular technique in pain management in the USA, where this treatment is offered primarily to pregnant women [14, 15].

Research conducted by the Osteopathic Survey of Health Care in the USA shows that back pain was the most common reason for contacting an osteopath in the USA in the last several years [16]. Most patients seeking treatment are diagnosed with problems of musculoskeletal origin. Some clinical trials show a 50% reduction in lumbosacral spine pain in women after OMT as compared to the groups with placebo (no treatment) [17]. Another study revealed that OMT use for back pain is far more effective than placebo, and this effect persists for at least 3 months after treatment completion [18].

Reports on the use of OMT for back pain in pregnant women are numerous. Back pain ailments usually appear in the third trimester of pregnancy as a result of thoracic kyphosis, lumbar lordosis and pelvic tilt [19].

It is suggested that in case of lumbosacral pain in pregnant women, muscle energy techniques can be used to relax the joints [20]. All of the above mentioned techniques are safe to be applied in pregnant women at any stage of pregnancy.

**Table 1.** Summary of Osteopathic manipulative treatment in pregnant women.

Study	Number of participants	Study type	Week of pregnancy	Group specific therapy	Comparison between groups	Outcomes, conclusions
King et al. [19]	321 women	Clinical study	After delivery	Group 1: with OMT (160 women) Group 2: Group that did not receive prenatal OMT (161 women)	The case control study found evidence of improved outcomes in labor and delivery for women who received prenatal OMT compared with women who did not.	Results of the study support the hypothesis that prenatal OMT may reduce the occurrence of some complications of pregnancy, labor and delivery.
Licciardone et al. [21]	144 women	RCT	30 <sup>th</sup> week of pregnancy	Group 1: usual obstetric care and OMT Group 2: usual obstetric care and sham ultrasound treatment Group 3: usual obstetric care only	During pregnancy, back pain decreased in Group 1, remained unchanged in Group 2, and increased in Group 3.	OMT slows or halts the deterioration of back-specific functioning during the third trimester of pregnancy.
Daly et al. [22]	23 women	Clinical study	During pregnancy	One group of 11 women with sacroiliac subluxation.	11 from 23 women meeting criteria for sacroiliac subluxation was treated with OMT.	After OMT 91% of women had relief of pain and no signs of sacroiliac subluxation.
McIntyre et al. [23]	20 women	Clinical study	During pregnancy	20 women with low back pain.	After three visits 15 women had no pain and the five had more than 50% improvement in their pain.	Low back pain in pregnancy is likely to be due to sacroiliac dysfunction which can be significantly improved with mobilisation.
Smallwood et al. [24]	Woman	Case study	During pregnancy and labor	A 30-year-old woman desiring natural childbirth with a history of low back pain.	The patient was able to undergo labor and delivery without the painkillers. Stage two of labor was on the quicker end of the spectrum.	OMT for the laboring woman should be considered as a treatment modality to facilitate a natural childbirth.
Licciardone et al. [25]	144 women	RCT	The third trimester of pregnancy	Group 1: usual obstetric care and OMT Group 2: usual obstetric care and sham ultrasound treatment Group 3: usual obstetric care only	Patients in Group 1 were significantly less likely to experience progressive back-specific dysfunction. The effect sizes for Group 1 vs Group 2 and for Group 1 vs Group 3 were classified as medium and large, respectively.	OMT has medium to large treatment effects in preventing progressive back-specific dysfunction during the third trimester of pregnancy.
George et al. [26]	169 women	RCT	24-28 weeks' gestation with follow-up 33 weeks' gestation	Group 1: musculoskeletal and obstetric management (87 women) Group 2: standard obstetric care (81 women)	Group 1 demonstrated significant mean reductions in Numerical Rating Scales scores and Quebec Disability Questionnaire scores from baseline to follow-up evaluation. Group 2 demonstrated no significant improvements.	A multimodal approach to low back and pelvic pain in mid pregnancy benefits more than standard obstetric care.

RCT – randomized controlled trial  
OMT – osteopathic manipulative treatment

Pain management is achieved through the influence on the structural and biochemical changes responsible for somatic dysfunctions. OMT also affects other mechanisms reducing back pain, such as hormonal and cardiovascular changes that influence different aspects of somatic dysfunctions in pregnancy [21].

In a prospective study on 97 pregnant women, a statistically significant reduction in pain intensity was observed in women who underwent OMT, in comparison to women who did not undergo OMT [19]. In another study, 23 pregnant women with the subluxation of the sacroiliac joints and with pain in lumbosacral area underwent OMT. Improvement in the form of reduced pain and reduced symptoms of subluxation of the sacroiliac joint was achieved in 10 (91%) patients [22].

In another study on 38 pregnant women, 20 women experienced intense back pain, 17 in the sacroiliac area, and 3 in the area of iliopsoas attachment. After application of 3 OMT procedures and a series of home exercises, the pain was eliminated in 15 women, and the rest of patients reported 50% improvement in this regard [23].

Smallwood et al., used OMT as a sole method in addressing pain in the prenatal period and during labor in a 30-year-old woman opting for natural childbirth. The use of OMT made the stage two of labor quicker. OMT for laboring women should be considered as a possible treatment modality to facilitate a natural childbirth [24].

One of the recent studies on OMT was carried out by Licciardone et al. One of the main aims of this randomized study was to investigate the potential effect of OMT, used only in the third trimester of pregnancy, on the back pain in pregnant women. High-risk pregnancy cases (gestational diabetes, preeclampsia, placenta previa, placental abruption) were excluded from the study. The study showed that the use of OMT during pregnancy slows or stops the deterioration of lumbosacral spine functionality in women in the third trimester of pregnancy [21].

Another paper by the same authors demonstrated the measurement of treatment effects of OMT in 68 (47%) patients with progressive pack-specific dysfunction during the third trimester of pregnancy using criteria established by the Cochrane Back Review Group. The authors conclude that OMT resulted in medium to large treatment effects. These findings are of potential importance with regard to indirect costs of work disability during pregnancy [25].

Similarly, George et al., observed that a multimodal approach to low back and pelvic pain in mid-pregnancy benefits patients more than standard obstetric care [26].

A study was performed with the use of questionnaires in four medical facilities in a group of 160 pregnant women, who underwent OMT procedures during pregnancy. This interesting analysis showed that osteopathic treatment was not only associated with reduced back pain, but also with lower risk of premature birth and meconium presence in the amniotic fluid [19].

Lavelle reviewed the available literature on the use and effectiveness of OMT during pregnancy and concluded that it can drastically reduce the pain during pregnancy by treating somatic dysfunctions. Moreover, the hemodynamic changes of the maternal body can be controlled through the viscerosomatic connection, thus reducing the duration of labor and avoiding complications during labor [27]. Pennick and Liddle searched

the Cochrane Pregnancy and Childbirth Group's Trials Register (18 July 2012). They included 26 randomized trials examining 4093 pregnant women in this updated review. Eleven trials examined LBP (N = 1312), 4 examined pelvic pain (N = 661), and 11 examined lumbo-pelvic (LBP and pelvic) pain (N = 2120). Diagnoses ranged from self-reported symptoms to the results of specific tests. All interventions were added to usual prenatal care and unless noted, were compared to usual prenatal care. They suggested that physiotherapy, OMT, acupuncture, a multi-modal intervention, or the addition of a rigid pelvic belt to exercise seemed to relieve pelvic or back pain more than standard care alone [28].

As pregnancy enters second and third trimesters, centers of mass shift anteriorly, causing an increase in lumbar lordosis, which causes low back and pelvic girdle pain. Oswald et al., observed the efficacy and safety of OMT in the treatment of these symptoms [29].

Other authors suggest that at the moment there are no reliable studies which would confirm the benefits of manual techniques in the pelvic bone area and mobilization of lumbosacral joints. Therefore, such extreme direct techniques should not be advised in pregnant women. There is a lack of large, prospective clinical studies supporting the effectiveness of OMT in pregnancy [23, 30].

## Conclusions

Manual therapy procedures appear to be effective and safe for pelvic and spinal pain management in the lumbosacral area in pregnant women and women in reproductive age.

OMT use for back pain in pregnancy can eliminate or significantly reduce the need for pharmaceutical drugs which, especially when used in the first and second trimester, can result in adverse fetal effects.

## Oświadczenie autorów:

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## Konflikt interesów:

Autorzy nie zgłaszają konfliktu interesów oraz nie otrzymali żadnego wynagrodzenia związanego z powstawaniem pracy.



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**III ULTRASONOGRAFIA  
W GINEKOLOGII I POŁOŻNICTWIE**

**Sekcji USG PTG**

V Podhalańska Praktyczna Ultrasonografia  
w Ginekologii i Położnictwie  
Kurs Ultrasonograficzny

**28 maj 2015**  
Warsztaty praktyczne - Podhalański Szpital Specjalistyczny w Nowym Targu

**29 - 30 maj 2015**  
Wykłady - Centrum Kongresowe Belvedere w Zakopanem

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Informacje: [www.usgptg.pl](http://www.usgptg.pl); tel. +48 81 84 19 334  
Termin zgłaszania prac do 30 marca 2015.

## PROGRAM RAMOWY

### Piątek, 29.05.2015

I sesja: Obrazowanie wczesnej ciąży – 5-10 tygodni

II sesja: Nowe schematy diagnostyki prenatalnej między 11-14 tygodniem ciąży

III sesja: Ocena bliźny po cięciu cesarskim. Diagnostyka ultrasonograficzna łożyska wrosniętego, przerosniętego i przodującego

IV sesja: Rola ultrasonografii w okresie okołoporodowym

Pokazy filmowe trisomii 21, 13, 18

### Sobota, 30.05.2015

V sesja: Ocena ultrasonograficzna macicy i jajników oraz badania hormonalne w diagnostyce niepłodności

VI Sesja: Diagnostyka prenatalna wad rozwojowych cz.I

VII sesja: Terapia płodu. Ciąża wielopłodowa

VIII sesja: Wybrane zagadnienia z diagnostyki ultrasonograficznej w ginekologii

Panele tematyczne do zgłaszania prac do 30.03.2015:

- I – wczesna ciąża 5-10 tygodni
- II – diagnostyka prenatalna 11-14 tygodni
- III – ocena bliźny po cięciu cesarskim, patologia łożyska
- IV – ultrasonografia w okresie okołoporodowym
- V – niepłodność
- VI – wady rozwojowe
- VII – rak jajnika, rak gruczołu piersiowego, ultrasonografia w uroginekologii

Możliwości prezentacji i przysyłania prac:

- streszczenie i model plakatu elektronicznego
- praca do publikacji w ginekologii polskiej według zasad GP
- Wyróżnione streszczenia i prace prezentowane w poszczególnych sesjach tematycznych
- Plakaty elektroniczne będą prezentowane na ekranach telewizyjnych przez cały okres kongresu
- Publikacja streszczeń w materiałach kongresu

**Zapraszamy**  
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