

The Role of Acupressure in Reducing Labor Pain and Duration of Childbirth

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Abstract

Labor pain is one of the most intense forms of acute pain experienced by women during childbirth. While pharmacological methods such as epidural analgesia and opioid administration are widely used for pain relief, they may be associated with side effects including hypotension, prolonged labor, restricted mobility, and potential neonatal complications. Growing interest in non-pharmacological and supportive childbirth practices has led to increased exploration of complementary techniques such as acupressure. Acupressure, derived from traditional East Asian medicine, involves applying manual pressure to specific acupoints believed to regulate energy flow and stimulate physiological responses. In obstetric practice, commonly used points include LI4 (Hegu), SP6 (Sanyinjiao), and BL32 (Ciliao), which are associated with pain modulation and uterine activity. This study examines the role of acupressure in reducing labor pain intensity and influencing the duration of childbirth.

Keywords: Labor Pain; Childbirth; Acupressure Therapy; Non-Pharmacological Pain Relief

Introduction

Labor is a natural physiological process, yet it is commonly associated with significant pain and physical stress. The intensity of labor pain varies among women and is influenced by factors such as uterine contractions, cervical dilation, fetal descent, psychological state, cultural background, and previous childbirth experience. Severe labor pain can lead to maternal exhaustion, anxiety, increased catecholamine release, and potentially prolonged labor. Effective pain management is therefore an essential component of safe and positive childbirth care. Pharmacological methods, including epidural anesthesia, spinal analgesia, and systemic opioids, are widely used to manage labor pain. While these approaches can provide substantial relief, they may also be associated with side effects such as hypotension, motor block, prolonged second stage of labor, restricted maternal mobility, and potential neonatal respiratory depression. In addition, some women prefer to avoid medical interventions and seek more natural or holistic approaches to childbirth. In recent years, non-pharmacological pain management techniques have gained increasing attention in obstetric practice. Methods such as breathing exercises, hydrotherapy, massage, continuous labor support, and acupressure are being integrated into maternity care settings to enhance maternal comfort and satisfaction. These techniques aim to reduce pain perception, promote relaxation, and support the

physiological progress of labor without interfering with the natural birthing process. Acupressure is a non-invasive technique derived from traditional East Asian medicine that involves applying manual pressure to specific acupoints on the body. In obstetrics, commonly stimulated points include LI4 (Hegu), SP6 (Sanyinjiao), and BL32 (Ciliao), which are believed to influence pain modulation and uterine activity. From a biomedical perspective, acupressure may stimulate endorphin release, regulate autonomic nervous system activity, improve local circulation, and enhance uterine contractions, potentially contributing to reduced pain intensity and shorter labor duration. Given the growing emphasis on respectful maternity care and patient-centered approaches, evaluating the role of acupressure in reducing labor pain and influencing childbirth duration is clinically relevant. This study aims to examine existing evidence regarding the effectiveness, safety, and practical application of acupressure as a supportive intervention during labor.

Physiology of Labor and Mechanisms of Labor Pain

Labor is a complex physiological process that involves coordinated hormonal, muscular, and neurological events leading to the delivery of the fetus and placenta. It is typically divided into three stages: cervical dilation, fetal expulsion, and placental delivery. Each stage is associated with distinct physiological changes and varying patterns of pain.

1. Hormonal Regulation of Labor

Labor onset is regulated by a cascade of hormonal interactions. Oxytocin, released from the posterior pituitary gland, stimulates rhythmic uterine contractions. Prostaglandins produced in the uterus and fetal membranes promote cervical ripening and enhance uterine contractility. Estrogen levels rise near term, increasing uterine sensitivity to oxytocin, while progesterone influence declines.

These hormonal shifts ensure coordinated contractions and progressive cervical dilation, essential for effective labor progression.

2. Uterine Contractions and Cervical Dilation

During the first stage of labor, regular uterine contractions cause effacement and dilation of the cervix. Contractions temporarily reduce uterine blood flow, leading to transient ischemia of uterine muscle fibers. This ischemia, combined with stretching of cervical tissues, activates pain receptors.

Pain signals from the uterus and cervix are transmitted primarily through visceral afferent fibers entering the spinal cord at thoracic (T10–T12) and lumbar (L1) levels.

3. Fetal Descent and Somatic Pain

In the second stage of labor, as the fetus descends through the birth canal, stretching and pressure affect the vagina, pelvic floor, and perineum. This produces somatic pain, which is sharper and more localized than visceral pain. These pain impulses are transmitted via the pudendal nerve to sacral spinal segments (S2–S4).

4. Neurophysiology of Labor Pain

Labor pain involves both peripheral and central mechanisms. Nociceptors in uterine and pelvic tissues respond to mechanical stretching, pressure, and ischemia. These signals travel to the spinal cord and ascend to higher brain centers, where they are processed and perceived as pain.

Emotional and psychological factors such as fear, anxiety, and previous childbirth experience can amplify pain perception through activation of the sympathetic nervous system. Increased catecholamine release may reduce uterine efficiency and potentially prolong labor.

5. Endogenous Pain Modulation

The body possesses intrinsic pain-modulating systems involving endorphins and other endogenous opioids. During labor, endorphin levels rise, providing a natural analgesic effect. However, when pain becomes overwhelming or stress levels are high, these natural mechanisms may be insufficient, leading to increased discomfort and fatigue.

In summary, labor pain arises from a combination of uterine muscle ischemia, cervical stretching, pelvic tissue distension, and neural transmission pathways. It involves both visceral and somatic components and is influenced by hormonal, neurological, and psychological factors. Understanding these mechanisms provides a foundation for evaluating interventions such as acupuncture, which aim to modulate pain pathways and support physiological labor progression.

Conventional Methods of Labor Pain Management

Effective management of labor pain is a central component of modern obstetric care. Conventional approaches primarily involve pharmacological interventions administered in hospital settings. These methods aim to reduce maternal discomfort while maintaining safety for both mother and fetus.

1. Epidural Analgesia

Epidural analgesia is considered the most effective method for relieving labor pain. It involves the injection of local anesthetics, often combined with opioids, into the epidural space of the lumbar spine. This blocks nerve impulses from the uterus and birth canal, significantly reducing pain sensation.

Epidural analgesia provides substantial and sustained relief, particularly during the active and second stages of labor. However, it may be associated with side effects such as hypotension, motor block, prolonged second stage of labor, urinary retention, and increased likelihood of assisted vaginal delivery.

2. Spinal and Combined Spinal–Epidural Analgesia

Spinal analgesia involves a single injection of anesthetic into the subarachnoid space, producing rapid onset pain relief. Combined spinal–epidural (CSE) techniques offer both immediate relief and the option for continued dosing through an epidural catheter.

While highly effective, these techniques require skilled administration and continuous monitoring to prevent complications.

3. Systemic Opioids

Intravenous or intramuscular opioids such as fentanyl, morphine, or pethidine are commonly used when epidural analgesia is not available or desired. These medications act centrally by binding to opioid receptors in the brain and spinal cord, altering pain perception.

Although opioids provide moderate pain relief, they may cause maternal drowsiness, nausea, respiratory depression, and, in some cases, transient neonatal respiratory suppression.

4. Nitrous Oxide (Inhalational Analgesia)

Nitrous oxide, administered through a mask during contractions, offers mild to moderate analgesia and anxiolytic effects. It has a rapid onset and short duration, allowing women to control its use during labor.

While generally safe, nitrous oxide provides less pain relief compared to epidural anesthesia and may cause dizziness or nausea.

5. Regional Nerve Blocks

In certain situations, local nerve blocks such as pudendal nerve block are used to relieve pain during the second stage of labor or for assisted vaginal delivery. These techniques target specific nerves supplying the perineal region.

conventional pharmacological methods provide effective and widely accepted options for managing labor pain. However, they may require continuous monitoring, specialized equipment, and trained personnel. Potential side effects and intervention-related risks have encouraged growing interest in complementary and non-pharmacological approaches, including acupuncture, as supportive strategies in maternity care.

Conclusion

Labor pain is a complex physiological and emotional experience shaped by hormonal activity, uterine contractions, cervical dilation, fetal descent, and individual psychological factors. While conventional pharmacological methods such as epidural analgesia, spinal techniques, systemic opioids, and inhalational agents provide effective pain relief, they may be associated with side effects, increased medical intervention, and limitations in maternal mobility. These considerations have encouraged growing interest in supportive, non-invasive approaches that align with physiological childbirth. Acupuncture has emerged as a promising complementary intervention in obstetric care. By stimulating specific acupoints such as LI4, SP6, and BL32, acupuncture may enhance endogenous endorphin release, regulate autonomic nervous system balance, improve uterine contractility, and reduce pain perception. Evidence from clinical studies suggests that acupuncture can decrease labor pain intensity and may contribute to a shorter duration of labor, particularly during the active phase. Importantly, acupuncture is safe, cost-effective, and simple to administer by trained healthcare professionals or birth partners. It supports maternal participation and may enhance overall satisfaction with the childbirth experience. As maternity care increasingly emphasizes respectful and patient-centered practices, integrating acupuncture into routine labor support offers a valuable adjunct to conventional pain management strategies. Further large-scale randomized controlled trials are needed to standardize application techniques and confirm long-term maternal and neonatal outcomes. Nonetheless, current evidence indicates that acupuncture holds meaningful potential as part of a holistic approach to labor pain management and childbirth care.

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