

Lower Extremity Nerve Injury During Labor and Birth: AWHONN Practice Brief Number 11

An official practice brief from the Association of Women's Health, Obstetric and Neonatal Nurses.

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The information herein is designed to aid nurses in providing evidence-based care to women and newborns. These recommendations should not be construed as dictating an exclusive course of treatment or procedure. Variations in practice may be warranted based on the needs of the individual patient, resources, and limitations unique to the institution or type of practice.

Recommendations

- Comprehensive education for obstetric care providers, including nurses, midwives, physicians, and anesthesia and emergency personnel, is essential for preventing, recognizing, and managing lower extremity nerve injury (LENI, pronounced "LEN-EYE") in childbirth. To reduce the risk of LENI during childbirth, especially in patients receiving neuraxial anesthesia, include the patient in the decision-making process, implement proactive repositioning strategies, and educate patients regarding self-repositioning and neurological signs and symptoms of LENI to report.
- During the postpartum period, health care teams should monitor neurological symptoms such as numbness, weakness, and altered gait and should respond promptly to minimize fall risk and protect physical function, safety, and emotional well-being. Symptoms should be treated with the same urgency and thoroughness as nonobstetric nerve injuries, including timely imaging, specialist referral, physical rehabilitation, and discharge follow-up. Providers must recognize and address the psychological impact of LENI. Mental health screening, emotional support, and access to counseling and therapy should be prioritized to support recovery and well-being.

Background

Lower extremity nerve injury is a rare neurological complication that can occur during childbirth when nerves are compressed, stretched, or otherwise compromised regardless of mode of birth (Todhunter & Thornburg, 2026). The consequences of LENI extend beyond physical impairment. In a 2022 survey of 230 individuals with LENI, 89.6% reported experiencing depression in the first postpartum month and 75.8% reported falls at home, underscoring the injury's impact on both safety and mental health (Sleutel et al., 2022).

Incidence and Recognition

The incidence of LENI ranges from approximately 0.3% to 2% of all births, most commonly due to compression or stretch injuries during delivery, with neuraxial anesthesia contributing to a small proportion of cases (Richard et al., 2017). However, true incidence is likely underreported, as many cases are misdiagnosed or missed due to lack of postpartum follow-up, especially when symptoms are transient or mild (Haller et al., 2017; Richards et al., 2017; Wisner, 2021).

Symptoms vary depending on the affected nerve and may include numbness, paresthesia, pain,

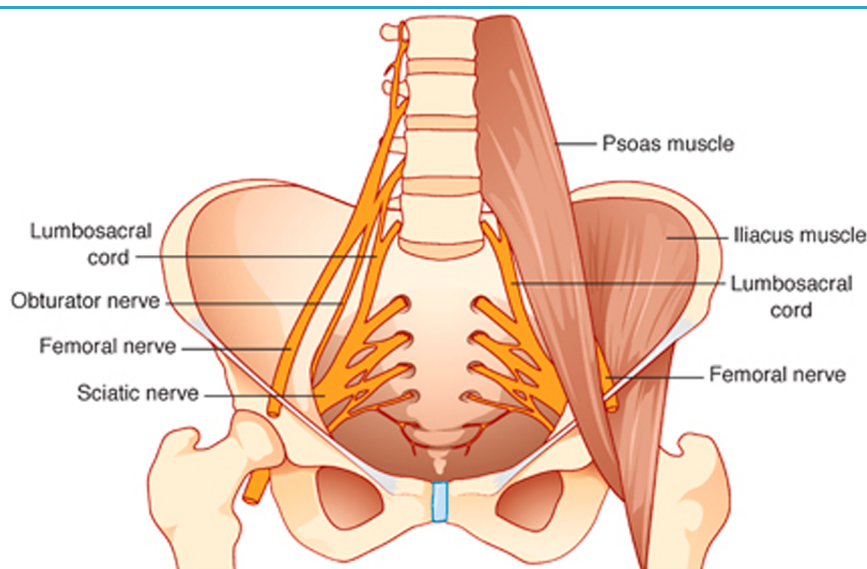
weakness, foot drop, and impaired gait. Injuries may be unilateral or bilateral and range from transient to permanent (Todhunter & Thornburg, 2026).

Mechanisms and Risk Factors

Positions that may contribute to LENI include prolonged lithotomy, hand placement of the patient or clinician during the second stage of labor, operative birth, and fetal head compression against the pelvic wall (Sleutel et al., 2022). Neuraxial analgesia is associated with an increased incidence of LENI compared with those without, although precise risk estimates vary and true incidence is likely underreported (Haller et al., 2017; Sleutel et al., 2020). Patients with neuraxial analgesia are less mobile and may remain in the same position for extended periods of time.

Neuraxial analgesia may also mask pain signals that would otherwise prompt position changes. Additional risk factors for LENI include nulliparity, prolonged second-stage labor (Toledo et al., 2023), macrosomia, and diabetes mellitus, which may predispose nerves to injury through preexisting subclinical neuropathy followed by compression during delivery (Nguyen et al., 2023) (see Figure 1 and Table 1).

FIGURE 1. THE FORMATION OF THE LUMBOSACRAL PLEXUS IN THE PELVIS.



Note the relationship of the psoas major muscle to the plexus. The plexus lies in the path of the descending fetal head where it may be compressed. Used with permission, Springer Nature. Sinnott, M., Fernando, R. Postpartum Neuropathies. *Current Anesthesiology Reports* 13, 49–58 (2023). <https://doi.org/10.1007/s40140-023-00550-8>

Recovery and Prognosis

Lower extremity nerve injury is typically associated with a favorable prognosis. Yang and colleagues (2025) determined that the median percentage of patients with LENI requiring outpatient follow-up care had complete or near-complete resolution by approximately 1 month postpartum. Recovery is influenced by early recognition, appropriate referrals (Yang et al., 2025), and emotional support (Sleutel et al., 2022). However, in patients with diabetes mellitus, nerve regeneration may be delayed due to impaired cellular repair mechanisms (Nguyen et al., 2023). Delayed or inadequate treatment can lead to mobility limitations and increased risk of falls, chronic pain, and significant mental health impacts, including postpartum depression (Sleutel et al., 2022).

Intrapartum Prevention Strategies

Prevention of LENI during labor and childbirth can be optimized by the following recommendations:

1. Obtain a pertinent medical history on admission to identify risk factors for potential neurological complications postdelivery (American Society of Anesthesiologists Committee on Obstetric Anesthesia, 2023).
2. The risks attributed to LENI should be discussed during the process of informed consent (American Society of Anesthesiologists Committee on Obstetric Anesthesia, 2023).
3. Use shared decision-making with the patient. Providers benefit from training in respectful maternity care, including validating patient concerns and offering

empathetic communication (Association of Women's Health, Obstetric and Neonatal Nurses, 2022).

4. Provide education to support safe positioning and early symptom recognition, including the following:
 - selecting comfortable labor positions;
 - repositioning frequently (self or with support) to reduce nerve compression; and
 - reporting changes in pain, sensory, or motor function during labor and postpartum (American Society of Anesthesiologists Committee on Obstetric Anesthesia, 2023).
5. Reposition lower extremities frequently, especially during a prolonged second stage of labor (e.g., every 10–15 min), to reduce compression risk (Farooq et al., 2022).
6. Implement proactive positioning strategies:
 - Limit thigh and knee flexion to less than 90 degrees, especially during abduction and external rotation, to reduce nerve compression (Farooq et al., 2022; Wisner, 2021).
 - Use neutral or flat leg positioning between pushing cycles (Farooq et al., 2022) and after maneuvers (e.g., McRoberts) to prevent prolonged hyperabduction (e.g., frog leg) (Wisner, 2021).
 - Reposition hands frequently during the second stage of labor, using flat hands instead of fingertips to avoid sustained deep pressure directly posterior to the knees (Farooq et al., 2022; Wisner, 2021).
 - Ensure that legs are not resting against hard surfaces such as bed rails and stirrups.

TABLE 1 COMMONLY AFFECTED NERVES

Nerve	Position/Risk Factor	Mechanism	Sensory Changes	Motor Changes
Lateral femoral cutaneous	Retraction during cesarean birth, tight belts, clothing, high body mass index, and edema	Compression under/at the inguinal ligament from prolonged hip flexion/abduction	Paresthesia pain and burning in the anterolateral thigh	No motor deficit or weakness
Femoral	Thigh flexion, retraction during cesarean birth	Compression under/at the inguinal ligament from prolonged hip flexion/abduction	↓ Sensation/numb anterior thigh, medial calf	Quadriceps weakness, ↓/absent patellar reflex, difficulty in knee extension
Peroneal	Pressure during knee flexion or hyperflexion of knees (e.g., stirrups, hand compression during pushing)	Pressure behind the knee and/or on the fibular head	↓ Sensation to lateral calf and dorsum of foot	Foot drop, dorsiflexion weakness, some eversion weakness
Lumbosacral plexus	Prolonged lithotomy, fetal head, forceps, operative vaginal birth, occiput posterior fetal position	Nerve compression between the bony pelvis and fetus	↓ Sensation to the posterior thigh	Combo deficits: foot drop ± hip adduction ± quadriceps weakness
Obturator	Operative birth, lithotomy position, hematoma formation from pudendal nerve block	Excessive hip flexion	↓ Sensation to the medial thigh	Hip adduction weakness → wide-based gait

Note. Adapted with modifications from Todhunter, L. P., & Thornburg, L. L. (2026). Neurologic disorders in pregnancy. In N. H. Troiano, S. McMurtry Baird, & R. L. Cypher (Eds.), *High-risk & critical care obstetrics* (5th ed., p. 386). Wolters Kluwer.

- Document details of labor positioning, including specific positions used and frequency and duration of changes (Sleutel et al., 2020).
- Provide ongoing assessment to reduce the risk of factors that may contribute to LENI, and monitor for the adequacy of pain relief, changes in vital signs, and level of motor blockade (e.g., Bromage scale, straight leg raise test).
- Continue monitoring motor function during the postpartum period, especially in those who received neuraxial analgesia (American Society of Anesthesiologists Committee on Obstetric Anesthesia, 2023). If the motor block persists beyond 4 hours after the last dose of anesthetic, consult an anesthesia provider.
- Incorporate the emotional impact of LENI into patient education.
- Initiate timely referrals for physical therapy, neurology, and mental health support (American Society of Anesthesiologists Committee on Obstetric Anesthesia, 2023; Sleutel et al., 2022).

Postpartum Care

Postpartum patients may report LENI symptoms shortly after birth or once sensation returns following neuraxial analgesia. Structured

postpartum assessment and support can reduce fall risk, promote recovery, and improve physical and emotional well-being.

- During routine postpartum care, evaluate neurological symptoms such as unusual lower extremity weakness, numbness, gait changes, pain, foot drop, and loss of function (Richards et al., 2017; Sleutel et al., 2020, 2022). Report any abnormal findings in lower extremity assessments, including mobility impairments and relevant anesthesia-related assessment findings, to the anesthesia and obstetric health care providers (American Society of Anesthesiologists Committee on Obstetric Anesthesia, 2023).
- Assess weight-bearing ability before ambulation. Use a validated fall risk scoring tool, preferably an obstetric-specific one (Hale et al., 2020). Supervise initial ambulation and implement fall precautions. If neurological deficits are present, continue to provide assistance with ambulation; this may include a mobility aid, a gait belt, and additional personnel. Individuals with LENI might be unable to safely ambulate or care for their newborns independently.
- Ensure a multidisciplinary approach to care; initiate early referrals to neurology, physical therapy, and/or occupational therapy to support safe mobility and recovery (Nguyen et al., 2023; Sleutel et al., 2020).

4. Screen for perinatal mental health conditions, including postpartum depression and anxiety. Provide anticipatory guidance and refer to mental health services and support groups. Educate patients on the emotional impact of LENI and validate patient concerns (Sleutel et al., 2022; Wisner, 2021).
5. Answer questions and provide education regarding recurrence risk and strategies to prevent LENI in future pregnancies (Haller et al., 2017; Todhunter & Thornburg, 2026; Yang et al., 2025).
6. Document and ensure safe discharge planning with appropriate equipment such as a cane, a walker, a wheelchair, leg/foot braces, and a shower chair (Farooq et al., 2022; Sleutel et al., 2022), and referrals for home care support as needed (Sleutel et al., 2022; Toledo et al., 2023).

AWHONN Context Statement

AWHONN recognizes the existence of diverse gender identities and acknowledges that patients might not identify as women, exclusively or otherwise. AWHONN strives to use gender-inclusive language where possible. In some instances, words like “women” (and the related pronouns “she” and “her”) have been retained for accuracy (e.g., to preserve the terminology of a published study) and specific case scenarios. To provide appropriate, respectful, and sensitive care, the health care provider is encouraged to always ask individuals what words they use to describe themselves, their bodies, and their health care practices.

Acknowledgment

AWHONN gratefully acknowledges Margie Bridges, DNP, ARNP-BC, RNC-OB; Cheryl Parker, DNP, CRNA, RNC-OB, FAWHONN, FAANA; Kandice Perez, DNP, RNC-OB; and staff members Caitlin Goodwin, DNP, APRN-CNM; and Susan Hale, DNP, MSN, RNC-OB, C-EFM, C-ONQS, C-OBE, EBP-CH, CHSE, who contributed to portions of this revised position statement.



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