Obstetric Foot Drop: Two Case Reports

Tinu Philip[1*], Neena Baby[2], Kunjamma Roy[3] and Rekha G Muricken[3]

[1]Department of Obstetrics and Gynecology, Royal Oman Police Hospital, Muscat, Oman

[2]Department of Neurology, Renai Medicity Multi Super-Specialty Hospital, Kerala, India

[3]Department of Obstetrics and Gynecology, Believers Church Medical College Hospital, Kerala, India

Received: 21 August 2024

Accepted: 28 October 2024

*Corresponding author: tinuphilipdr@gmail.com

DOI 10.5001/omj.2027.32

Abstract

Foot drop is a rare and under-reported neurological complication in women following childbirth. We present two cases of foot drop in the peripartum period, both involving common peroneal nerve injury. Both were vaginal deliveries without regional analgesia. Clinically both lesions were localized to common peroneal nerve injury. The diagnosis was supported by magnetic resonance imaging (MRI) of lumbosacral spine and nerve conduction studies. Both patients completely recovered following short term oral steroids and physiotherapy. Both patients had the typical risk factors for foot drop: viz., nulliparity, short stature, higher fetal weight, and prolonged flexed knee position during labor. Our cases highlight the importance of a thorough neurological evaluation, individualized obstetric management, and consideration of alternative birthing positions to prevent such injuries. While steroids appear promising in the treatment of peripheral neuropathies, further studies are needed to clarify their long-term benefits. Future obstetric plans will have to be individualized, especially for patients with higher risk factors for foot drop, for whom caesarean section could be considered.

Keywords: Common Peroneal Nerve; Foot Drop; Nerve Injuries; Nerve Conduction Studies; Birthing Positions; Steroids; Caesarean Section

Introduction

Obstetric foot drop is a rare complication of labor. The incidence of postpartum lower limb nerve injuries is less than 1%.[1] Commonly affected nerves, in the order of frequency, are lateral cutaneous nerve of the thigh, femoral nerve, common peroneal nerve, and lumbosacral plexus.[2] Superficial location of common peroneal nerve around fibular head makes it particularly prone for injury.[3] Most obstetric foot drop cases are unilateral; bilateral ones are rare.[4,5]

Anatomically, the superficial branch of the common peroneal nerve (L5-S1) lies laterally at the neck of the fibula and innervates the evertors of the ankle (peroneus longus and brevis).The superficial branch provides sensory innervation to the mid and lower parts of the lateral aspect of calf and dorsum of the foot. The deep branch of the peroneal nerve supplies dorsiflexors of the ankle and sensations over interdigital space between the first and second toes. Injury at the fibular neck usually affects both superficial and deep branches.[6] Injury to the superficial branch results in weakness of foot eversion and leads to high stepping gait with slapping of foot whereas injury to the deep branch causes foot and toe drop.

Clinical presentation depends on the nerve involved and the level of injury. Though prognosis is good, incidents like foot drop can cause stress and anxiety for the patient and her family. Here we present two cases of common peroneal nerve palsies in peripartum period and their management.

Case Report

Case one

24-year-old primigravida, height 151 cm and body mass index (BMI) 27, underwent induction of labor (IOL). The induction-to-delivery interval was 11 hours, with an active phase of 2.5 hours and a second stage of 70 minutes. She delivered a 3.7 kg baby vaginally without assistance. After delivery, she received an intramuscular injection of Syntocinon® on the left buttock.

During the second stage of labor, she reported difficulty stabilizing her left leg along with left foot weakness. Examination revealed sensory loss over the lateral aspect of the lower left leg and foot, weakness in dorsiflexion (power grade 1/5), mild weakness in plantar flexion (4/5), and impaired foot eversion [Figure 1]. Hip abduction, hamstrings, and deep tendon reflexes were normal. There was no significant back pain or radicular pain, and she had no history of regional analgesia or back injury.

Clinical findings localized the lesion to common peroneal nerve. Nerve conduction studies (NCS) performed on post-natal day 2 were normal. Magnetic resonance imaging (MRI) of the lumbosacral spine showed no disc bulge or canal stenosis. She was started on oral prednisolone (1 mg/kg/day), tapered over one month. Repeat NCS on postpartum day 21 was found normal with normal F waves of peroneal nerves, and she showed significant clinical improvement [Figure 2].

Figure 1: Absence of dorsiflexion of the left foot (patient 1).

Figure 2: Complete resolution of foot drop on postpartum day 21 (patient 1).

Case two

27-year-old primigravida (height 158 cm and BMI 24) underwent IOL. Induction-to-delivery interval was 12 hours, with a 3-hour-long active phase and a 35-minute-long second stage of labor. She delivered a 3.5 kg baby vaginally, unassisted. After delivery, an intramuscular Syntocinon injection was administered in the left buttock.

After 24 hours of delivery, she reported difficulty walking, with a high steppage gait in the left foot. Examination revealed weak left ankle dorsiflexion, eversion with weakness in toe extension, and sensory impairment over lateral foot. The rest of neurological examination including ankle jerk was normal. She had no history of regional analgesia or back injury.

Clinically, the lesion was localized to the common peroneal nerve. NCS on day 3 was normal. Follow up NCS was not done at the patient's request; an MRI was planned if there was no improvement. She was treated with oral steroids, physiotherapy, and foot exercises, and completely recovered within six weeks postpartum.

Discussion

Cases of common peroneal neuropathy after vaginal delivery tend to be under-reported.[7] Risk factors for obstetric foot drop include nulliparity, short stature, higher fetal weight, fetal malposition, and prolonged second stage of labor; both our patients had these risk factors except prolonged labor.[1] History of back injury or any neurological condition increases the risk. In addition, nerve injuries may go unnoticed in patients receiving labor analgesia.[8]

Sciatic nerve injury from intramuscular injections involves weakness in hip flexion and plantar flexion owing to tibial nerve involvement. L5 radiculopathy causes foot drop with associated hip abduction weakness, while lumbosacral plexus injuries present with more proximal lower-limb involvement.

A focused history-taking and clinical examination help localize the lesion. Commonest cause is nerve compression at the level of fibular neck due to prolonged positioning. Where foot drop is caused by lumbosacral plexus injury, the proximal lower limb will also be affected. In NCS, motor nerve conduction parameters typically show impairment within 5–7 days after injury, while sensory involvement becomes evident after 11–13 days. This explains the normal NCS in both the current cases, having been done within five days.

F wave study helps in identifying proximal conduction defects including radicular involvement. MRI of the lumbosacral spine helps rule out root involvement. Electromyogram, which identifies denervation/reinnervation patterns, is not routinely performed, but reserved for follow up of cases which do not recover.

Most women deliver in lithotomy position which predisposes to these injuries.[1] Whether this is a preference of the women or healthcare providers need to be studied.[9] Patients should be encouraged to change positions during labor and to delay active pushing till natural urge occurs. Avoiding prolonged flexion of thighs, extreme thigh abduction and external rotation during lithotomy prevents such injuries.

Obstetric foot drop cases have good prognosis unless there is axonal involvement.[1,10] Our patients recovered completely within six weeks. The involvement of neurology team and physiotherapy sessions are cornerstones of management. As these patients have an increased risk of falling, they may need ambulation assistance during the recovery period. Steroids (prednisolone or dexamethasone) are recommended in peripheral nerve injuries due to their anti-inflammatory and regenerative effects.[11]

Though the recurrence risk of obstetric foot drop is unknown, caesarean section is recommended for subsequent deliveries.[12,13]

Conclusion

Although rare, obstetric foot drop must be recognized promptly. Proper and early assessment of any sensory or motor weakness in the peripartum period is essential. Shifting away from traditional supine or lithotomy positions to alternative birthing positions may help prevent such injuries. Training of obstetricians and midwives in alternate birthing positions may facilitate safer labor practices. Most compressive neuropathies resolve with physiotherapy and supportive measures. While steroids provide additional benefit, their role in improving outcome warrants further studies.

Disclosure

The authors declare no conflicts of interest. Informed written consent for publication was obtained from both patients.

References

1. Wong CA. Nerve injuries after neuraxial anaesthesia and their medicolegal implications. Best Pract Res Clin Obstet Gynaecol 2010 Jun;24(3):367-381.

2. O'Neal MA, Chang LY, Salajegheh MK. Postpartum spinal cord, root, plexus and peripheral nerve injuries involving the lower extremities: a practical approach. Anesth Analg 2015 Jan;120(1):141-148.

3. Manoharan A, Suresh SS, Sankaranarayanan L. Proximal fibular osteochondroma producing common peroneal nerve palsy in a post-cesarean section patient. Oman Med J 2013 May;28(3):e047.

4. Sharmila V, Thirunavukkarasu AB. A case of bilateral foot drop following uncomplicated vaginal delivery: a case report and review of literature. Amrita Journal of Medicine 2021 Apr;17(2):63-65.

5. Pham LH, Bulich LA, Datta S. Bilateral postpartum femoral neuropathy. Anesth Analg 1995 May;80(5):1036-1037.

6. Preston DC, Shapiro BE. Electromyography and neuromuscular disorders. 4th ed. Elsevier; 2013.

7. Chow K, Wong K, Gill A. Severe postpartum femoral neuropathy: a case series. J Obstet Gynaecol Can 2021 May;43(5):603-606.

8. Bunch K, Hope E. An uncommon case of bilateral peroneal nerve palsy following delivery: a case report and review of the literature. Case Rep Obstet Gynecol 2014;2014(1):746480.

9. Withers M, Kharazmi N, Lim E. Traditional beliefs and practices in pregnancy, childbirth and postpartum: a review of the evidence from Asian countries. Midwifery 2018 Jan;56:158-170.

10. Brehmer L, Rutfors J. [Postpartum nerve injury is usually not caused by neuroaxial anesthesia–a case report]. Lakartidningen 2017 Jan;114:EAID.

11. Couch B, Hayward D, Baum G, Sakthiyendran NA, Harder J, Hernandez EJ, et al. A systematic review of steroid use in peripheral nerve pathologies and treatment. Front Neurol 2024 Sep;15:1434429.

12. Cohen S, Zada Y. Postpartum femoral neuropathy. Anaesthesia 2001 May;56(5):500-501.

13. Rowland C, Kane D, Eogan M. Postpartum femoral neuropathy: managing the next pregnancy. BMJ Case Rep 2019 Dec;12(12):e232967.