Physical Therapy Management during Pregnancy of a 40-year-old female with T4 ASIA C SCI: A retrospective case report

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Background and Purpose:

Approximately 18,000 new Spinal Cord Injuries (SCIs) occur each year in the United States, with 22% identified as female, most within childbearing age[1]. Complications reported during pregnancy include Urinary Tract Infections, bowel and bladder dysregulation, dysreflexia, spasticity, pressure sores, DVTs, gestational diabetes, and chronic pain.[2] Prior reports call for a multidisciplinary medical team to assist this patient population. However, descriptive accounts of physical therapy management of patients with SCIs during pregnancy are scarce.[3,4] The purpose of this retrospective case report is to provide a descriptive account of a physical therapy plan of care for a 40-year-old patient with a T4 ASISA C spinal cord injury during her pregnancy.

Client History:

The patient presented to physical therapy with a 7-year history of a T4 ASIA C incomplete spinal cord injury. The patient was 12 weeks into her pregnancy with a main complaint of increasing spasticity and pelvic pain. The patient was unable to continue with pharmacological management of spasticity due to concerns about an unfavorable impact on fetal development.

Examination and Systems Review:

- **Cardiovascular &Pulmonary:**
  - **BP** 106/74 mmHg **HR** 73 bpm **SpO_2** 99% **RR** 14 rpm
  - Occasional episodes of Autonomic Dysreflexia
- **Neurological**:
  - Cranial nerves: intact.
  - Sensation intact for B UE's – Inconsistent for light touch and pinprick for trunk and B LE's;
  - Reflexes: Biceps, Triceps, 2+ Patellar and Achilles 3+
  - Muscle Tone: 2-3 fluctuating hamstrings, adductors and plantar flexors
- **Integumentary:**
  - Intact – history of gluteal wound
  - All surgical incisions well healed
- **Musculoskeletal:**
  - Cervical spine – Min limitations with B Rotation and Side bending
  - Lumbar spine: minimal limitations for all planes – hyperlordosis noted with standing position with walker
  - PROM –WNL - B UE & L LE
  - AROM/Strength – B UE - 5/5 throughout
    - B LE – Hip 2-/5, Knee 1/5, ankle 0/5
- **Functional Mobility:**
  - Independent with manual wheelchair propulsion
  - Transfers +/- 2 inch –Independent with pop over
  - SBA for standing with RW and B KAFO's
  - CGA for ambulation x 50 feet / WISCI level 6
  - Functional Reach: Forward: 6.5 inch. Lateral: 7.5 inch
  - Neuro Recovery Scale:
    - Trunk Extension In Sitting: 2B
    - Sitting: 2B
    - Stand: 2B

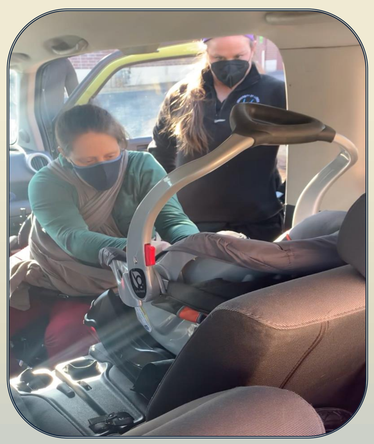
Interventions:

An Activity–Based Therapeutic[5] approach was used to address the patient's mobility needs during her evolving condition. She was seen 1-2 times per week for 20 weeks for 28 visits until week 40 of gestation when the patient delivered her son.
Therapeutic interventions evolved as gestation progressed.
Interventions utilized were:

- Stretching and Weight Bearing: Used to manage spasticity
- Strengthening: Upper body and trunk strengthening to improve functional reaching, trunk control, transfers, and prevention of diastasis recti.
- Cardiovascular Training: Moderate Level -50-60% HR
- Manual Therapy to assist with pelvic alignment and low back pain.
- Activity Based: Functional training to address self-care, functional mobility, and infant care.





Outcomes:

- **Functional Mobility:**
  - Independent with manual wheelchair propulsion and power assist wheels
  - Transfers +/- 2 inch –modified independent with sideboard
  - SBA for standing with a standing wheelchair
  - MOD x 2 for ambulation x 10 feet with B KAFO's/ WISCI level 1
  - Functional Reach: Forward: 4.5 inch. Lateral: 4 inch
  - Neuro Recovery Scale:
    - Trunk Extension In Sitting: 2B
    - Sitting: 2A
    - Stand: 1C
- **Pregnancy Outcomes:**
  - Full-term pregnancy with Vaginal delivery
  - Autonomic dysreflexia episodes minimized and managed
  - Absence of pressure injury
  - Normal gestational weight gain
  - Normal birthweight for the fetus
  - Avoidance of carpal tunnel syndrome

Level of Expected Outcome Goal	Much More than Expected +2	More than Expected +1	Expected Outcome 0	Less than Expected -1	Much Less than Expected -2
Picking up baby from crib (8-10 lbs)	Independent with picking up 12 lb baby from floor	***Independent with picking up 10 lb baby from crib and knee level***	Independence with picking up 8 lb. baby from crib	Able to pick 7 lb baby up from lap level	Unable to pick the baby up, requires total assist
Propelling wheelchair while pushing a stroller	Independent with wheelchair propulsion and pushing stroller on uneven terrain	Independent with wheelchair propulsion and pushing stroller on level surfaces and ramps	***Independent with wheelchair propulsion and pushing stroller on level surfaces and ramps with power assist wheels***	Minimal Assist with pushing of stroller, wheelchair propulsion with power assist wheels	Unable to push a stroller while propelling a wheelchair requires power wheelchair
Placement of car seat in car with baby	Independent with car seat placement in 1 increments	Independent with car seat placement in 2 increments	***Independent with car seat placement in 3 increments***	Minimal Assistance with car seat placement in increments	Unable to place car seat without Moderate Assistance

Discussion

Although pregnancy rates for women with SCI are proportionate to the rates of other women with mobility impairments[6], along with recommendations for an interdisciplinary management approach during pregnancy, physical therapy is not reported in the literature to be part of the approach. Literature is supportive of the inclusion of physical therapy during pregnancy to assist with pain, incontinence, pelvic organ prolapse, and maintenance of muscle tone and cardiovascular fitness. Women with spinal cord injuries who experience pregnancy have unique needs that can be addressed and treated effectively by physical therapists. The findings of this case report demonstrate that tailored physical therapy interventions can impact the health and wellness of both mother and child. and may decrease the rate of complications associated with spinal cord injury and pregnancy. Additional reports are needed to further explore the impact that physical therapy may have on this condition.

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References:

1.National Spinal Cord injury Statistical Center: 2019. Accessed: August, 25, 2023: https://www.nscisc.uab.edu/Public/Facts%20and%20Figures%202019%20-%20Final.pdf
2. Le Liepvre, H., A. Dinh, B. Idiard-Chamois, E. Chartier-Kastler, V. Phé, A. Even, G. Robain, and P. Denys. "Pregnancy in spinal cord-injured women, a cohort study of 37 pregnancies in 25 women." *Spinal Cord* 55, no. 2 (2017): 167-171.
3.Al Rashdi, Hilal, Laurent Soustelle, Saad Ed Dine Fadli, and Stephane Droupy. "Can childbearing spinal cord injury women with continent cutaneous urinary diversion have child?." *Urology Annals* 14, no. 1 (2022): 96.
4.Khalili, Molly, Marie Berlin, Karin Pettersson, Carl Lindgren, Claes Hultling, and Cecilia Ekéus. "Pregnancy, delivery, and neonatal outcomes among women with spinal cord injury in Sweden 1997–2015: A population-based cohort study." *Acta Obstetricia et Gynecologica Scandinavica* 101, no. 11 (2022): 1282-1290.
5.Swaffield, Emma, Lovisa Cheung, Avideh Khalili, Emily Lund, Michelle Boileau, Damian Chechlacz, Kristin E. Musselman, and Cindy Gauthier. "Perspectives of people living with a spinal cord injury on activity-based therapy." *Disability and Rehabilitation* 44, no. 14 (2022): 3632-3640.
6.Iezzoni L, Chen Y, McLain A, Current pregnancy among women with spinal cord injury: finding from the US Spinal Cord Injury Database: *Spinal Cord*. (2015);53:821-826.