

PROCEDURE

1.0 Intrapartum

1.1 Overall Intrapartum Management Recommendations

- Consult the woman's intrapartum care plan as developed prior to admission by the obstetrician, anesthesiologist, urologist, physiatrist, nurse and physiotherapist.
- Perform a Braden Scale assessment of skin integrity risk. Assist or conduct turns and position changes with routine skin assessments q2h to prevent decubitus ulcer formation and an AD episode.
- Ideally, position the woman in a way in that she is tilted off her back. This will prevent aortocaval compression from the uterus.
- Perform regular assessments of fetal position, presentation, and station throughout labour
- Delivery should occur in the high acuity unit which can provide hemodynamic monitoring via an electrocardiogram, pulse oximetry, and/or arterial lines, especially in women with a baseline pulmonary insufficiency.
- Have safety equipment at the bedside including rapid acting antihypertensive medications that are compatible with pregnancy
- Continuous Blood pressure monitoring should be considered during labour and delivery, especially for cervical ripening procedures, in order to detect Autonomic Dysreflexia
- Ensure adequate hydration.
- Monitor temperature. A high temperature may not indicate intra-amniotic infection but may be SCI-related as women do not perspire or release heat in the same way.
- Continuous monitoring of oxygen saturation and heart rate may be required
- Labour delivery in women with SCI can occur safely, most often resulting in a spontaneous onset of labour and vaginal delivery.
 - The decision to undergo a cesarean section should be based on and limited to standard obstetric indications rather than as a default for women with an SCI.
 - A cardinal indication for Ceasearn Section includes intractable AD that is unresponsive to nonpharmacological and pharmacological intervention. Consider that surgery may further incite AD but is the only resolution .

1.2 Onset of labour/premature labour implications

- Women with SCI are encouraged to come to hospital for labour assessment as soon as they suspect any signs or symptoms of labour.
- Early inpatient hospitalization may be recommended for women with an SCI greater than T6 for monitoring of cervical dilation and progression of labour due to the risk of autonomic dysreflexia (AD) and unattended delivery.
- Hospitalization may be required for women at risk for preterm labour.

1.3 Labour induction

- Discussion about planning for birth, and managing the risks going in to labour unattended at home and discussing planning for induction should occur with the woman and her support person(s) during the antepartum period..

2.0. Autonomic Dysreflexia (AD) Management

AD is most common in women with a SCI at or above T6. Approximately 85 – 90% of pregnant women with a SCI at or above T6 are at risk for AD during labour and delivery. Women with no previous history of AD may also be at risk for AD during labour, especially for women with lesions above T5

- Assess for possible triggers that may precipitate AD. These involve any noxious stimuli below the level of the SCI and include but are not limited to
 - a full bladder or bowel,
 - pelvic examinations
 - changing of Foley catheter
 - uterine contractions
 - augmentation with intravenous oxytocin infusions
 - vaginal instrumentation.
- Ask the woman for any individual personal extraneous factors that may trigger AD.
- AD during labour can result in several neonatal complications
 - uteroplacental vasoconstriction,
 - fetal hypoxemia,
 - fetal bradycardia.
- Healthcare providers must be able to differentiate between the clinical manifestations of preeclampsia from AD and initiate the appropriate therapy.

a. Prevention of AD

- Perform pelvic examinations in a semi-sitting position with the woman's head elevated as high as possible. If the woman has a history of severe AD, only perform pelvic exams when absolutely necessary and when there is emergency assistance.
- Avoid the use of cold stirrups or speculums as these may act as triggers.
- Application of local anesthetic gel to the vagina and speculum in non-anaesthetized woman may reduce the risk of AD
- If AD occurs during a pelvic examination, stop the exam, raise the head of the bed as high as possible, and administer rapid-acting antihypertensive agents. Prompt delivery of the baby and placenta may be required if hypertension cannot be controlled. For women with frequent or severe AD, apply a pudendal block or topical anesthetic before pelvic exams

b. Epidural Block as a preventative measure for AD

- Administer adequate intravenous prehydration. Continuous epidural anesthesia at the onset of early labour can act as a prophylaxis for AD during labour and delivery. Bupivacaine and fentanyl have been effective in blocking afferent nerve impulses below the SCI lesion.
 - Fentanyl is ineffective if used as the sole anesthetic agent within the epidural space as it lacks local anesthetic properties and is thus ineffective in preventing AD.
- The epidural catheter may be left in situ during the postpartum period to provide additional anesthesia in preventing AD resulting from postpartum stimuli.
- A regional, spinal, or general anesthesia in addition to prophylactic antihypertensive therapy should be considered before performing any procedures that could stimulate visceral responses and thus an episode of AD.



- In the event that AD occurs during labour despite use of an epidural, treat immediately with antihypertensive medications, a magnesium sulfate injection, and/or expedite the delivery via assisted vaginal delivery or urgent cesarean birth.

c. Acute pharmacological management

- Invasive hemodynamic monitoring with the use of radial artery and central venous catheters may be considered, especially in women with comorbid preeclampsia.
- Administer 10 – 20 mg of oral nifedipine for short-term rapid response. Repeat this in 30 min if blood pressure (BP) remains elevated.
- Nifedipine may also be administered 30 min before any diagnostic or therapeutic procedure known to cause AD.
- Other antihypertensives include
 - intravenous hydralazine
 - Intravenous labetalol
- ACE inhibitors (e.g. captopril), although beneficial in the acute management of AD, are not recommended in pregnancy
 - Caution must be taken with rapid acting antihypertensives due to hypotensive side effects. An acute hypotensive crisis is poorly tolerated by the neonate than is the acute AD-related hypertensive episode.
- Assess the BP every 5 minutes throughout an AD episode until the woman is stable. Careful clinical and electronic monitoring of the fetal status is required.

3.0 Pulmonary function

- Some SCI-related impairments involve altered thoracic excursion. Monitor respiratory function in these women. For women at high risk for respiratory distress, it is essential that they deliver in a tertiary care centre due to availability of ventilatory support.
- For women who are found to have compromised pulmonary function in antepartum may require supplemental oxygenation and pulse oximetry during labour.

4.0 Anesthesia/ Pain Management

- General principles of anesthesia management
 - Anesthesia above the T10 level is needed for a cesarean birth as this allows for adequate AD control
 - Insertion of the epidural catheter may be difficult due to issues in positioning impeded by muscle spasm and inability to maintain a position.
- Anesthesia management in cesarean births
 - Cesarean Section can be performed under regional or general anesthesia although lower rates of maternal and neonatal morbidity is associated with use of regional anesthesia. The amount of general anesthesia required to control AD can result in neonatal depression and uterine atony
 - If general anesthesia is selected, a regional block as supplementary may be considered.
- Physiological Pain pathways
 - The highest level of entry of sensation to the spinal cord from a uterine contraction is at the T10 level. Thus women with a complete SCI above T10 will experience no sensation of pain whereas women with lesions below T10 are likely to have pain during labour. Women with complete lesions above T10 but below T5 will likely experience no pain during labour but may be able to feel uterine contractions due to

increased spasticity, flexor spasms, and clonus. Women with incomplete SCI usually have partial sensation and may have varying mobility.

- d. Pain relief in labour
- Women with an incomplete SCI and a low risk of AD require a minimum of local anesthetic for an episiotomy or repair procedures for both AD and pain control. Most often, these women would have a continuous epidural catheter in situ for prevention of AD.

5.0. Mode of delivery and Related Complications

- Women with SCIs will be able to identify their limitations and abilities regarding labour and delivery. A woman who is able to generate adequate abdominal pressure for urinary and bowel management will have an increased capability of assisting in labour

Assisted vaginal delivery via forceps or vacuum is often required for women with poor abdominal strength

- Changing positions is helpful. Some women with SCI find that pulling their legs up to their chest helps to compress abdominal muscles, thus increasing pushing effectiveness.
- If possible, the woman should deliver in bed to prevent trauma from transfer to other delivery tables. A lithotomy position may not be possible for clients with limited abduction and rotation abilities. Varied positions, including side-lying with flexion of upper leg at the hip may be more feasible in these women.
- For women with a suprapubic catheter and undergoing a cesarean birth, a classic approach is recommended.
- Institute a postoperative thromboprophylaxis regimen to all women with SCI undergoing a cesarean birth. Standard prophylactic dose of a low molecular weight heparin (enoxaparin 40 mg daily or Dalteparin 5000 units q 24 hours) is indicated postoperatively. It is recommended that prophylaxis be continued for up to 6 weeks postoperatively, depending on level of injury.
- Women with SCI have an overall reduced blood volume. Therefore in the instance of postpartum hemorrhage, a lower treatment threshold is recommended.
- Ideally, avoid the use of an episiotomy as it can lead to AD.

6.0 Bladder and bowel care:

- Upon admission, insert a Foley catheter during all stages of labour (except for second stage) to prevent neurogenic bladder distention, and repeated intermittent catheterizations,
- Remove the Foley catheter briefly during the second stage to prevent bladder trauma from bearing down. Re-insert after delivery of the baby .
- Assess the bladder after delivery for latent distension masked by residual neural blockade.

7.0. Considerations for preparing for safe and accessible baby care in the immediate postpartum period

- Never leave a woman with SCI alone with her baby, or provide access for the mother to call for help. Institute a method in which the mother may 'pull' the call bell with her mouth in women higher lesions.
- Provide the mother with a modified crib, such as an overbed crib with frontal access, to facilitate holding and easy access to baby.
- Mothers should be made aware of possible modifications to their diaper changing table and bath so that they are at their level.



- To facilitate breast or bottle-feeding, provide the mother with support for her to be independent with holding the baby such as a sling.
- Facilitate skin-to-skin contact by having a support person remain close to the mother and baby dyad.
- Provide total care for the baby and assist in feeding (including latching of baby on breast, attaching and working breast pump, and administering breast milk via dropper or bottle intermittently). A primary nurse model (1:1 nurse to client ratio) is necessary

DOCUMENTATION

Physician's History
Antenatal Record
Partogram
Interprofessional Notes

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