

# ACOG

Committee on  
Obstetric Practice

Reaffirmed 2019

# Committee Opinion



Number 275, September 2002

(Replaces No. 121, April 1993)

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ISSN 1074-861X

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Obstetric management of patients with spinal cord injuries. ACOG Committee Opinion No. 275. American College of Obstetricians and Gynecologists. *Obstet Gynecol* 2002;100:625-7.

## Obstetric Management of Patients with Spinal Cord Injuries

*ABSTRACT: Effective rehabilitation and modern reproductive technology may increase the number of women considering pregnancy who have spinal cord injuries (SCIs). It is important that obstetricians caring for these patients are aware of the specific problems related to SCIs. Autonomic dysreflexia is the most significant medical complication seen in women with SCIs, and precautions should be taken to avoid stimuli that can lead to this potentially fatal syndrome. Women with SCIs may give birth vaginally, but when cesarean delivery is indicated, adequate anesthesia (spinal or epidural if possible) is needed.*

Approximately 11,000 new spinal cord injuries (SCIs) are reported per year in the United States. More than 50% occur in persons between the ages of 16 and 30 years, with women constituting approximately 18% of these cases. Effective rehabilitation and modern reproductive technology may increase the number of these patients considering pregnancy.

Ideally, women with SCIs who are considering pregnancy should have a preconceptional evaluation. Chronic medical conditions and the woman's adaptation to her disability must be evaluated. Baseline pulmonary function and renal studies may be appropriate. Also, it should be recognized that fertility in these patients usually is not affected, and family planning should be discussed.

It is important that obstetricians caring for such patients acquaint themselves with the problems related to SCIs that may occur throughout pregnancy. Common complications affecting women with SCIs include urinary tract infections, decubital ulcers, impaired pulmonary function, and autonomic dysreflexia. Additional potential complications include anemia, deep vein thrombosis, pulmonary emboli, and unattended delivery.

### Common Complications

#### *Urinary Tract Infections*

Asymptomatic bacteruria occurs in a majority of patients with SCIs during pregnancy. The incidence of lower urinary tract infections and pyelonephritis

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also is increased. Incomplete bladder emptying, neurogenic bladder, urinary diversions, and indwelling catheters contribute to this risk. Frequent urine cultures or antibiotic suppression are indicated.

### ***Decubital Ulcers***

Decubital ulcers are a frequently preventable complication in women with SCIs. During pregnancy, women with SCIs should have routine skin examinations, frequent position changes, adequate padding, and appropriately sized medical equipment (eg, wheelchairs). Weight gain and edema also may contribute to decubital ulceration.

### ***Pulmonary Function***

Impaired pulmonary function may be present in women with high thoracic or cervical spine lesions. For patients with borderline function, ventilatory support and meticulous attention to pulmonary care is necessary during pregnancy and delivery. Supine positioning may further impair pulmonary function. Serial assessments of vital capacity will help assess the need for ventilatory assistance.

### ***Autonomic Dysreflexia***

Autonomic dysreflexia is the most significant medical complication occurring in women with SCIs (85% of patients with lesions above T5 through T6 level). This condition is attributed to a loss of hypothalamic control of sympathetic spinal reflexes and occurs in patients with viable spinal cord segments distal to the level of injury. It can occur in patients with incomplete transections. In susceptible patients, afferent stimuli from a hollow viscus (eg, the bladder, bowel, or uterus) and from the skin below the level of the lesion or of the genital areas ascend in the spinothalamic tracts and posterior columns, which causes reflex sympathetic activation unmodified by the supraspinal centers. The resultant catecholamine release and vasoconstriction lead to hypertension associated with headache, bradycardia, tachycardia, cardiac arrhythmia, sweating, flushing, tingling, nasal congestion, piloerection, and, occasionally, respiratory distress. Uteroplacental vasoconstriction may result in fetal hypoxemia.

It is important to avoid stimuli that can lead to autonomic dysreflexia, such as distension or manipulation of the vagina, bladder, urethra, or bowel. During labor, the symptoms of autonomic dysreflexia are commonly synchronous with uterine contractions. The severity of the syndrome during labor

ranges from unpleasant symptoms to hypertensive encephalopathy, cerebrovascular accidents, intraventricular and retinal hemorrhages, and death. Therefore, continual hemodynamic monitoring during labor is mandatory in all at-risk patients.

Although patients with SCIs may perceive no pain during labor, anesthesia should be used to prevent autonomic dysreflexia. Spinal or epidural anesthesia extending to the T10 level is the most reliable method of preventing autonomic dysreflexia by blocking stimuli that arise from pelvic organs. Therefore, antepartum consultation with an anesthesiologist and the establishment of a plan for induction of epidural or spinal anesthesia at the onset of labor is imperative. If autonomic dysreflexia occurs before a regional anesthetic is available or occurs despite regional anesthesia, hypertension may be treated with antihypertensive agents that have a rapid onset and short duration of action (eg, sodium nitroprusside or nitroglycerin), ganglionic blocking agents (eg, trimethaphan), adrenergic blocking agents (eg, guanethidine), or a direct vasodilator (eg, hydralazine).

If there is evidence of autonomic dysreflexia during the second stage of labor, delivery can be expedited by forceps or vacuum assisted delivery with adequate anesthesia. If autonomic dysreflexia during labor cannot be controlled by any means, cesarean delivery may be necessary. Adequate anesthesia, spinal or epidural if possible, is needed for cesarean deliveries in all patients with SCIs.

### **Ascertainment of Labor**

Women with SCIs may give birth vaginally. Women with spinal cord transection above the T10 segment may have painless labor. In a patient with total transection at a lower thoracic level, labor pain may be so reduced that the patient is unaware of uterine contractions, especially during sleep. However, symptoms under the control of the sympathetic nervous system (eg, abdominal or leg spasms, shortness of breath, increased spasticity) concurrent with uterine contractions may make patients aware of labor. Patients should be instructed in uterine palpation techniques to detect contractions at home.

### **General Support**

Excess weight gain may increase the difficulty of moving and transporting pregnant women with SCIs. Muscle-strengthening exercises may be rec-

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ommended for the upper extremities of non-quadruplegic patients. For all patients, elevation of the legs and range-of-motion exercises may be implemented as pregnancy advances. The possibility of an increased need for social support services also should be addressed.

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