
Sex, Sexuality, and Fertility for Women with Spinal Cord Injury

Jenelle E. Foote

Women who have sustained spinal cord injury (SCI) often experience changes in regard to sex, sexuality, and fertility. Information is now available regarding the neurophysiology of female sexual function as well as the neuropathology affecting sexually active women with SCI. This article reviews the contemporary literature in terms of sexual function, sexual interest, fertility, and pregnancy for women with SCI. Key words: *female sexual dysfunction, fertility, pregnancy, spinal cord injury, SCI, sex, sexual activity, sexual intercourse, sexuality, sexual function*

The changes in bowel and bladder function for many patients with spinal cord injury (SCI) are immediate and dramatic. In contrast, the changes in sex, sexuality, and fertility are often more subtle, often becoming apparent to the patients only after discharge from the rehabilitation center. After discharge, the individuals attempt to resume their roles at home and in the community that defined their sense of self. In this article, we will explore what is known in regard to the changes in sex, sexuality, and fertility in women who have sustained an SCI.

Sex

An understanding of the nervous systems' role in sex and sexuality can enable an appreciation of the deficits that occur in women with SCI. Although much progress has been made in regard to the understanding of the neural control of male sexual function, such studies of female sexual function are not as advanced. In an elegant review of the re-

search in female sexual function, McKenna¹ drew analogies from relevant research in men. Female sexual responses, to include clitoral and vaginal vasocongestion, are organized at the spinal level. Such responses involve coordination of sympathetic, parasympathetic, and somatic efferents. An interneuronal system coordinates this efferent activity. These spinal sexual centers can be activated by afferent stimulation from the genitals (via the pudendal nerve) or inhibited by visceral afferents (via the pelvic and hypogastric nerves). Sites within the brainstem and hypothalamus exert excitatory and in-

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hibitory control to these spinal sexual centers. The spinal reflex mechanisms are relatively unaffected by gonadal hormones, with hormones primarily affecting forebrain sites.

With a basic understanding of the nervous system's role in sexual response and an appreciation of the exact level and degree of a woman's SCI, researchers can identify certain aspects of the sexual response that are altered with specific patterns of SCI. Sipski²⁻⁶ and colleagues have conducted laboratory studies of arousal and orgasm among women with different levels and degrees (i.e., complete and incomplete) of SCI. Their responses have been compared with able-bodied control participants. Parameters measured in such studies include heart and respiratory rate, blood pressure, vaginal pulse amplitude, subjective arousal, and subscores on the Derogatis Sexual Functioning Inventory. In able-bodied women, the arousal phase of sexual response is characterized by lubrication of the vagina and clitoral swelling, as well as increases in heart rate, respiratory rate, and blood pressure. Autonomic responses, such as increased heart rate, respiratory rate, and blood pressure were generally similar between participants with and without SCIs. Because the upper chest receives some innervation from the cervical roots, even women with low complete cervical injuries may have some breast changes and the "sexual flush" on the chest wall.

Complete lesions above the level of the sexual spinal centers would be expected to prevent psychogenic arousal. In fact, studies of sexual arousal indicate that preservation of pinprick sensation in the T11-T12 dermatomes is associated with psychogenic vaginal lubrication. In addition, women with complete upper motor neuron lesions (UMN) above the sacral segments have preservation of reflex lubrication, which sug-

gests that arousal is dependent on an intact sacral reflex arc. Women with incomplete UMN lesions may have the capacity for reflex as well as psychogenic lubrication. Women with complete lower motor neuron (LMN) lesions would not be expected to experience the symptoms characteristic of arousal. Studies of orgasm suggest that orgasm, like arousal, is also a reflex response and is dependent on an intact sacral reflex arc. While interventions that interfere with the sacral reflex arc, such as sacral rhizotomy, can impair women's ability to experience arousal or to achieve orgasm, electrical stimulation may be used to facilitate sexual response.²⁻⁶

Sexuality

Although most individuals experience a decrease in the frequency of sexual activity after SCI, most individuals who were sexually active before SCI remain so. Despite reports that sexual satisfaction and sexual desire decline for most individuals, positive sexual adjustment is reported by a majority (vide infra).

In a multicenter study authored by Jackson and colleagues,⁷ a questionnaire of women's reproductive health was administered to 472 women at least 1 year after SCI. The participants' responses after SCI were compared to their responses regarding their pre-SCI status. Sexual intercourse before SCI was reported by 87% of the participants, while only 67% reported having intercourse after SCI. Years post SCI was a significant predictor of sexual intercourse, with 49% of women 1 year post SCI, 65% of women 2–10 years post SCI, and 76% of women 11 or more years post SCI reporting sexual intercourse. Level of injury was also predictive of inter-

course: 62% of cervical, 70% of thoracic, and 82% of the lumbar/sacral group reported having had intercourse after injury. Equivalent percentages of women with complete and incomplete injuries were sexually active after SCI. When compared to pre-SCI status, significant problems associated with sexual intercourse included lack of lubrication and lack of enjoyment.⁷

Concerns specific to post-SCI status included difficulty with positioning (41.9%), increased spasticity (26.3%), bladder incontinence (16.5%), and autonomic dysreflexia (11.4%). Among the 315 women who were sexually active after SCI, 54.2% reported experiencing orgasm. In this group, 71% reported experiencing pleasure above the level of injury during sexual activity.⁷

Fisher et al.⁸ published a prospective longitudinal study to assess changes in sexuality concerns in individuals after an acute SCI. Forty individuals completed The Sexual Health Needs Survey at initial rehabilitation and at 6-, 12-, and 18-months after discharge from the hospital. Of the population studied, 20% were women. The questionnaire was developed by members of the National Institute on Disability Rehabilitation Research Model Center and includes questions regarding sexual activity, concerns, interest, and adjustment as well as partner sexual factors and educational needs. By 6 months after discharge, the respondents had made the most significant changes in sexual activity and sexual interest that they would achieve during the study period. The respondents' greatest concerns remained their partners' and their own sexual satisfaction. The respondents showed an increase in their interest in receiving sexual information and counseling during the interval from inpatient rehabilitation to 6 months post discharge.

The authors concluded that this change corresponded to a more realistic recognition of the decline in sexual activity, function, and interest that generally occur after an SCI. The authors suggested that sexual health interventions should be readily available to clients at about 6 months after inpatient rehabilitation. Inclusion of sexual partners in the intervention process was also recommended.

Sipski and Alexander⁹ administered an 80-item questionnaire to assess pre-SCI and post-SCI sexual functioning in 25 women. Where intercourse was the favorite activity before SCI, kissing, hugging, and touching were preferred after SCI.

Treatment of sexual dysfunction after SCI involves informing patients about the impact of their SCI on sexual functioning. Suggestions to women to empty the bladder prior to sex and information about the means to prevent autonomic dysreflexia are relevant. The purpose of counseling is to help the patient foster a healthy body image and to enable the individual to view herself as a sexual being.¹⁰ In addition, treatment for women with SCI who have sexual dysfunction should improve the ability of the woman to become aroused and to achieve orgasm.⁶ A recent double-blind, placebo-controlled study of women with SCI indicated that sildenafil may improve female sexual arousal.¹¹ Another prospective, multicenter study to evaluate the role of sildenafil is in progress.

The choice of birth control for women with SCI should be tailored to the patient's medical history and abilities. For example, a previous history of deep venous thrombosis is considered a contraindication to the use of oral contraceptives. In one study, 4 of 70 women with SCIs who took birth control pills for an undetermined period of time developed thrombophlebitis.¹² Contracep-

tives containing low doses of progestin alone are associated with a lower risk of venous thrombosis and may represent a safer pill for this population. The use of cervical diaphragms, caps, or sponges is not recommended for women with decreased uterine sensation or limited hand dexterity. Because pelvic inflammatory disease has been associated with intrauterine device use, women who have recurrent symptomatic urinary tract infections should use such devices with caution. The use of levonorgestrel implants in women with SCIs has not yet been studied, although these may prove to be safe for this group of women. The barrier method of male contraception may be the safest option for many patients with the added benefit of protection against sexually transmitted diseases.^{6,13}

In Jackson's survey of 472 women, 70.3% of the sexually active women reported using birth control. The most commonly chosen methods included condoms (38.9%), sterilization (26.1%; most had chosen surgical sterilization prior to the injury), birth control pills (22.1%), and spermicide (15.1%).⁷

Fertility and Pregnancy

In general, SCI is unlikely to adversely affect the ability of a woman to conceive. Immediately after the onset of SCI, 60% of women have amenorrhea. By 6 months and 1 year post injury, 50% and 90%, respectively, of women have resumption of their menstrual cycles. The age of menarche occurs normally in girls who have been injured as children.¹⁴

There is no increase in pregnancy loss in women injured the first trimester when compared to able-bodied women. For pregnancies in women who already have SCI, 8% spontaneously abort and more than 10% are electively terminated.¹⁴

A number of conditions common to able-bodied women during pregnancy may be more problematic for pregnant women with SCI, such as urinary tract infection. These infections may be prevented by vigilance to a bladder program that prevents overdistention. More frequent catheterization and special care to prevent kinking of the indwelling catheter are two components of this type of program.¹⁵ Because most women with indwelling catheters and on intermittent catheterization experience asymptomatic bacteriuria, the expectation that sterile urine can be maintained in pregnancy may be unrealistic. Certainly, symptomatic urinary tract infections should be treated. A limited work-up to exclude anatomic causes and/or a renal ultrasound to exclude upper tract stones or obstruction, for example, may be indicated if frequent symptomatic urinary tract infections occur. In such circumstances, consideration should also be given to the institution of antimicrobial prophylaxis, particularly in the last trimester, because of the increased risk to the fetus at this stage.

Constipation, while not an uncommon problem for able-bodied pregnant women, may be more problematic for pregnant women with SCI who already have decreased bowel motility. Adequacy of fluid intake, maintenance of physical activity, a high-fiber diet, stool softeners, and compliance with a regular bowel program may prevent and treat this problem.¹⁴

Pregnant SCI women are at special risk for the development of thrombophlebitis. Both the conditions of pregnancy and SCI are associated with a greater than average incidence of thrombophlebitis, as a consequence of increased circulating clotting factors and immobility, respectively.¹⁴

Other symptoms unique to SCI can be exacerbated by pregnancy. These include decreased vital capacity, pressure ulcers (30% incidence), increased spasticity, and autonomic dysreflexia in women with injuries above T6.¹⁴

Delivery before 37 weeks' gestation occurs to approximately 30%–40% of women with SCI. Determination of the onset of labor may be difficult for women with injuries at T10 and above because of their inability to feel the uterine contractions. In such circumstances, the onset of labor may be heralded by increased spasticity, or for women with injuries T6 and above, autonomic dysreflexia. Almost 90% of women have dysreflexia during labor; this complication has been noted in women with lower thoracic injuries as well.

Differentiation of the hypertension of autonomic dysreflexia from the hypertension accompanying pre-eclampsia in such situations may be critical. In contrast to pre-eclampsia, the hypertension of autonomic dysreflexia peaks during a uterine contraction and is resolved after the contraction. Placement of an epidural with bupivacaine and a narcotic agent can block the afferent impulses below the level of the injury and thus reduce the severity of this potentially

life-threatening syndrome.¹⁴ The American College of Obstetrics and Gynecology, in fact, recommends epidural anesthesia for women with SCI because of the risk of autonomic dysreflexia.¹⁶ Vaginal delivery is not contraindicated in women with SCI; cesarean delivery is usually reserved for obstetric indications.¹⁴ Because of the high incidence of skin breakdown at the episiotomy site, the use of nonabsorbable sutures is recommended for women requiring episiotomy.¹⁵ In the case of cesarean delivery of women who have had reconstructive urologic surgery, such as augmentation enterocystoplasty with or without continent abdominal stoma, the assistance of a urologic surgeon can be useful.

Conclusion

Spinal cord-injured women are joining their able-bodied sisters in their demands for an increased understanding of and treatment options for the disorders that characterize sex, sexuality, and fertility. The groundbreaking work of investigators such as Sipski, as well as descriptive surveys and reflective reviews, will serve as the foundation for the development of novel treatment options for this unique group of women.

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