The impact of a Spinal Cord Injury on pregnancy, labour and delivery: What you need to know

The Queensland Spinal Cord Injuries Service
Spinal Outreach Team (SPOT)

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Abbreviations used:

AD	Autonomic dysreflexia
DVT	Deep vein thrombosis
ICSC	Intermittent clean self-catheterisation
IDC	Indwelling catheter
GP	General practitioner (local doctor)
OT	Occupational therapist
SCI	Spinal cord injury
SIA	Spinal Injuries Australia
SIU	Spinal Injuries Unit
SPC	Suprapubic catheter
SPOT	Spinal Outreach Team
UTI	Urinary tract infection
VAC	Vacuum assisted closure

Definition of terms used:

Autonomic dysreflexia (AD)	A condition of sudden high blood pressure (BP). If untreated, the BP can rapidly rise to extreme levels. AD can occur in people with spinal cord lesions at T6 or higher. It is caused by a stimulus below the level of the injury. The most common stimulus is a distended or over-full bladder. Bowel impaction or rectal stimulation are the next most common causes.
Braxton-Hicks contractions	Short, relatively painless uterine contractions during pregnancy that may be mistaken for labour pains. They allow the uterus to grow and help circulate blood through the uterine blood vessels.
Dehiscence	A rupture or splitting open of a surgical wound
Preeclampsia	A condition during pregnancy that results in high blood pressure, swelling that doesn't go away and large amounts of protein in the urine.
Trimester	The pregnancy is often regarded as comprising three time periods, for ease of describing how far a woman is through her pregnancy. Each of these three month periods is called a trimester. They are called the first, second and third (or final) trimester.

Introduction

If you have a spinal cord injury and are pregnant or are thinking of becoming pregnant, this booklet is for you. It contains information about how a spinal cord injury may impact on pregnancy and labour. The booklet should not be used for your own specific, individual medical information – you need to consult your local doctor and obstetrician during your pregnancy. Instead, this booklet lets you know about some things that might happen during your pregnancy and labour.

Fertility

Is my fertility affected by my spinal cord injury?

Immediately following a spinal cord injury, most women experience a temporary period of amenorrhea (no menstruation because ovulation ceases temporarily). This occurs in about 85% of women with cervical or high thoracic injury, and in about 50 - 60% of women overall. It lasts on average about six to twelve months. After this time, the monthly menstrual cycle returns in 50 - 90% of women, with generally no lasting effect on fertility.

A spinal cord injury doesn't alter the likelihood of becoming pregnant, with about 12% of all women experiencing infertility or difficulty becoming pregnant. Women with SCI who experience fertility issues generally undergo the same type of treatment as other women, where problems with ovulation and abnormalities related to the uterus or fallopian tubes are explored and treated. A woman with SCI has a similar chance of becoming pregnant through the use of fertility treatments as a woman without a disability.

What about contraception?

It is advisable that you talk with your doctor or spinal rehabilitation specialist about contraception, as there are some special considerations for women with a spinal cord injury.

- There appear to be no specific considerations if using male condoms, and unless you are sensitive to latex, condoms may be the easiest method of contraception.
- Use of spermicidal foam, sponges or a diaphragm and jelly may be difficult for a woman with limited arm and hand control. However, this can be overcome if your partner inserts and checks the device.
- Oral contraceptives are linked to inflammation and clots in blood vessels, and the risk of these is greater for women with SCI. Oral contraceptives may be considered if you did not have a deep vein thrombosis or pulmonary embolus during your acute admission.
- Intra uterine devices (IUDs) can cause problems if a woman's lack of sensation or inability to check its positioning results in unrecognised slippage of the device. Slippage decreases its effectiveness, and may cause a life

threatening uterine puncture. Women who are prone to urinary tract infections should use IUDs with caution.

- Intramuscular injections such as Depo-Provera may be an acceptable option as they have a dual role of contraception and suppression of menstruation.
- Subcutaneous implantable bars such as Implanon may also be an acceptable option. However, menstrual disturbances may occur as a side effect of these bars, which may make menstrual management more difficult.
- Tubal ligation (having your tubes tied) can be considered if you never want to become pregnant.
- Your partner may consider having a vasectomy if you never want to become pregnant.

You should continue to have your routine annual examination and screenings such as PAP smears, pelvic exams and mammograms as recommended by your GP. It is advisable to also talk with your GP about other supplements that are often recommended prior to or early in pregnancy, such as folic acid and iron tablets. You might also like to use this as an opportunity to discuss whether the Gardasil vaccination against human papillomavirus (HPV) is recommended for you.

What should I consider when planning to become pregnant?

Emotional readiness for pregnancy

Every woman should have the right to decide for herself if and when she wants to become pregnant, as it is such a personal decision. Many women who have a spinal cord injury long to have children but feel they may not be able to manage the demands of pregnancy and parenting due to their physical limitations. There is much to consider, but with the right preparation and support, you can overcome many of these obstacles, both real and imagined.

Being emotionally prepared for conception, going through the pregnancy and becoming a parent is closely related to being physically prepared. There are many changes ahead, and an important part of your emotional preparation will be learning to deal with and adapt to these. Carefully planning a pregnancy and, together with your partner thinking through the changes that will affect both of your lives, will help prepare you for the path ahead. Parenting is easier when it is a team effort, and planning together and sharing responsibilities will help to make pregnancy and parenting manageable and enjoyable.

Many women with spinal cord injuries have had babies after their SCI, and speaking to someone who has this real, lived experience, can help you learn from their knowledge and life experiences, and feel more confident about your decision to have a child. Spinal Injuries Australia (SIA) peer support team (phone 1800 810 513 or email **enquiries@spinal.com.au**) may be able to put you in touch with mothers who have recently experienced pregnancy and delivery. Also, professional support staff in your local spinal cord injury services can help you address your concerns and navigate any obstacles.

Before planning a pregnancy, it is a good idea to consider the following:

- Are you and your partner both equally committed to becoming parents?
- How will being pregnant affect you physically? Are you likely to need extra assistance to help you manage these changes? Can this extra help be organised?
- Do you have other family members or close friends who know of your plan to have a baby and, if needed, can help you care for him/her?
- Will you need to change your existing routines? Will you need additional equipment to better manage your pregnancy?
- Is your home able to accommodate an extra little person or do you need to make changes or even move before giving birth?
- Do you or your partner have to stop paid employment or reduce work hours? If so, how will this affect you financially?
- Do you have other financial concerns that you need to address?
- Is now a good time to organise or review legal and financial issues such as life insurance or making a will?
- Are you happy to be managed throughout your pregnancy by the public health system or do you wish to use private insurance? What are your options?

Remember, preparing yourself emotionally for pregnancy, labour and parenthood is an individual journey. You and your baby share a unique relationship, in which you will each adapt to the others' strengths and limitations as you grow and develop together.

Do I need any medical tests before I become pregnant?

When considering pregnancy, it is advisable that you have a pre-conception medical assessment to look into any chronic medical conditions you may have. Your doctor may want to take some pre-pregnancy measures of your lung and renal function as a baseline for comparison throughout your pregnancy.

Do I need to be concerned about medications I'm taking to manage my SCI symptoms?

You should talk with your doctor to see if any changes in medication will be needed, as some medications may be harmful to the foetus. Medications frequently prescribed for management of SCI symptoms include:

- Anti-spasticity medications such as Baclofen and Dantrium
- Medications to manage your bladder, including urinary tract infections (UTIs)
- Medications to manage your bowel
- Pain medication such as opioids (e.g. Endone, Targin, Oxycontin), Gabapentin and Lyrica.

All your medications should be reviewed by your obstetrician each trimester.

Can I have my annual renal surveillance if I'm pregnant?

Discuss with your doctor whether to have an early ultrasound and x-rays or to delay it until after your pregnancy. X-rays should not be done during pregnancy unless absolutely necessary, as they could harm the foetus. Your GP may choose to schedule a complete urological evaluation and consult with your spinal rehabilitation specialist regarding the type of urological follow-up care that is advisable during your pregnancy.

I'm newly pregnant – what are the first things to consider due to my SCI?

One of your first considerations may be finding a doctor who will care for you and your unborn child during your pregnancy, labour and delivery. Not all obstetricians are experienced in SCI and pregnancy, so you may prefer to find one who is keen to learn about SCI and thus provide you with the best medical support available. You may be more confident knowing that your obstetrician will communicate and liaise with your SCI team whenever required on issues such as autonomic dysreflexia (AD), bowel and bladder management, and skin care.

As for so many expectant mums, you will probably want to find a doctor or obstetrician who you trust and who understands your medical needs and preferences. Spinal Injuries Australia (phone 07 3391 2044) may be able to link you with new mums who can let you know their experiences with particular obstetricians.

The time to develop good communication with your medical team is before and during the first few weeks of your pregnancy, to ensure you feel confident and comfortable with them during your pregnancy, labour and delivery.

What does my ante-natal team need to know about my spinal cord injury?

Areas to discuss with staff involved with your pregnancy and labour include:

- The level of your injury and how this impacts on your daily life. If you have postural changes such as curvature of the spine, pelvic fractures or hip disarticulation, tell your doctor, as these can interfere with the space in your abdomen available to carry your foetus to full-term, and to have a normal delivery
- Areas where you have normal, altered and no sensation
- Whether you have ever experienced autonomic dysreflexia (AD) (relevant for women with SCI injury at or above T6)
- Your current medications – take a list with you to your first appointment
- Any therapies you are currently undertaking
- Monitoring hypotension, skin breakdowns and other potential risks
- Current method of bladder and bowel management
- Any previous pregnancies and any issues or problems that occurred.

How might a spinal cord injury impact on pregnancy?

Bladder function

The growing foetus places downward pressure on the bladder. This pressure can cause the bladder to hold less urine so you may have to empty your bladder more frequently. It can also cause urgency, so you may need to get to the toilet in a hurry.

Urinary frequency may also be due to increased blood volume and increased urine production.

A urinary tract infection (UTI) may trigger premature labour if not properly managed.

Urinary incontinence may become a problem and could be confused with the rupturing of your waters (signifying the start of labour).

Calcium supplements are important but may increase the risk of urinary stones.

What might happen

- You may experience an increase in bladder spasms
- You might leak between ICSC, to the point that you require an IDC
- Bladder spasms may expel your IDC
- Your skin may be affected by being wet with urine
- You may be more prone to UTIs
- ICSC may become difficult in the last few months of pregnancy, as it may be not be possible to see or reach adequately around the baby

Ideas for managing

- Catheterise more frequently
- Consider an IDC
- Continence pads can absorb urine and maintain skin health
- Recognise UTI symptoms e.g. cloudy and/or smelly urine, fever, chills. Seek urgent medical advice as UTIs can increase the risk of AD if SCI level is T6 or above
- If unsure about the source of wetness, seek medical advice
- Discuss the possible impact of calcium supplements with your doctor/obstetrician
- If prone to UTIs, check that your antibiotics are safe to take during pregnancy

Who may be able to help

- GP (local doctor)
- Obstetrician
- SPOT nurse
- Continence advisor

Bowel function

The growing foetus exerts pressure on the colon (large intestine), causing slower transit time, resulting in constipation.

The additional pressure on the colon may also impact on the frequency and regularity of bowel movements.

Hormonal changes may slow bowel function.

Some iron supplements can increase the risk of constipation.

Positioning for bowel emptying may become difficult.

What might happen

- You may become constipated or experience faecal impaction
- Morning sickness may change your fluid and dietary intake

Ideas for managing

- Ensure you have regular healthy meals
- Increase your fluid intake, but check with your obstetrician first
- Review bowel medication and adjust as advised by doctor/nurse
- Review other medications
- Commence medication for constipation as advised by doctor/nurse
- In latter stages of pregnancy, you may need assistance for bowel therapy

Who may be able to help

- Dietician
- Obstetrician
- SPOT nurse
- GP (local doctor)

Respiratory function

The growing foetus exerts pressure upwards underneath the diaphragm, limiting space for the lungs to expand. This may make it harder to breathe.

Women with high level paraplegia and tetraplegia, whose diaphragm function may already be compromised, may experience increased shortness of breath as pregnancy progresses.

What might happen

- You may experience shortness of breath
- You may be at increased risk of pneumonia, particularly if you have tetraplegia
- With morning sickness, you may experience vomiting. If your cough is weak, you are at a higher risk of aspiration

Ideas for managing

- When in bed, lie with the upper body raised on pillows to help your breathing. This position may cause pressure in different areas and skin shearing, so be sure to regularly check your sacral area, natal cleft and buttocks
- If you have a weak cough and are experiencing morning sickness, you may find side lying is an acceptable position
- Do regular breathing exercises as recommended by your physiotherapist
- At higher levels of injury, assisted coughing may become difficult, and the procedure may need to be modified.

Who may be able to help

- GP (local doctor)
- Obstetrician
- SPOT physiotherapist
- Your local physiotherapist

Circulation

The growing foetus increases pressure on the venous return from the legs. This affects the return of fluid from the feet.

For those who already experience swollen legs and feet because of spinal injury, pregnancy may increase the swelling.

What might happen

- There is an increased risk of deep vein thrombosis (DVT = blood clots in the leg veins) during pregnancy after spinal cord injury
- Symptoms of a DVT include:
    - asymmetrical swelling (one leg, not both)
    - an area that is red and noticeably warmer than general skin temperature
    - calf tenderness (if you have sensation in this area)

Ideas for managing

- If you suspect a DVT, contact your doctor immediately
- Raise your feet above the level of the heart when lying down. Lying in this position for periods during the day may be helpful
- Increase your shoe size to prevent pressure from tight shoes
- Wear support pantyhose or correctly-fitted compressive stockings
- Use passive ranging exercises to try to reduce swelling. This may become difficult as your pregnancy progresses
- Avoid fluid restriction, as this can lead to dehydration
- Limit your salt intake

Who may be able to help

- GP (local doctor)
- Obstetrician
- SPOT nurse
- SPOT OT

Skin care

The risk of a skin pressure injury increases during pregnancy.

Pressure relief requirements are often unchanged during the first half of the pregnancy, but may become an issue in the later stages.

Changing nutritional demands and centre of gravity can impair healing of a pressure injury once it develops.

Pregnancy increases a woman's susceptibility to anaemia, which may also contribute to skin breakdown.

What might happen

- During the second half of your pregnancy, pressure may become a problem due to changes in weight, pressure, posture and balance
- Pressure injuries are more likely to occur as pressure relief and transfers become more difficult because of your increasing weight and changes to your centre of gravity, posture and balance

Ideas for managing

- Check your skin regularly
- Keep your skin clean and dry
- Consider increasing the frequency of skin checks to detect any problems as early as possible
- Review your cushion. You may temporarily need a different type of cushion that provides you more effective pressure redistribution
- Review your mattress. You may need to change to a pressure re-distribution mattress during the second half of your pregnancy
- If you already use a pressure redistribution mattress, check the weight range/setting to make sure it is still appropriate for your needs
- Check the padding and cover integrity of your shower bench/ chair. You may need a seat with better pressure redistribution properties

Who may be able to help

- SPOT nurse, physiotherapist and OT
- Your local physiotherapist or OT

Spasticity

The increasing weight of the baby, its movements and Braxton Hicks contractions may cause an increase in muscle tone and spasticity.

If you don't normally experience spasticity, a sudden increase in spasticity may indicate the onset of labour or a symptom of an underlying medical condition.

What might happen

- You may be advised to cease your regular anti-spasticity medications to protect the baby's well-being, so your muscle tone could be less well managed than pre-pregnancy

Ideas for managing

- Talk with your doctor about any sudden increase in spasticity
- Be aware of activities or positions that have caused spasm in the past, and use strategies to avoid these
- Make sure you complete your daily passive stretches to prevent any contractures. You may need someone to help you as your pregnancy progresses
- Try not to rush your daily activities

Who may be able to help

- GP (local doctor)
- Obstetrician
- Physiotherapist

Centre of gravity and balance

Your centre of gravity will change as the baby grows, because of the additional weight that will be carried at the front of your body.

What might happen

- Things that you might have been independent with before (e.g. transfers, dressing your lower limbs, putting on your shoes, and doing your bowel program) may not be possible in the latter stages of pregnancy due to:
    - changes in your weight distribution
    - changes in balance
    - your baby belly getting in the way
- You may need to work harder to maintain positions that were easy to maintain previously.

Ideas for managing

- Practise different ways of doing things before your baby belly grows. Try putting a basketball down your shirt and doing your regular activities
- Seek help from family and community care agencies
- Allow yourself additional time to do daily activities
- Consider using aids for daily living, such as long handled pick-up sticks and sock and/or stocking donners that reduce the need to stretch outside your safe zone.
- You may need to consider making adjustments to your manual wheelchair if it starts to get too “tippy”
- You may need to alter the tilt in space of your powerdrive wheelchair to compensate

Who may be able to help

- Local physiotherapist and/or OT
- SPOT physiotherapist and OT

Mobility

The change in your centre of gravity affects your posture, mobility and sitting position.

What might happen

- You may feel as though you're tipping in your chair or are hunched over
- Weight gain may make your wheelchair overly snug
- Fatigue and altered body mechanics may make it impossible to use a manual wheelchair

Ideas for managing

- Consider increasing the angle between your seat and the back of chair. This may make your manual wheelchair more "tippy", so assess for this
- Your existing backrest may need to be adjusted, or a different back rest may be required to provide more support and comfort
- It may be beneficial to change the location of the axles of your manual wheelchair to a less 'tippy' position, providing you are still able to comfortably push your chair
- If your chair is unstable, consider fitting/adjustment of anti-tip bars
- You may be able to move the wheels of your manual chair outwards to give yourself a bit more width. This may impact on accessibility within your home
- Remember that your mobile shower commode may also need to be adjusted
- Consider hiring a powerdrive wheelchair for the final weeks of pregnancy so you can maintain your mobility. It may also be beneficial to keep it for the first few weeks after delivery

Who may be able to help

- SPOT physiotherapist and OT

Transfers

The extra weight gained during pregnancy, plus the change in your centre of gravity can make transfers more difficult.

What might happen

- You may not be able to get the same degree of lift that you had before your pregnancy. This may impact on your skin integrity
- The change in your centre of gravity may increase your risk of falling
- You may have to change the way you usually do transfers
- If you regularly use a hoist and sling for transfers, you may need a different sling if your baby belly limits your hip flexion. This depends on the style of sling used

Ideas for managing

- Think of other ways to transfer. If you were doing a sideways transfer without a sliding board before, you might benefit from using a slide board now
- You may need some physical assistance for transferring, which may mean you are limited as to when you transfer
- Consider hiring a hoist for transfers during the later stages of your pregnancy. Seek advice when selecting the most appropriate sling, and aim for a sling that doesn't flex your hips to the point where your belly gets squashed by thighs
- Purchase additional care hours to cover assistance with transfers
- Try to transfer to and from a similar height, or downwards. Bed blocks or chair raisers could help
- If your bed is higher than your chair, a ramp up to a platform by the bed can make them the same height
- Hiring an electric height adjustable bed may be helpful

Who may be able to help

- SPOT physiotherapist, OT and social worker

Fatigue

During the last trimester, women commonly experience fatigue due to additional weight, blood volume and intra-abdominal pressure.

What might happen

- Your mobility and transfers may be compromised due to your fatigue
- You are likely to find it more difficult to complete your daily tasks

Ideas for managing

- Leave tasks that don't have to be done, or ask someone else to help you
- Try to get a good night's sleep. This may mean changing your bladder management so you don't need to catheterise during the night
- Practice energy conservation techniques, such as:
    - Pace yourself
    - Have rest breaks during an activity, rather than pushing on until a task is fully completed
    - Listen to your body and rest when you first notice fatigue Plan your day to include rest periods
    - Be kind to yourself
    - Ask for help with daily chores
- Consult with your GP to determine if you need your iron levels checked

Who may be able to help

- SPOT OT
- Your local OT

Autonomic dysreflexia (AD)

The probability of experiencing AD is limited to those with spinal cord impairment at or above T6.

Being in labour and, although uncommon, enlargement of the uterus during the later stages of pregnancy can trigger AD.

AD is characterised by a sudden rise in blood pressure. It is a medical response to an autonomic imbalance in the spinal cord nervous system.

AD can lead to severe consequences if untreated. Not all health workers are aware of this condition.

The symptoms of AD and preeclampsia (a condition during pregnancy that results in high blood pressure, swelling that doesn't go away and large amounts of protein in the urine) are very similar but are managed differently. With AD, the heart rate (pulse) may slow down, whereas a common symptom of preeclampsia is tachycardia (a rapid heart rate). For AD, the aim is to treat the dysreflexia and maintain the pregnancy till the end. However, with preeclampsia there's risk to the child and mother so there may be a tendency to deliver the baby early.

What might happen

- The most common symptom of AD is a severe, pounding headache. Other symptoms may include sweating, flushed face or blotchiness of skin above the level of injury, goose bumps, anxiety, tremors, nausea, chest pain, shortness of breath or a stuffy nose, and a slowed heart rate.
- Your doctor may prescribe medications to lower your blood pressure

Ideas for managing

- If applicable, ensure your obstetrician and medical team know about AD. Your spinal service will be able to provide you with information to help you with this.
- Immediately look for causes of AD such as bladder retention, constipation, tight clothing etc.
- Sit up rather than lie down, and lower your feet to reduce your blood pressure. Immediately reduce the amount of rearward tilt in your wheelchair
- Call an ambulance immediately if the symptoms are severe or increasing rapidly. Consult your doctor if the symptoms are mild
- Know the difference between AD and preeclampsia
- In labour, an epidural can help control autonomic dysreflexia

Who may be able to help

- Emergency services (ambulance)
- Obstetrician
- SPOT nurse

Low blood pressure (hypotension)

During pregnancy your blood pressure may drop slightly.

The risk of low blood pressure is greater for women with a spinal cord injury at or above T6.

What might happen

- You may feel dizzy or light-headed
- Acute hypotension could affect foetal blood flow.

Ideas for managing

- Lie down or use the tilt function on your chair to assist blood return to your head and heart
- Stay well hydrated
- Elevate your legs
- To minimise the risk of falls, don't transfer when feeling dizzy
- Move from lying down to the upright position slowly and cautiously
- If the dizziness or light-headedness cannot be managed by lying down or reclining in your chair, contact your doctor or go to your local emergency department
- Wearing support pantyhose or correctly fitted compressive stockings may assist

Who may be able to help

- Obstetrician
- GP (local doctor)
- SPOT OT

Will I be able to feel the baby move during my pregnancy?

You may not be able to feel the baby move if your level of injury is high, but movement can be felt with your hands or arms once the baby is large enough**.** As baby grows, you will be able to see the movements in your abdomen.

Can I sleep on my back during pregnancy?

In the early stages of pregnancy, lying flat on your back (supine) or on your tummy (prone) may still be possible. However, as pregnancy progresses, supine lying should be avoided. This is because the enlarged uterus can increase pressure on the large vessels in the abdomen, decreasing the return of blood return to your heart. Nausea and dizziness are warning signs that you should not be lying on your back. Women with tetraplegia need to be even more vigilant, as breathing may become difficult due to pressure on the diaphragm from the enlarged uterus.

Try side lying, with or without pillows for support. Check your hips for red areas that don't fade within 30 minutes. If red areas last longer than this, consider using a pressure redistribution mattress. SPOT can provide you advice about these.

Semi-reclining in bed (the Fowler position) may also be a comfortable and suitable sleep position, particularly if you experience heartburn due to pregnancy. However, this position may increase pressure and shearing on your bottom, so be sure to check for signs of pressure. If you use an alternating air mattress, set it to increase the air under your buttocks to prevent you bottoming out. You may need to temporarily upgrade your pressure redistribution mattress due to changes in your sleep position, increased weight and possibly greater difficulty in bed mobility.

Labour

How will I know when labour starts?

The uterus is controlled by neuro-hormonal factors, not neurological factors, so your spinal injury has no effect on the beginning of labour. The uterus begins contractions at the appropriate time. This is the same for women regardless of motor function and sensory level.

Your ability to detect the onset of labour and contractions will vary depending on your level of injury. Obvious signs of an imminent start of labour are a mucous "show" or your waters breaking. The majority of women with SCI above T10 experience uterine contractions as only abdominal discomfort, so extra vigilance is required to prevent you being in labour without knowing. You may experience other sensations such as abdominal tightening, backache, an increase in spasticity, autonomic dysreflexia (AD), bladder spasms, pain above the level of injury, or changes in your breathing. Discuss other ways you may be able to detect the onset of labour with your medical team. For example, a foetal/contraction monitor may be helpful, along with regular monitoring of uterine tone, cervical dilation and effacement.

Sometimes, a medical team may prefer to induce labour so you don't sleep through your labour and give birth unattended. This is called an unrecognised labour, and can put both you and your baby at risk. Induction can be difficult in patients with a neurological level of T6 and above because of the risk of AD. At times, a woman with a SCI may be admitted prior to term for ease of regular monitoring.

Because of the increased blood pressure that occurs with uterine contractions, AD often occurs at the time of labour and delivery. Let your medical team (including the anaesthetist) know how your AD has been managed previously. There is evidence that AD may cause foetal distress. Proper anaesthesia or anti-hypertensive medication can treat the problem, but immediate delivery of the baby and placenta is imperative.

What type of anaesthesia is recommended for me? Why do I need anaesthesia?

Discuss appropriate pain relief with your anaesthetist to ensure you have adequate anaesthesia during labour and delivery. This is important despite any lack of sensation, your level of injury, and whether you have a vaginal or caesarean delivery. Pain relief is particularly relevant if your injury is at or above T6 due to the risk of developing AD. While AD during labour and delivery can be managed with sub-lingual (under the tongue) or intramuscular medications for high blood pressure, epidural anaesthesia is the preferred and most effective management method, because medications which lower your blood pressure have the potential to cause acute low blood pressure that could affect foetal blood flow.

Will I be able to follow the birth plan that I have developed?

Discuss your desired birth plan with your obstetrician and medical team, so they can work with you to help you achieve the birth you want. Encourage them to talk with you about your expectations and any concerns or complications as they arise, so everyone involved is fully informed. Remind them that you are at significant risk of pressure injuries, so require repositioning and/or pressure redistribution support surfaces during labour, delivery and post-partum.

If your injury is at or above T6, remind your medical team that AD can be a problem during labour. Let them know your previous symptoms, and explain to them that frequent position changes and keeping your bladder from overfilling can help prevent AD.

Will I have to have a Caesarean section?

Your SCI will not necessarily determine whether your baby can be delivered vaginally or by Caesarean section (C-section). Some women with a SCI may deliver with ease, while others may need the assistance of a vacuum device or forceps, as the muscles used during the pushing phase may not be functional. However, C-sections are more frequently performed in women with SCI. This may be due to skeletal abnormalities such as curvature of the spine, pelvic fracture, or hip dislocation. These conditions can limit the space in the abdomen necessary to carry a full-term foetus, and can make vaginal delivery difficult. In these cases, a C-section may be necessary.

A C-section involves two incisions; one in the abdominal wall and one in the uterus. Most commonly, the abdominal wall incision is made horizontally just above the pubic bone (bikini line), but in an emergency caesarean, a vertical incision (from the navel to the pubic area) allows the obstetrician to deliver the baby faster. The incision in the uterus is commonly horizontal but may be vertical, depending on your individual situation.

Postnatal period

Do I need to take any special care after giving birth?

If you experienced autonomic dysreflexia during labour, you may need to have the epidural for at least twelve hours after delivery, or until the dysreflexia resolves.

After delivery, the rate for a urinary tract infection is initially higher, so watch for any symptoms, and be vigilant with your bladder management. Intermittent catheterisation may be difficult for a little while, so an indwelling catheter could be considered for a short period of time.

For some time after delivery, your pelvic floor will be affected by hormonal changes that affect the ligaments and soft tissue in preparation for giving birth. Your pelvic floor has also supported the weight of your growing baby during pregnancy, and has been stretched during a vaginal delivery, so further straining to empty your bladder or bowel impacts on your pelvic floor and can increase the long term risk of a vaginal prolapse and haemorrhoids. Therefore, work with a women's health physiotherapist to minimise the risk of these complications.

Bowel routines can be disturbed by the delivery. Try to readjust your bowel management program, returning to your previous routine, other than straining, as soon as practicable.

Orthostatic hypotension (low blood pressure) can occur in women who have no control over the abdominal muscles. This can lead to a tendency to faint or feel dizzy when sitting up for several days after the delivery. It can be minimized or prevented by sitting up very slowly and wearing compression stockings, and/or an abdominal binder. However, a binder may not be recommended if you have had a C-section, as it may impact on the healing of the suture line.

What is the best way to look after my perineum after a vaginal delivery?

After an episiotomy or a tear, the pressure from sitting on your perineal area can lead to an increased risk of skin breakdown. The area should be checked frequently and, if necessary, you should limit mobilising until the area has healed. You may also need to limit the time you spend in sitting, increase the time you spend in lying, and make sure you have a good quality pressure redistribution chair cushion.

Some obstetric units may still use a heat lamp on the perineum, but if you have a loss of sensation, you are at risk of burns, so heat should not be used.

What if I've had a Caesarean Section?

The muscles of the abdominal wall help to flex and rotate (bend and twist) the trunk, support the abdominal organs, control the tilt of the pelvis, assist regular breathing, and support the muscles of the spine while lifting. Women with spinal cord injuries above T7 – L1 are likely to have limited function in abdominal wall muscles, so may not notice any change in ability after a C-section.

It takes about four to six weeks for a C-section incision to heal, and during this time you will need to limit any pressure on you abdomen which may cause wound dehiscence (splitting open). You may be advised to hold your abdomen near the incision during sudden movements such as coughing, sneezing or laughing, and to use pillows or rolled up towels for extra support while breast-feeding. An abdominal binder could increase the risk of a pressure injury over your suture line, so should be avoided unless recommended by your medical team. Similarly, avoid underwear where the waistband may sit on the incision line.

Strenuous upper limb activity can increase abdominal pressure, which is why women who have had a C-section are advised to avoid lifting anything heavier than their baby, doing vacuuming, hanging out wet clothes etc. For a woman with a spinal injury, other daily activities can also increase pressure on the wound, including tasks such as leaning forwards to perform self-catheterisation, and straining to assist with bladder emptying or bowel therapy.

Depending on your level of spinal cord injury, you may be used to lifting your body weight with your arms for transferring or repositioning. Therefore, after a C-section, you may be unable to do things normally, such as transferring, looking after your skin and getting around. You will need to make appropriate arrangements for transferring in the weeks after delivery. A slide board, standing hoist or hoist with sling may be necessary for a few weeks. Similarly, if you rely on pressure lifts to look after your skin, you will need to find another way of maintaining your skin integrity, such as using an effective pressure redistribution cushion, leaning forwards and to the side in your chair to offload pressure, and spending time off your bottom (side or prone lying in bed or on a couch).

You may need to limit use of your manual wheelchair in the first few weeks after a C-section, as pushing can increase abdominal pressure and stretch your wound. Therefore, you may need assistance for your mobility, or you may prefer to borrow or hire a powerdrive chair until you are fully recovered from the surgery. If you have power add-on wheels, they could be very useful during this time.

Maintaining an upright posture in your chair can help prevent wound contractures and support respiratory function post-surgery. Women with a SCI may be at risk of a breakdown of their suture line. Discuss options for managing this (e.g. using a VAC dressing) with your obstetrician.

Remember to check your C-section incision for signs of infection or dehiscence, particularly if you don't have sensation in this area, and contact your doctor if:

- The incision is red, swollen or leaking discharge
- You have a fever
- You experience increasing pain around your incision.

Will I be able to breast feed?

You should be able to breast feed if you wish to do so, although it appears that less women post SCI breast feed than women without such an injury. Breast feeding can cause an increase in spasticity. While women with a spinal cord injury below T6 usually have no problems, women with an injury at or above T6 may have a reduction in milk production after 6 weeks. This may be due to a lack of nipple stimulation which is necessary for the milk ejection reflex occur. These women may also experience challenges due to autonomic dysreflexia and problems with positioning and handling the baby for breast feeding.

What now?

The next step is to enjoy your pregnancy, and plan for life with a baby. You may like to refer to the Spinal Outreach Team's booklet titled "Parenting babies and toddlers: A practical guide to equipment that can help parents with spinal cord injuries". This booklet provides handy hints for mums and dads who are new to parenting with a spinal cord injury, and can be found at
http://www.health.qld.gov.au/qscis/html/health.asp

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