

WHAT TREATMENT IS AVAILABLE FOR CHILDREN WITH BRACHIAL PLEXUS INJURIES?

The most important factor in the recovery of brachial plexus injuries is time. Injured nerves can repair themselves well enough to allow full use of the arm, however for some children the injury has been so severe that they will have some residual impairment. Most nerve and muscle recovery will occur in the first year. You will notice a gradual improvement in both the movement and strength in your child's arm. Further recovery may happen in the second year, but the effects of increased muscle strength will be much more subtle and difficult to see.

Physiotherapy should be started early in the newborn, the first week of life should be therapy free, allowing the baby time to recover from the trauma they have suffered. Then a full range of passive movement exercises should be started. Physiotherapy won't help the nerves heal any faster, but it can help prevent problems such as joint stiffness and muscle contractures. Unless the arm is touched and moved regularly, the brain doesn't receive the messages from the arm which in turn, help the nerves in the brain continue sending messages to the arm to encourage movement.

The physiotherapist will tell you the best way to handle your baby and will also teach exercises to keep the infant's joints supple and strengthen muscles that are beginning to work.

If the biceps muscle is not working within about 3 -6 months your baby may need an operation. There are a variety of surgical procedures which may help your child's function at various stages through their life, these include nerve grafting, tendon transfers and muscle releases.

You should contact the Erb's Palsy group who can offer you some further fact sheets about these procedures.

WHAT USE WILL MY CHILD HAVE OF THE AFFECTED ARM?

Most children will regain good use of their affected arm and are able to participate in most activities that they want to. However, some muscle weakness usually remains and some children with brachial plexus injuries will have some limitation of their functional ability.



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Erb's Palsy Group

**Obstetrical
Erb's Palsy**
(Brachial Plexus Paralysis)

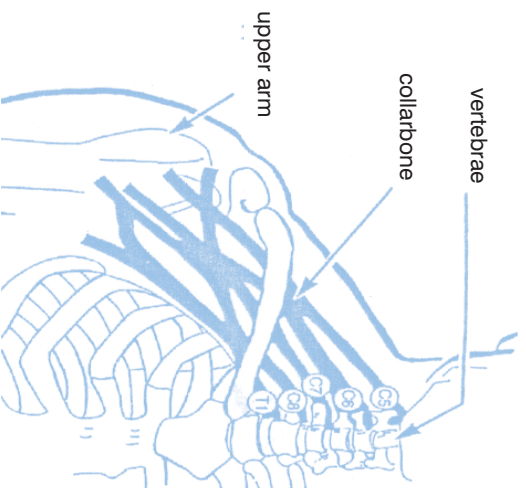
Your child has been diagnosed with a brachial plexus injury, commonly known as Erb's Palsy.

This fact sheet has been prepared to help you learn more about your child's condition and to explain about the management of the injury. All children with Brachial plexus Injury are not the same and some will recover quicker and more fully than others. Your child's treatment will be designed specially for him or her and you should ask your physiotherapist or consultant if you have any questions.

WHAT IS THE BRACHIAL PLEXUS?

The brachial plexus is made up from five large nerves which come out of the spinal cord between the bones in the neck (the vertebrae) and give movement and feeling to the arm. These nerves are represented by the symbols C5, C6, C7, C8 and T1

Shortly after coming out of the neck, the nerves come together and then divide among the muscles and tissues of the arm. The brachial plexus runs from the neck and passes under the collarbone to become the major nerves of the arm at about the level of the armpit.



WHAT ARE NERVES?

Nerves are cord like structures of tissue from a collection of nerve fibres. A single nerve may contain thousands of fibres, a bit like a telephone cable. In the arm, these fibres carry electrical messages both ways between the brain, muscles and tissues. For a muscle to work (contract) a message must travel from the brain along a nerve that goes directly to the muscle. When nerve fibres are injured, the muscles that the nerve controls may be weakened, even though the injury is not in the muscle itself.

Nerves outside the spinal cord (peripheral nerves) can repair themselves. Damaged nerve fibres are able to regrow at a rate of about 1mm a day or 1 inch a month. It may take many months for regrowing fibres to reach the muscles in the lower arm. If an entire nerve has been damaged or broken, it will not grow back to the muscle.

HOW DO BRACHIAL PLEXUS INJURIES OCCUR?

The brachial plexus is most often injured when it is subjected to a pulling force. This usually happens when the arm and shoulder are forced down while the head and neck are stretched sideways in the opposite direction. Tension on the brachial plexus may stretch or even pull apart the fibres within one or more nerves. Extreme force on the plexus may rupture nerves entirely or tear them from the spinal cord.

WHAT HAPPENS WHEN THERE IS AN INJURY TO THE BRACHIAL PLEXUS?

Many factors affect how severe the injury is. The first is the number of nerves that have been affected. Of the five nerves of the brachial plexus the first two, (C5 C6) are most often involved. A classic sign of this is an elbow which does not bend and the hand being held in a 'waiters tip' (turning backwards) position.

Sometimes all the nerves may be affected, if this occurs, weakness or paralysis will affect the entire arm and hand. Signs of this may also include a limp hand and there may be an associated Horner's syndrome. This is when the eyelid droops and the pupil in the eye may be smaller. The baby may also have an associated Torticollis. Torticollis is where the baby faces away from their affected arm and is unable to face forward for any length of time. Your baby may also suffer from sensory loss in the arm and hand.

The second is how badly the nerve has been damaged. If the fibres have only been mildly stretched, your child should recover use of the muscle quite quickly. The more fibres that are stretched or pulled apart, the weaker the muscle will be and the longer it will take to start working properly again. A nerve that has been severely damaged but still remains connected may heal, but scar tissue may form at the site of injury. This scar tissue may stop the electrical messages so they can't work getting to the muscles. A nerve that is completely pulled apart cannot repair itself, so the muscles it controls are paralysed. Sometimes it is possible to have an operation to mend the nerve and restore some function to the muscle, if this is necessary, the child is likely to be left with some residual weakness in the arm. In rare cases the nerve may be torn away from the spinal column itself - this is called an AVULSION in these cases it is imperative to consult a specialist in Brachial Plexus Injuries as soon as possible to discuss a treatment plan.

HOW DO I KNOW HOW SEVERE THE BRACHIAL PLEXUS INJURY IS?

No single test can tell you this. Instead, several different tests and observations are performed over a period of time. These may help to tell you where the injury is and how severe it is. A test called an electromyogram (EMG) may be done when your baby is about 3 months old. This can measure how well the muscles respond to electrical impulses. This involves attaching wires that pick up the messages onto the skin, or sometimes putting a small needle into the muscle, this test may give your baby's Specialist clues about the amount of damage and how much the nerve is recovering.

Not all specialists will offer this test as it is by no means an accurate gauge of recovery and most specialists in Brachial Plexus Injuries will use it in conjunction with observation of your baby's recovery and use their clinical judgment in deciding a care plan for your baby.

It is believed that recovery can be gauged by the contractions of biceps and deltoid muscles which are as follows:

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| COMPLETE | - start at one month and normal by about two months |
| GOOD | - start by three months and complete by about 5 months |
| AVERAGE | - start after three months |