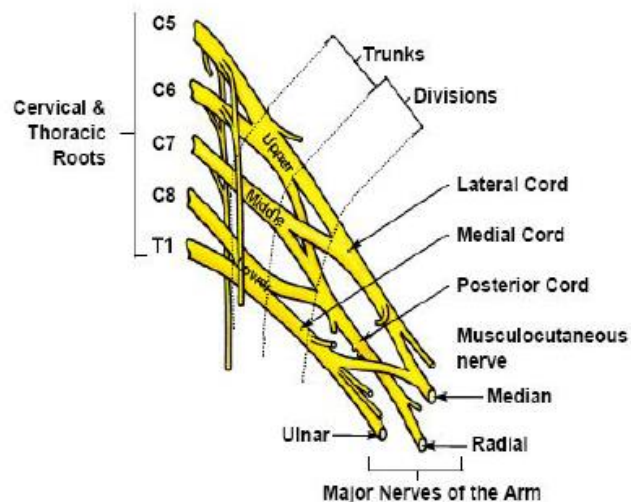
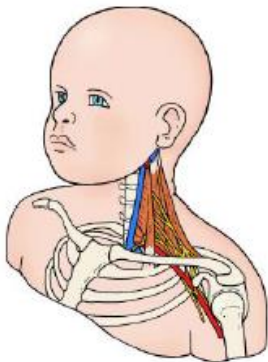


## What is it?

The brachial plexus is a network of 5 nerves coming from the neck into the arm. These nerves provide movement and feeling to the arm and hand. These nerves start in the spinal cord in the neck and are named C5, C6, C7, C8 and T1.

It is through these nerves that the brain sends electrical signals to the muscles and skin of the arm and hand. Each nerve supplies movement and feeling to specific areas in the arm and hand.



## How does Injury Occur?

Obstetric Brachial Plexus Palsy affects about 1 in every 200 births. It is more common in larger babies, but can occur in babies of any weight. During birth, after the delivery of the baby's head, the baby's shoulder may become stuck in the mother's pelvis.



At this stage it is very important for the baby to be delivered quickly to prevent brain damage from lack of oxygen. In order to free the shoulder, a variety of manoeuvres may be used and may result in damage to the nerves of the arm. The baby may also suffer a break in the collar bone or humerus (upper arm bone) during the delivery. It is also possible for the nerves to be damaged in a breech delivery.

If there is injury to one or more nerves of the brachial plexus they are unable to transmit the electrical signals from the brain and so the muscles that are controlled by the injured nerve will not work and the skin supplied by the injured nerve will lose feeling.

The recovery of the nerve depends on which structures are damaged and how badly they are damaged.

Recovery is difficult to predict. Most babies will recover full movement but nerve growth is very slow. Rapid return of muscle function is a positive sign. Most nerve re-growth and muscle function will occur during the 1st year. However, some muscle weakness usually remains.

### **Types of Brachial Plexus Injury**

- **Neuropraxia-** the nerves are usually stretched but remain in one piece. The nerve can recover on its own in days and weeks.
- **Axonotmesis-** is when the nerve fibres are stretched and torn but the covering around the nerve is intact so the nerve can still recover. The recovery may take many months as the nerve will only re-grow at a rate of one millimetre a day.
- **Neurotmesis/nerve rupture-** is when the nerve is torn, but not from where it attaches to the spinal cord. As the nerve tries to recover it may form a scarred swelling or neuroma. This scar tissue

cannot conduct electrical signals and so the pathway from the brain to the arm is interrupted. This type of injury may benefit from surgery to remove the scar tissue and repair the nerve ends.

- **Nerve Root Avulsion-** is when the nerve is torn from where it attached to the spinal cord. These nerves cannot repair themselves and cannot be repaired with surgery.

## **Assessment and Treatment**

There is no single test which can determine the extent of the brachial plexus injury. Instead, your child's arm movement will be assessed and monitored over a period of time by a physiotherapist. The majority of children with brachial plexus injuries recover with physiotherapy alone. Approximately 10% require some surgery.

Following birth your baby will have been assessed by a paediatrician or midwife. If any abnormalities of arm function are observed they may refer for an X-ray to check whether there are any fractures in the arm, and they will refer for a physiotherapy assessment. The paediatrician will usually arrange a follow up paediatric appointment.

Your baby will be assessed by a physiotherapist usually within 10 working days of receiving the referral. The physiotherapist will assess your baby's active arm movement and the range in their arm joints. If appropriate the physiotherapist will give advice on handling your baby and teach arm exercises.

You will be given a leaflet with information on handling and exercises to take home.

### **Do not start exercises until they have been demonstrated by a physiotherapist.**

The physiotherapist will arrange a follow up appointment to check exercise technique and review your baby's arm function.

If the physiotherapist feels the arm function is not progressing adequately by 8 weeks they may suggest a referral to a specialist centre for assessment and to see if surgery is required.

If your baby's arm fully recovers they will be discharged. If there is incomplete recovery the physiotherapist will continue to monitor and advise and may refer to an Occupational Therapist if required.

## References

Association of Paediatric Chartered Physiotherapist- Obstetric Brachial Plexus Palsy: A Guide to Management April 2012

Leeds Teaching Hospitals- Obstetrical Brachial Plexus Palsy Leaflet

Royal Children's Hospital, Melbourne- understanding Brachial Plexus Palsy 2004

We would like to thank APCP and Leeds Teaching Hospital who have given us permission to reproduce diagrams and text used in this leaflet.

### **For Further information and Support you can contact:**

[www.erbspalsygroup.co.uk](http://www.erbspalsygroup.co.uk)

Alternatively Contact Karen Hillyer of the Erb's Palsy Group at:

60 Anchorway Road

Coventry

CV3 6JJ

Tel no 024 7614 3293

Or at [info@erbspalsygroup.com](mailto:info@erbspalsygroup.com)

**This document is available in Welsh / Mae'r ddogfen hon ar gael yn Gymraeg**