

Let's Talk About...

Birth brachial plexus injuries

A birth brachial plexus injury (BBPI) occurs when a baby's brachial plexus nerves are disrupted during birth. The brachial plexus is several nerves grouped together that run from the spinal cord through the neck and stimulate the muscles in the arms.



What are the different types of birth brachial plexus injuries?

There are several types of birth brachial plexus injuries, including:

- **Neurapraxia:** A minor strain or stretch in the brachial plexus (mildest form)
- **Neuroma:** Scar tissue that develops around or over the initial injury during the healing process, causing more pressure on the injured nerve
- **Rupture:** A tear in the nerve (but not at the spinal cord)
- **Avulsion:** A nerve is torn from the spine (most severe form)

Birth brachial plexus injuries can impact different parts of the nerves and have different names:

- **Erb's palsy:** Arm paralysis, decreased arm sensation, and decreased shoulder movement when upper section of nerves is impacted
- **Klumpke's palsy:** Impaired hand, wrist, and arm when lower section of nerves is impacted
- **Global palsy:** Arm, wrist, and hand impairment when both the upper and lower sections are impacted

What causes a birth brachial plexus injury?

Causes for a birth brachial plexus injury are not always known. However, the following risk factors may be associated with birth brachial plexus injuries:

- Gestational diabetes
- High infant delivery weight (more than 10 pounds)
- Positioning in the uterus
- Traumatic birth (shoulder dystocia or forceps used)
- Breech delivery

What are the signs of a birth brachial plexus injury?

Your baby will usually show signs of a birth brachial plexus injury at birth, including:

- No movement or reduced arm or hand movement on one side of the body
- No Moro reflex (impulse to raise arms) on impaired side
- A "claw-hand" on one hand



How is a birth brachial plexus injury diagnosed?

A physical medicine and rehabilitation (PMR) healthcare provider will evaluate your baby. They will perform a neurological/physical exam and do muscle testing to see which type of injury your baby has and which nerves might be affected. Your baby may also need other tests, which may include:

- An electromyogram (EMG), or test that records electrical activity of muscles
- An ultrasound
- An MRI or CT scan (detailed images of the body)
- An x-ray if your baby may have clavicle fractures
- A nerve conduction study, or test that measures how fast electrical impulses move through the nerves

These special tests can help determine which area of your baby's nerves was impacted and how severely they were injured.

How are birth brachial plexus injuries treated?

Babies with brachial plexus injuries should be evaluated by a physical medicine and rehabilitation (PMR) healthcare provider or orthopedist (bone injury doctor) before they're 3 weeks old.

An occupational therapist should also begin helping your baby when they're 1–2 weeks old. The occupational therapist will help you learn stretches, positioning, and ways to help your child move their arm. They'll also watch for signs that your child needs more help as they grow and develop, like surgery or a nerve tendon transfer (releasing a tendon and connecting it to another bone or tendon).

Will my baby recover from a birth brachial plexus injury?

Your baby's recovery depends on how severe the birth brachial plexus injury is. As a general rule of thumb, prognosis for recovery guidelines are as follows:

- **1 month:** If your baby has active biceps motion (can bend their elbow on their own), they likely will have a total recovery.
- **3 months:** If your baby has active biceps motion, they likely will have a very minor impairment long-term.
- **6 months:** If your baby has not healed, they may need nerve transfer surgery.
- **12 months:** If your baby has not healed, they may need an isolated nerve transfer surgery.

Babies who have more severe injuries may have limb length differences (shorter impaired arms) and trouble stabilizing their body while standing or sitting. They may also be at risk for developmental and functional delays.

What if I have questions about birth brachial plexus injuries?

If you have questions about your baby's treatment or what to expect in the future for birth brachial plexus injuries, contact your baby's physical medicine and rehabilitation (PMR) healthcare provider or orthopedist.

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