Cerebral palsy is not a single disorder but a group of disorders with diverse implications for children and their families.

What is Cerebral Palsy?
Cerebral palsy is a static, non progressive neurological lesion occurring in the immature brain that leaves children with a permanent motor impairment. The lesion may occur as a developmental defect like lissencephaly, an infarction (like middle cerebral artery occlusion) in a neonate or as trauma during or after delivery.

Types of Cerebral palsy.
Cerebral palsy is characterised by both anatomical and pathophysiological involvement. The major types of anatomical involvement are Quadriplegia, with all four extremities involved often with global involvement. Diplegia, with lower extremities are more involved than upper extremities and Hemiplegia, where one side of the body involved, usually upper limb is effected more severely than the lower limb. Spasticity is the most common type of pathophysiological involvement, followed by athetosis, ataxia and rigidity.

How to Diagnose?
There is no agreed diagnostic criteria to make a diagnosis of cerebral palsy (CP). When a child not meeting developmental milestones, has persistant primitive reflexes or has significant abnormalities in the elements of motor function, a diagnosis of CP can be made. The history should clearly demonstrates that this is a non progressive lesion and non familial.

What are the Orthopaedic manifestations?
In Lower limbs, depending upon the severity they have tight adductor and illo- psoas contractures which leads flexion and adductor contractures at hip and leads to scissoring gait, Whereas tight Hamstrings at knee leads to crouch gait. Tight Tendo Achilles at ankle leads to equinus at ankle, which further leads to toe walking. In upper limbs, adductor contractures at shoulder, flexion contractures at elbow, pronator contracture at forearm and wrist and finger contractures are common. Scoliosis is common spinal deformity in quadriplegic patients.

Role of Orthotics
In Lower limbs Orthotics will help in stretching the spastic tendons, prevents the progression of deformity and aids in walking. In upper limbs Orthotics help in preventing the palmar flexion at wrist and aids in extension of fingers.

Role of Physiotherapy
Physiotherapy plays a vital role in rehabilitating Cerebral palsy kid. It helps in not only strengthening the weak muscles, also stretches the spastic muscles. Achieving trunk balance is the main key for sitting and standing balance. Early aggressive physiotherapy with light weight orthosis immediately after surgery helps in improving activities of daily living gait.

Role of Botox injection
Botox injection is useful in children with mild contractures and effective in children upto age of 5 yrs. Because the effect of Botox is transient, may need repeated botox injections. Aggressive physiotherapy should be initiated after Botox injection.
Role of surgery
Recent protocol for surgery is try to address all deformities at once. Single event multi level surgery (SEMLS) means operating numerous symmetrical procedures on both limbs in one sitting. These surgeries will be effective in maximising child ability to walk, improves the ambulatory potential, reduces the risk of anaesthesia and long hospital stay. These procedures includes adductor tenotomy, fractional legthening of hamstrings and Gastrocnemius, derotational osteotomy for tibia, femur, corrective osteotomies and fusion for foot deformities. Depending upon the severity, these surgeries can be done from 3rd year onwards.

Advantages of Aponeurotic lengthening
The major advantage of aponeurotic lengthening over tendon lengthening is early mobilization.

Dr. K. Durga Nagaraju  DNB, MRCS (UK)
Fellowship in Pediatric Orthopaedics (USA)
Consultant Pediatric Orthopaedic Surgeon
Mobile: 9885127788  Email: drnagarajuk@gmail.com

Cerebral Palsy
orthopaedic manifestations

HEMIPLEGIA
PRE OP  POST OP

DIPLEGIA
PRE OP

"Let's give an Opportunity to Walk"

In cerebral palsy kids quality of life can be improved with early physiotherapy botox injections and by surgeries