

Clubfoot, also called talipes equinovarus, is a deformity of the fetal foot that is turned inward, with the sole of the foot facing backwards. Clubfoot is one of the most common congenital anomalies detected prenatally with a prevalence ranging from 1/1000 to 3/1000 live births, and it is bilateral in about 50% of cases, with a higher incidence in male compared to females.

Congenital clubfoot presents commonly as an isolated anomaly affecting bones, muscles, tendons, and blood vessels of one or both feet in an otherwise structurally normal fetus. Conversely, complex cases are associated with additional structural or chromosomal anomalies. Positional clubfoot results from a persistently abnormal (adducted/abducted) foot position in a restrictive uterine environment.

The precise cause of isolated clubfoot has not been completely elucidated yet, while complex clubfoot presents in the setting of chromosomal or genetic syndromes.

Conversely, reduction of amniotic fluid or uterine anomalies are the most common factors of positional clubfoot.

Associated anomalies are common in fetuses with clubfeet and this risk of associated anomalies is higher in clubfeet presenting in the setting of a chromosomal or genetic disorder.

The most common neuromuscular condition found at birth and not detected at prenatal ultrasound is arthrogryposis. Arthrogryposis is a condition characterized by multiple joint contractures due to central nervous system disorders.

Other anomalies associated with clubfeet involve musculoskeletal, cardiac, urinary and gastrointestinal systems. When looking at syndromic clubfoot, the majority of cases are associated to sex chromosomal anomalies, such as Klinefelter syndrome, while the incidence of trisomy is generally negligible.

The first issue in the prenatal management of clubfoot is a close ultrasound surveillance throughout pregnancy to rule out associated structural anomalies, which can significantly affect short and long-term prognosis.

There is no consensus yet also on whether invasive tests should be offered in case of isolated clubfoot, while prenatal invasive testing should be recommended when other associated risk factors for aneuploidy, such as advanced maternal age or abnormal first trimester screening test results, co-exist with clubfoot.

Currently there is no evidence to support the routine use of fetal MRI in fetuses with clubfoot, unless there is a suspicion of associated cerebral anomaly on ultrasound.

When associated with other structural or chromosomal abnormalities, the prognosis of clubfoot is closely related to the presence of associated anomalies.

Fetuses with prenatal diagnosis of isolated clubfeet generally have a good prognosis. Thorough phenotypic assessment at birth is warranted in order to identify signs of genetic syndromes not identified prenatally.

Postnatal management of clubfoot has changed in the past 10 years. Nowadays, minimally invasive procedures, such as Ponseti's or Kite's methods, significantly decrease the rate of a more extensive surgical treatment. Ponseti's technique consists of sequential, manipulative castings and prolonged bracing, followed by eventual minor surgery, and is currently considered the best approach for children with isolated clubfoot.

What other questions should I ask?

- Are there any other abnormalities on the ultrasound?
- What kind of genetic testing will I need to have?
- How often will I have ultrasound examinations done?
- Where should I deliver?
- Where will the baby receive the best care after it is born?
- Can I meet the team of doctors that will be assisting my baby when it is born in