

## CONGENITAL TALIPES EQUINOVARUS INCIDENCE IN POPULATION OF SWABI, KHYBER PAKHTUNKHWA

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### Abstract

**Objective:** The aim of the study was to find out the incidence of congenital talipes equinovarus in children presenting at District Headquarter Teaching Hospital, Swabi.

**Material and Methods:** This study was of one year duration and was carried out at District Headquarter Teaching Hospital, Swabi. The record of 988 children presenting in the orthopedic ward for surgery were studied.

**Results:** A total of 96 (9.7%) children presented with congenital talipes equinovarus or club foot and out of these children 56 (5.7%) patients were males and 40 (4.04%) were female.

**Conclusion:** Clubfoot or congenital talipes equinovarus is one of the most common abnormalities of the foot and idiopathic talipes equinovarus is most common in the population of Swabi. It is more common in males and is mostly bilateral. It should be detected at birth and treated early to prevent permanent disability.

**Keywords:** clubfoot, varus, cavus, congenital talipes equinovarus, syndromic

### INTRODUCTION

The foot is a flexible terminal portion of the lower limb made up of bones, joints, muscles and soft tissues which bears weight and has a vital role in locomotion. It helps us to perform many functions like standing upright, jumping, walking and running.<sup>1,2</sup> The foot has 26 bones and 33 joints and is divided into three parts: the forefoot, the mid foot and the hind foot. The forefoot contains the metatarsals and phalanges.<sup>3,4</sup> The midfoot contains the navicular

bone, cuneiform and cuboid bones which make the arches of the foot and are shock absorbers. The hind foot is made of the talus and calcaneus bone and forms the heel and ankle.

Any abnormality of the foot can greatly hinder movement and if not corrected can lead to permanent disability. One of the most common abnormalities of the foot is talipes equinovarus which is also known as club foot. It occurs in 1 per 1000 live births. It is a complex congenital birth defect in which there is malalignment of bones and muscles of the forefoot, midfoot and hind foot.<sup>6</sup> It is more common in males and occurs bilaterally in 50% of the cases. There are both intrinsic and extrinsic factors believed to be responsible for this disorder like immobility in the uterus, maternal diabetes and smoking, seasonal

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variations and genetic factors but exact cause is not known.

The word talipes equinovarus has been derived from tali meaning ankle, pes meaning foot, equino meaning pointing downwards and varus meaning midline deviation. In this anomaly one or both feet are rotated inward and downward.<sup>7</sup> The foot is fixed in adduction, in supination and in varus. The navicular, calcaneus and cuboid are medially rotated in relation to talus. The muscles that are contracted and produce the characteristic deformity are flexor hallucis longus, flexor digitorum longus and tibialis posterior. There is poor development of peroneal muscles which causes the foot to be inverted. At the ankle joint, there is plantar flexion and at the subtalar joint there is adduction and inversion.

Congenital Talipes equinovarus can be idiopathic or syndromic. In 80% of the cases congenital talipes equinovarus is idiopathic and in 20% of the cases it is syndromic.<sup>11,12</sup> In Idiopathic congenital talipes equinovarus the exact cause is not known but there is a strong evidence of genetic link. It is usually associated with some minor malformations like lax joints, hip dislocation and absence of tarsal bones. In syndromic talipes it is usually associated with other malformations like spina bifida, arthrogryposis, diastrophic dysplasia, myelodysplasia or Prune belly syndrome.<sup>13</sup> This disorder is usually detected antenatally on an ultrasound or after birth. At birth the foot is carefully manipulated to see if it goes back to its position and if it does not it means it is congenital talipes equinovarus.<sup>14</sup> The best treatment is the Ponseti method of serial manipulation and casting but sometimes surgery is needed. Even then some deformity persists. In Pakistan the incidence of congenital talipes equinovarus is high but studies about its causes and incidence are few. The present study has been conducted to know about the incidence of clubfoot in our part of the world.

**MATERIALS AND METHODS**

It was a cross-sectional study of data of patients with Congenital Talipes Equinovarus who presented in Orthopedic ward of District Headquarter Teaching Hospital, Swabi during one year period. The inclusion criteria was all patients under two years with foot abnormalities and both sexes. Patients with previous injury/surgery on the foot and patients older than two years of age were excluded.

**RESULTS**

A total of 96 (9.7%) cases of clubfoot were recorded over a one year period in which 988 cases were observed. Of the 96 cases of congenital talipes equinovarus 89 (9%) cases were idiopathic while 7(0.71%) cases were syndromic. Of the 96 cases ,56 (5.7%) cases were male and 40 (4.04%) were female.65 (6.6%) cases were bilateral congenital talipes equinovarus while 31(3.13%) had unilateral congenital talipes equinovarus.

**DISCUSSION**

Congenital talipes equinovarus (CTEV) is one of the most common congenital foot abnormality which if not treated can lead to disability.<sup>15,16</sup> It occurs in 1 -2 per 1000 live births. It is more common in low or middle income countries with about 80% of clubfoot cases occurring in these countries. Clubfoot occurs more in males with a male to female ratio of 2:1 and is more common in the first born male child.<sup>21,22,23</sup> A reason for the gender difference was proposed by Kruse et al 5 in 2008. It is idiopathic in 80% of the cases and is usually bilateral. Our study revealed that out of 96 patients with congenital talipes equinovarus 56 were male and 40 were female which is similar to other studies which also showed male predominance. A study carried out by Lochmiller et al<sup>8</sup> showed that congenital talipes equinovarus was more common in males as compared to females .In our study out of the 96 cases with talipes 65 were

**Table 1:**

No of Patients	Ctev	Male	Female
988	96 (9.7%)	56 (5.7%)	40 (4.04%)

**Table 2:**

Ctev	Bilateral	Unilateral	Idiopathic	Syndromic
96	65 (6.6%)	31(3.13%)	89 (9%)	7(0.71%)

bilateral and 31 were unilateral which is in concordance with the study carried out by Wynne et al<sup>9</sup> which stated that about 50-70% cases of talipes were bilateral. Congenital talipes equinovarus can be idiopathic or syndromic. Our study revealed that 89 cases were idiopathic while only 7 were syndromic. This is similar to the study conducted by Zosia<sup>10</sup> which also reported that idiopathic congenital talipes equinovarus is more common. Idiopathic talipes equinovarus is usually associated with minor malformations like absent metatarsals, joint laxity and hip dislocation. Syndromic talipes is associated with neurological defects like spina bifida, arthrogryposis and myelodysplasia.<sup>17,18</sup> Our study also revealed similar results. The exact cause of clubfoot is not known but many studies have revealed factors believed to be responsible for this disorder which includes both environmental and genetic causes like maternal diabetes and smoking, malposition in the uterus and positive family history. The aetiology of clubfoot is still not known and research is needed to know the exact cause of this disorder.<sup>19,20</sup>

## CONCLUSION

Idiopathic Congenital Talipes Equinovarus is a common foot disorder which if not treated in time can greatly limit mobility. It usually occurs bilaterally and is more common in males. Many factors are believed to cause this anomaly which includes both genetic and environmental factors such as maternal smoking and diabetes and intrauterine immobility but its causes need to be further studied so its incidence can be reduced.

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