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RESEARCH ARTICLE

A CASE REPORT OF TREATMENT COURSE IN A NEGLECTED CLUB FOOT CHILD

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Abstract

Congenital club foot is among the most common developmental deformities in which affected children have abnormal bone arrangement. The worldwide clubfoot prevalence is around 0.6 to 1.5 per 1000 live births and around 1.4-1.5 per 1,000 live births in Pakistan. The need for this case study was to see the effect of Ponseti technique in a neglected clubfoot case where bony surgical procedures are mostly recommended to improve the deformity. After evaluation, the child was diagnosed with right clubfoot deformity. Conservative treatment using Ponseti method was initiated with weekly follow up followed by soft tissue release and post-operative casting. Now the child can bear her weight and walk properly.

Introduction:-

Literature was first introduced to club foot, which is also known as Congenital Talipes Equino Varus (CTEV), by Hippocrates around 400 B.C.[1] It is among the most common structural birth defects in which affected children have abnormal bone arrangement in the ankle having four main components: equinus, hind foot varus, fore foot adduction and cavus.[2,3] CTEV is a visible defect responsible for major disability in children.[4,5] The worldwide clubfoot prevalence is around 0.6 to 1.5 per 1000 live births. Among these, 80% of all clubfoot cases are presented in LMICs.[6,7] Little research has been done to calculate actual birth-prevalence of clubfoot in Pakistan. However, published data shows a prevalence of 6,000–7,000 cases/year which in other words is around 1.4:1,000 live births and 1.5/1,000 live births.[8,9] Clubfoot can occur in isolation, commonly known as idiopathic, or as an associated anomaly in different syndromes.1 It can be severe or mild in both conditions. The etiology of clubfoot is complex and is thought to be a combination of both genetic and environmental factors.[10,11]

50% of clubfoot cases are bilateral while the right side is more commonly affected than the left one in unilateral cases.[12,13] Males are more commonly affected by clubfoot than females.High negative impacts of clubfoot are seen in subjects suffering from this anomaly. Feet that had not been treated previously are termed as untreated/ neglected clubfeet.[14] Untreated forms of the malformation may result in lifetime dependency on others for performing daily chores, which in turn pose serious economic burden on the family as well as the country.[15]

Clubfoot, as a visible anomaly, can easily be diagnosed by foot examination after birth. Much debate has been done about the initial treatment of a clubfoot that it should start immediately after birth through nonsurgical procedures. Ponseti method is the most commonly used non-invasive procedure for clubfoot correction consisting of manipulation through serial casting and minor surgery and it can be initiated instantly after birth. Stretching and manipulation of foot's ligament and tendon on weekly basis is followed by casting to bring the ligament in its original position. Surgery is recommended in case of casting failure.[16,17] Untreated clubfoot in old

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age children is thought to be a difficult surgical problem due to stiff foot in these patients along with some pain and almost always some surgical intervention being already done.[18]

The paper will now discuss a neglected clubfoot case where bony/ reconstructive surgical procedures are mostly recommended but the team was able to handle the case amicably along with its relapse prevention and management. The aim of the case report is:

• to encourage healthcare professionals to adopt conservative, non-invasive treatment methods for clubfoot wherever possible
• to show how neglected, severe deformity can be treated without using bony procedures
• to stress on the importance of early intervention

Case Report

A 4 year old girl presented with clubfoot at Bashir Hospital Gujrat in March 2021.

Upon investigation, the reason behind the neglect and late presentation was compromised economic status and little family support. Detailed physical examination was performed after gathering basic patient data. There was no family history of clubfoot. Thorough examination revealed idiopathic unilateral right clubfoot (CTEV) with severely deformed foot. Patient was walking bearing weight on the dorsal aspect of the lateral border of the foot which had a large callosity with an underlying bursa. All the four components i.e. Equinus, Cavus, heel varus and forefoot adductus were in severe condition assessed on Damiglio and pirani score. The patient was registered for further treatment.

Course of treatment was started for the right foot after taking the informed consent from parents and proper counseling was provided to patient's parents about the procedures that will be performed. Serial casting in Ponseti method was used for stretching of all the components with cast on a weekly basis. Every time the cast was removed, foot was assessed for the improvement and improved foot scores were recorded. Casting was continued till the scores showed no further improvement.

Table 1:- Pre-op Pirani and Damigleo scoring of patient after each serial cast.

	Damigleo score				**Pirani score**		
	Varus	Cavus	Abductu	Equine	Mid foot	Hind foot	Tota

			s	s							l
					Posterior crease	Empty heel	Rigid equines	Talar head coverage	Medial crease	Curved lateral border	
1st cast	Present	Present	-30	-50	1	1	1	1	1	1	6
2nd cast	Present	Present	-30	-50	0.5	0.5	0.5	1	1	1	4.5
3rd cast	Present	Mild	-10	-30	0.5	0.5	0.5	0.5	0.5	1	3.5
4th cast	Corrected	Corrected	0	-10	0	0.5	0.5	0.5	0.5	0.5	2.5

A total of 4 pre operative stretching casts were applied. After that a modified poster medial soft tissue release was done followed by casting.

1st post operative follow-up was done after 2 weeks, cast was changed and patient was again put in a long leg cast with knee in slight flexion. The second cast was removed after 3 weeks i-e. 5 weeks post operative and patient was put in a short leg resin cast and allowed weight bearing as tolerated.

This cast was kept for 4 weeks and patient was encouraged to walk with cast. After removal of the cast, patient was fitted with an AFO and referred for gait training. Damigleo and pirani scores were noted at each follow up.

Table 2:- Post-op patient scoring after final cast.

Damigleo score				**Pirani score**						
Varus	Cavus	Abductus	Equines	Mid foot			Hind foot			Total
				Posterior crease	Empty heel	Rigid equines	Talar head coverage	Medial crease	Curved lateral border	
Corrected	Corrected	+20	0	0	0.5	0.5	0	0	0	1

Finally, the plantigrade corrected foot was achieved without significant stiffness. The patient condition has now improved significantly as it can be seen in the post picture.

Discussion:-

Clubfoot is one of the most commonly occurring congenital malformations which is mainly a result of multiple factors involving genetics and environment. Although sometimes associated with other congenital malformations, clubfoot is usually presented as idiopathic isolated anomaly. Clubfoot is a common congenital anomaly but the public knowledge about clubfoot is still sparse, therefore late seeking of treatment is likely and neglected cases are seen.

Treatments available can be conservative (such as splinting or stretching) or surgical.[19] The conservative clubfoot treatment approach using Ponseti method is well accepted as well as practiced compared to surgical procedures around the world in both developed as well as developing countries [20] and has been reported to show incredible foot correction ranging from a lower percentage of 50% to as high as 90%.[21] Ponseti technique includes two phases: an intervention phase and a maintenance phase in which intervention phase consists of series of manipulations and casting for clubfoot deformity correction and percutaneous tenotomy of the Achilles tendon for ankle equines correction while the maintenance phase involves wearing foot abduction braces for about 2-3years for maintaining the achieved correction.[19] One study reported that Ponseti clubfoot method has reduced the extensive soft tissue release requirement as well as major clubfoot surgery, and has changed the overall clubfoot operation approaches in Nigeria.[22] In less developed countries, different studies have shown promising results of Ponseti method in neglected clubfeet cases. A study in Malawi shows satisfactory deformity correction in 1.5 to 4 years old children.[23] Another Pakistani study conducted by Ullah and Shah, 2018 reported the effectiveness of Ponseti procedure in a neglected clubfoot case and favors our study results.[24] The case report discussed here also demonstrate how minimal surgical interventions can give amazing results through Ponseti method in neglected children.

Surgery is mostly recommended in 4 years old patients, however, in our case we used pre-surgical stretching to avoid bone shortening. Fortunately, the aim was attained through soft tissue releases without reducing the bone length. Moreover, correction of clubfoot was not the only outcome; satisfactory post-op reduction in rigidity in addition to the ease of motion and normal gait was also achieved as the patient used to walk on lateral aspect. Finally, the overall patient and parent satisfaction was accomplished.

It is safe to conclude that neglected clubfoot cases can be managed effectively by Ponseti method as it markedly reduces the need for surgical intervention and the complications linked with surgery. Developing countries should formulate early intervention strategies for clubfoot children because most neglected cases are presented there. Feet assessment should become a mandatory part of newborn examination so that parents can be guided about its management as early as possible.

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