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Edorium J Disabil Rehabil 2024;10(1):10–13.
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About a person with a missing limb and a clubfoot in one of their legs (congenital talipes equinovarus, or CTEV)

Md Shujayt Gani, Md Waliul Islam, Mohammad Anwar Hossain, Kumar Amitav, Nabila Tasnin

ABSTRACT

The Ponseti technique has a higher success rate than any other method now used in physiotherapy practice for the treatment of congenital talipes equinovarus or clubfoot. The study's objective was to discover proof that using the Ponseti approach for clubfoot challenging functional results and missing limb by prosthetic shoes. A baby girl who was 1 month and 6 days old and had no prior history of complications for either her mother or herself visited Centre for the Rehabilitation of the Paralysed (CRP). We identified her as having unilateral normal clubfeet (left) and missing limb in right, and throughout the casting process, her midfoot scored higher than her hindfoot. On the first casting day, feet had a total Pirani score (PS) of 5.5.

Total casting was necessary, and the right feet's PSs were 1.5 and 1, respectively. Just before the casting, she had manipulation (exercise therapy). After nine casting, Pirani's score was zero. Afterward, the patient was given the brace and prosthetic in the 4 size. This study's findings suggest that using the Ponseti approach yields comprehensive clinical and functional results and missing limb by prosthetic shoes.

Keywords: Clubfoot, CTEV, Missing limb, Ponseti management, Prosthesis

How to cite this article

Gani MS, Islam MW, Hossain MA, Amitav K, Tasnin N. About a person with a missing limb and a clubfoot in one of their legs (congenital talipes equinovarus, or CTEV). Edorium J Disabil Rehabil 2024;10(1):10–13.

Article ID: 100058D05MG2024

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doi: 10.5348/100058D05MG2024CR

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Received: 23 December 2023
Accepted: 27 May 2024
Published: 30 June 2024

INTRODUCTION

The three-dimensional foot deformity known as idiopathic clubfoot (talipes equinovarus) is characterized by equinus, cavus, and forefoot adductus [1]. Clinically, this pediatric defect can be classed as secondary or isolated; it is secondary or syndromic if it is linked to another congenital condition (20% of instances), and isolated if there are no other malformations (80% of cases), which introduces the idea of idiopathic CTEV [2]. Children born with clubfoot are known to occur anywhere between 0.4 and 2.0/1000 live births worldwide, with the average being close to 1/1000 live births [3]. During a normal ultrasound examination approximately 20 weeks into the pregnancy, it is feasible to identify clubfoot in its many forms. A higher PS typically correlates with

postnatal severity and prenatal ultrasonography has an accuracy of 86% for isolated clubfoot [4]. The Ponseti technique is a particularly specialized approach to the treatment of clubfoot that combines serial manipulation and casting with the maintenance of brace-based deformity correction [5]. The distinctive center bar of this foot abduction brace includes foot components attached in external rotation and dorsiflexion. It functioned on the tenet that fixed the two feet together in regard to the body's median plane and prohibited turning [6]. The current standard is for braces to be worn for a minimum of four years following correction [7]. The most frequent congenital anomaly following congenital heart problems is a congenital limb defect (CLD), which develops when normal limb development during the intrauterine period is compromised. The prevalence of CLD varies across studies, ranging from 4.9 to 13 per 10,000 live births [8]. Congenital limb deficiencies were more likely to occur in people with young mother ages, primiparity, male sex, and pregestational diabetes. Deficits in limb development were linked to antiepileptic drug intake during the first trimester. Interventions to prevent congenital limb deficits should ideally start before to conception and can involve educating the public about the dangers of maternal pharmaceutical usage during the first trimester of pregnancy, for instance [9].

A serious blow to a person's bodily integrity is the amputation of a limb. Attempts to provide the amputee with an almost complete replacement of the lost body part have been made in response to the necessity to rehabilitate the body after amputation. Hence, considerations of usefulness and aesthetics serve as the primary guiding principles for prosthetic treatment. Variables related to prosthesis embodiment and their impact on satisfaction among lower limb amputees include prosthesis fit, functional ability, aesthetic appearance, ownership experience, psychological adaptation, motor control, and social perception.

The device's aesthetics, functional, and physical qualities, and fit, as well as prosthesis use and medical conditions of the residual limb, were found to be significant determinants in a recent systematic review on factors linked with prosthesis satisfaction, specifically in lower limb amputees. Sex, the cause of the amputation, the degree of amputation, the prosthetic socket's characteristics, and other factors could all have a significant modifying role [10].

CASE REPORT

A 1-month 6 days-old girl was found to have a clubfoot right and missing limb left during a CRP Ponseti clinic program in January 2023. Hence, the infant was transferred to multiple hospitals after birth due to being born with clubfoot. A thorough history was obtained, including information on the mother's medical history, socioeconomic position, nutritional intake, and use of supplemental iron and calcium. The father's history of smoking was discovered in the family history. Several family members also experienced the same issue. To gauge the severity of various CTEV anomalies, a general and physical examination of the infant was performed in various positions. The ligaments and tendons in the foot were pulled and stretched on a weekly basis, and then total 9 soft fiber cast was used to help restore the ligaments to their natural position. No needed surgery after that patient got special prosthesis Dennis Brown splint (Figure 1).

Figure 1: Manipulation by expert physiotherapist, during recover and finally wear special prosthesis Dennis Brown splint.

DISCUSSION

The baby was diagnosed as typical clubfeet at the age of 1 month and 6 days where feet were involved unilaterally with mild rigidity. Recent studies indicate that 10.5% of parents were told of a family history of CTEV and that 97.7% of children were diagnosed before the age of five [4]. It was detected in bilateral or single feet, but 50% of instances involved both. Females were more likely to be affected than males, with ratios ranging from 1.6:1 to 3:1 [11]. Typically formed between 9 and 14 weeks of pregnancy [12]. The patient maintained treatment and finished the repair and maintenance phases under the supervision of a qualified and experienced physiotherapist (Ponseti practitioner). Once a week, the patient came in and changed the casting. It took a total of nine trips to complete the above-knee casting. On the day of the visit, the participant removed the cast in the center's hallway. Similar to other work, physiotherapists engaged in casting, removing casts, manipulating patients, and bracing [13]. A prior study supported our practice of replacing and removing the casting once each week [14] but their average number of casting sessions was lower (5.5) than us. Above-knee casting had the highest success rate, while below-knee casting had a failure rate of 37.5% and required much longer treatment periods [15]. Pirani scores were 1.5 in the right foot and 1 in the left foot at the final visit of the corrective phase. In another study, PS of 1 or below was attained in 85.0% of instances following the corrective phase, of which 37 foot had a PS of 0, 99 had a PS of 0.5, and 73 had a PS of 1. Moreover, only 4.0% (n=10) of the feet were unable to receive a score of 1.5 or

less, whereas 11.0% (n=27) of the feet did [16]. After PS was 0 then the patient received prosthesis Dennis Brown foot abduction brace for the shoe size of 4 and another limb was missing. The patient was not permitted to be off her feet for longer than an hour during the first three months. She wore the brace until the end of the course of treatment at roughly age 5, wearing size 12 shoes. Taking into account that PS was 0, clinical result remained steady. Ponseti himself described using the foot abduction prosthesis after three months of fulltime bracing for an extra mean period of 21 months (range from 10 to 30 months), with a recurrence observed in 56% of patients in his first case series [16]. Relapse occurred in nine studies, which was caused by non-compliance with the bracing regime and additional variables like poor income and low socioeconomic position [13]. Clinical outcome was measured weather arisen of any sign of the CTEV. Regular testing of the planter flexion reflex to ensure neurological function revealed it to be in good condition. According to other research on the functional outcome, 88% of cases had no limitations, 7% occasionally had limitations, and 3% had persistent limitations.

CONCLUSION

One of the disorders that is frequently seen in clinical practice is clubfoot. The main cause is a lack of nutrition throughout the prenatal period. The need for surgery has been significantly reduced thanks to the outstanding results of conservative care using the Ponseti approach. Current treatment of clubfoot deformity consists of initial trials of manipulation and serial casting (30–50% feet treated). If there is missing limb, special prosthesis for better choice.

From our research, we can infer that if we can consistently counsel, train, and teach the parents therapeutic activity, not only the casting period but also the full sustaining phase under physiotherapy brought about the favorable outcome of clubfoot. Until the end of the therapy course, there was no relapse. During the functional exam, the patient was able to carry out every task just like a typical young child.

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Author Contributions

Md Shujayt Gani – Conception of the work, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of

any part of the work are appropriately investigated and resolved

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Kumar Amitav – Conception of the work, Design of the work, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Nabila Tasnin – Conception of the work, Design of the work, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Guarantor of Submission
The corresponding author is the guarantor of submission.

Source of Support
None.

Consent Statement
Written informed consent was obtained from the patient for publication of this article.

Conflict of Interest
Authors declare no conflict of interest.

Data Availability
All relevant data are within the paper and its Supporting Information files.

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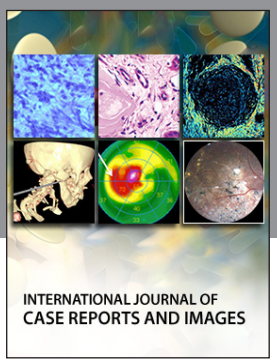

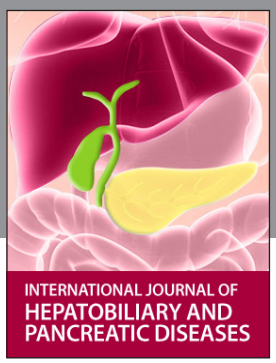

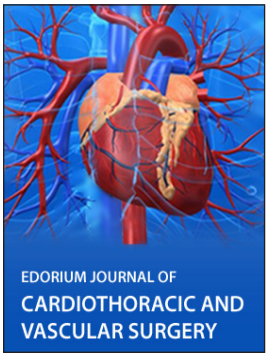

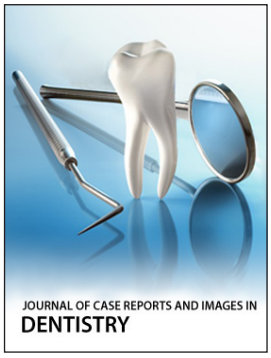

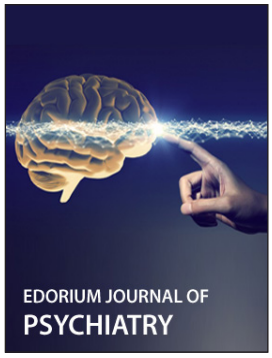

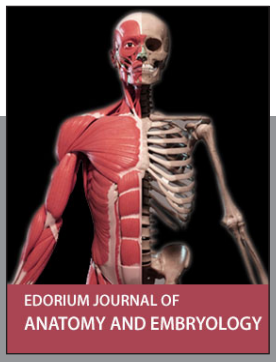

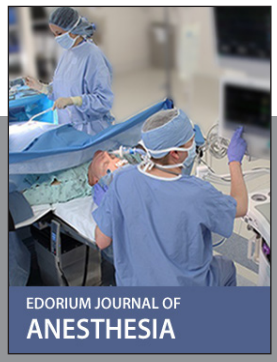

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