

Perception of Parents Regarding Ponseti Technique for Treatment of Club Foot

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ABSTRACT

OBJECTIVE: To analyze the impact of Ponseti technique on parents of children with club foot.

METHODOLOGY: It was a descriptive cross-sectional study, conducted at Dow University of hospital and Civil Hospital Karachi from August-October 2017. After taking informed consent, the parents of the children who had a club foot deformity, treated in our club foot clinic were included in the study. Research team members, filled the questionnaires. Sampling technique was non-probability type. SPSS version 16 was used for statistical analysis.

RESULTS: Out of 292 respondents, 152(51.2%) were only fathers working, 41(13.8%) only mother working and 99(33.3%) are both working. 124(41.8%) had a family history of club foot. 186(62.6%) children need tenotomy. Anxiety related to Ponseti technique prior to treatment observed in 232(78.1%) and 60(20.2%) had no anxiety before treatment. Anxiety regarding tenotomy before the procedure was in 172(57.9%) where as 38.7% had no anxiety. Regarding problems during casting, 58(19.5%) had irritability, 22(7.4%) had problems during nursing, 212 (1.4%) had both of these problems. Skin rashes and blisters were observed in 122(41.1%) whereas 170(57.2%) had mild redness only.

CONCLUSION: Ponseti technique is a very effective and successful method of treatment. Parent's perspective regarding Ponseti technique is that they are satisfied at the completion of treatment, but they got casting phase very difficult because of problems in maintaining hygiene. Initial period of bracing was difficult because of child's irritability and skin problems.

KEYWORDS: Club foot, Ponseti, Perspective, Tenotomy, Casting.

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INTRODUCTION

Club foot is the most common complex deformity present at birth with an incidence of 1.2 per thousand live births¹. Initially it was treated surgically, that resulted in painful arthritic feet². There has been increased interest in Ponseti method in treatment of club foot in recent years. It is a conservative way of treating clubfoot can be divided in two phases, the first phase is correction by casting as shown in **Figure 1** and the second phase is maintenance by bracing³. Although Ponseti technique has excellent results, lack of well-maintained follow up of bracing program results in recurrence in 80% families whereas relapse rate is 6% in compliant families. Parents face difficulty during the casting phase because it is very difficult to take the cast off at home by themselves especially when the baby cries and become uncomfortable⁴. During bracing phase parents face difficulties because of skin problems e.g. skin rashes, blisters or skin necrosis that in most case there was a mild skin

damage, there was redness of skin in many cases and few had small blisters as well⁵. Ponseti technique is a conservative method of treatment for club foot management. A study from university of Iowa reveals the fact that during a period of 10 years 98% patients had a successful correction with only 11% relapse⁶. Parents of children born with club foot face stress after birth of child when they come to know that their baby had club foot. Since Ponseti technique is a time-consuming procedure, they have to bring their child weekly to the hospital for casting for several weeks. After that they have to pass through an intensive bracing phase until the child is 4 years old⁷. In order to minimize the impact of anxiety, stress and depression, it is important to evaluate the parent's perspective so that appropriate steps can be taken to lessen the burden on the parents. Rationale of this study is to identify the impact of Ponseti technique on the parents and to identify their problems during casting and bracing phase, so that effective treatment plans can be made in order to avoid these problems.

FIGURE I: STAGES OF PONSETI TECHNIQUE



METHODOLOGY

This descriptive cross-sectional study was conducted at two constituent hospitals of Dow University of Health Sciences i-e Civil Hospital, Karachi and Dow University Hospital, Karachi. After taking ethical approval from Institutional Review Board, study was conducted during the period from August-October 2017. Using the 74.5% favorable response of the parents, computed sample size is 292 for this study with 95% confidence interval and 5% margin of error. After taking informed consent, the parents were informed in detail regarding the purpose of this study and the potential benefits regarding the results of this study to the patients. All those parents whose children were treated in our club foot clinic, completed their casting phase and at least 2 years of the bracing phase were included. Those parents whose children are under the casting phase or have not completed two years of bracing phase were excluded. Research team members, who are Ponseti trained practitioners, were responsible for the data collection by filling a questionnaire (designed by authors), comprising of demographic features and the questions pertaining to the impact of Ponseti treatment on parents. Questionnaire was available in three languages i.e. English, Urdu and Sindhi, interpreter was available for the other languages e.g. Punjabi, Pushto and Balochi. Parents were interviewed directly by the research team members in the clinic and answers were marked in it. Sampling technique was non-probability type.

SPSS version 16 was used for statistical analysis. All children included in the study were treated by Ponseti technique, without any modifications, including serial long leg casting on weekly basis. On average 7-8 casts were applied. The casting phase was followed by a percutaneous tenotomy under local anesthesia (1 ml of Inj. Xylocaine 2%) the procedure was performed in clinic. After tenotomy, a cast was applied for three weeks. Abduction brace was fitted to the child when last cast was removed, three weeks after tenotomy. The brace is recommended for 23 hours/day for three months followed by at night and during sleeping hours in the day time till 4 years of age⁸.

RESULTS

Out of 292 respondents, 152(51.2%) were only fathers working, 41(13.8%) only mother working and 99 (33.3%) are both working. 124(41.8%) had a family history of club foot. 186(62.6%) children need tenotomy. Anxiety related to Ponseti technique prior to treatment observed in 232(78.1%) and 60(20.2%) had no anxiety before treatment as mentioned in Table I. Anxiety regarding tenotomy before the procedure was in 172(57.9%) where as 38.7% had no anxiety. Regarding problems during casting, 58(19.5%) had irritability, 22(7.4%) had problems during nursing, 212 (1.4%) had both of these problems. Skin rashes and blisters were observed in 122(41.1%) whereas 170 (57.2%) had mild redness only (as mentioned in Table II).

Regarding social acceptability 142(47.8%) respondents responded with no, whereas (50.5%) said yes, it is socially acceptable. When respondents were asked about family support, 230(77.4%) had strong family support whereas 61(20.9%) had no support by family members during the course of treatment. Regarding thoughts to quit treatment 32(10.9%) respondents said that they had thoughts to quit treatment whereas 260(89.1%) said that they had no such thoughts (as mentioned in Table III).

TABLE I: PARENT RESPONSE REGARDING PONSETI TECHNIQUE (n=292)

	Frequency	Percentage
Family History of Club Foot	124	42.5%
Need of Tenotomy	188	64.3%
Anxiety Related to Ponseti technique	232	79.5%
Thoughts to quit Ponseti treatment	32	10.9%
Opinion about social acceptance of Ponseti	142	48.6%

TABLE II: COMPLICATIONS RELATED TO PONSETI TECHNIQUE (n=292)

Complications due to Casting		
Complications	Frequency	Percentage
Skin Problems	122	41.8%
Restriction to bathe leading to hygiene issue	170	58.2%
Problems faced during casting		
Problems	Frequency	Percentage
Irritability	58	19.9%
Problems in Nursing	22	7.5%
Both	212	72.6%

TABLE III: PARENTS THOUGHTS

Thoughts to quit Ponseti treatment	Yes	32	10.9%
	No	260	89.1%
Opinion about social acceptance of Ponseti	Yes	142	48.6%
	No	150	51.4%

DISCUSSION

Club foot is a congenital disorder, which if left untreated increases the disability and misery of the patient with increasing age. Nowadays treatment of clubfoot is mostly by a conservative approach (Ponseti technique), which was previously treated by strapping, physiotherapy and extensive surgical procedures. Parents have certain problems, ambiguities and anxiety during the course of treatment. If these concerns and problems of the parents are not identified and rectified by the treating physician, parents may quit the treatment at any stage. This study provides an important and unique insight in to the knowledge and perceptions about Ponseti technique in the parents. A study done by Malagaleda F 2016¹ shows that during the initial casting phase there was a higher stress and impact on the parents as compared to the bracing phase. This is consistent with our study which shows 78.1 % respondents had anxiety related to Ponseti technique.

Parents have anxiety just after the birth of children when they came to know that their baby has clubfoot which further increased by the stress related to treatment. It is also evident from a study done by Coppola G et al⁷ which states during the prolong phase of casting, parents suffer from severe anxiety and stress. It is not clear either this stress is related to ponseti technique itself or it is due to the diagnosis of clubfoot after birth, also it is not yet clear that this anxiety is either related to the casting treatment itself or it is superimposed effect of being diagnosed as a

club foot at birth. It is a very critical period for the families during the first three months after birth during the casting phase.

Parent's compliance is major factor that influence the outcome of treatment. In our study 77.4% respondents said that they had a strong family support. This is because of joint family system which is common in Pakistan. According to a study done by Gadhok K et al⁸ paternal support was a major factor for the better compliance of treatment in terms of financial and emotional support. A study done by Lu N 2010⁹, in Uganda and Malawi, mother was responsible for the child health care where as in Uganda lack of support by fathers was identified as a major barrier for the Ponseti method to be successful.

In our country due to strong joint family system parents were well supported during the period of treatment. It is also evident from a study which shows that in those societies where there is a respect for the elders and their decisions, compliance by the parents is better because of the practical support by the family members^{10,11}. A meta analysis done by Drew S 2016¹² shows that in all studies income of the care takers act as a major barrier to the better compliance of the treatment. Due to lack of access to resources, travel expenses and money loss by taking time off from job, it is very difficult for the people belonging to lower socio-economic group to continue this prolong treatment.

Anxiety related to achilles tenotomy before the procedure was seen in 57.9% respondents. This anxiety may be due to either the anticipated bleeding and other complications during the procedure or may be due to lack of communication with the physician. According to a study done by Nogueira M 2013¹³, 82.2% parents said that they found tenotomy as a simple procedure and it is not as complicated as it was anticipated.

Regarding satisfaction level of the parents, when they were asked either they had any thoughts to quit during the course of treatment, 82.6% said that they had no such thoughts. This is also evident from a study done by Kazibwe H 2009¹⁴ who reported that 74% told about the complications arising in the case of not following the instructions regarding treatment which shows that during the period of training parents learn a lot about club foot, despite the fact that before starting the treatment they had a very little knowledge regarding treatment. This could be due to the rewarding results of Ponseti technique at the completion of treatment and by discussion with the other parents.

CONCLUSION

Ponseti technique is a very effective and successful

method of treatment. Parent's perspective regarding Ponseti technique is that they are satisfied at the completion of treatment, but they got casting phase very difficult. Initial period of bracing was difficult because of child's irritability and skin problems. Anxiety related to Achilles tenotomy and the protocol of brace management are the anticipated problems prior to the commencement of treatment, which gradually resolves by repeated discussions among physician and parents.

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