

**STUDY OF SURGICAL MANAGEMENT OF NEGLECTED CONGENITAL TALIPES EQUINO VARUS IN CHILDREN**Chinta Shyam Kumar<sup>1</sup>, D. Venkateswara Rao<sup>2</sup>, Vijay Sreenivas<sup>3</sup>, Anvesh Sangepu<sup>4</sup>**HOW TO CITE THIS ARTICLE:**

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**ABSTRACT:** Idiopathic clubfoot is one of the commonest congenital conditions seen in Orthopaedics. It still remains an unsolved problem. Though Congenital Talipes Equino Varus exists from the time immemorial, its etiology is unknown, pathology is complex and management is full of controversies. This study includes, 68 children with neglected clubfoot who attended at Siddhartha medical College/Government General Hospital, Royal Hospital and Centini Hospital, Vijayawada in between May 2011 to April 2015. Based on the criteria mentioned in Materials and Methods of the 98 feet (68 patients), we had excellent results in 52 feet, good results in 28 feet, fair results in 14 feet and 4 feet poor results. We treated 56 feet with soft tissue release, 30 feet with soft tissue release along with limited bony procedure and 12 feet with JESS fixator.

**KEYWORDS:** CTEV, Neglected Clubfoot.

**INTRODUCTION:** Idiopathic clubfoot is one of the commonest congenital conditions seen in Orthopaedics. It still remains an unsolved problem. Though CTEV exists from the time immemorial, its etiology is unknown, pathology is complex and management is full of controversies. Surgeons have passed through the phase of forceful manipulation of clubfoot to microsurgical techniques and correction by external fixators. This study carried out at Siddhartha medical College/Government General Hospital, Royal Hospital and Centini Hospital, Vijayawada was aimed at evaluating the pattern and severity of neglected club feet in children and the outcome of the various surgical procedures in their management.

**AIM OF THE STUDY:** To evaluate the outcome of various surgeries in neglected club feet in children. This study includes, 68 children with neglected clubfoot who attended at Siddhartha medical College/Government General Hospital, Royal Hospital and Centini Hospital, Vijayawada in between May 2011 to April 2015.

**MATERIALS & METHODS:** The clinical material comprised of 68 children with neglected clubfoot who attended Siddhartha medical College/Government General Hospital, Royal Hospital and Centini Hospital, Vijayawada in between May 2011 to April 2015. All the patients included in the study were aged above 1 year and had never undergone any sort of manipulation or corrective casing or surgery. Out of the 68 patients, 48 were males and 20 were females and 30 patients had a bilateral deformity. Of the 38 unilateral deformities, 26 were on the right side and 12 on left side.

**Grading of severity:** The patients were graded into 3 groups based on gentle passive correction of the deformities.

**Grade-I:** All deformities of foot and ankle joint could be corrected fully.

**Grade-II:** Adduction & Inversion of foot could be corrected, but not equinus of the ankle joint.

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**Grade-III:** None of the deformities of the foot and the ankle joint could be corrected.

4 patients were of Grade-I, 36 patients were of Grade-II and 28 patients were of Grade-III. All the patients under study were subjected to stretching of soft tissues prior to surgery by Gentle manipulation and POP cast, twice or thrice for period of 3 weeks. The choice of the surgical procedure in each individual case varied depending on the age of the patient and the type and severity of a deformity.

In 36 cases, only Turco's posteromedial soft tissue release,<sup>1</sup> was done. In 20 cases, soft tissue procedure was supplemented with one of the bony procedures like, Dillwyn-Evan's procedure in 8 cases, dwyer's,<sup>2</sup> calcaneal osteotomy in 8 cases, and cuboid enucleation in 4 cases. In 2 cases anterior transfer of tibialis posterior tendon was done. In 12 cases JESS fixator was applied. The period of follow-up ranged from 6 months to 2 years. We have evaluated each foot cosmetically and functionally and rated them according to the criteria laid down by Turco<sup>1</sup> as:

**A. Excellent:**

- 1) Complete correction of all components of the deformity.
- 2) Plantigrade foot.
- 3) Pliable subtalar motion.
- 4) Dorsiflexion equal to the normal side or above the right angle in bilateral deformities.
- 5) Good push off and gait.

**B. Good:**

- 1) Complete correction of all components of the deformity.
- 2) One or more mild cosmetically acceptable residual, such as asymmetric foot size or pes planus.
- 3) Pliable metatarsus adductus.
- 4) Toe-in-gait.

**C. Fair:**

- 1) Over correction or some loss of initial correction.
- 2) Plantigrade foot.
- 3) Functionally acceptable.
- 4) Less acceptable cosmetically.

**D. Poor:**

- 1) Loss of correction and recurrence of deformities.
- 2) Persistence of cosmetically unacceptable deformities.

**RESULTS:** Evaluation of the results of clubfoot treatment is yet another area of wide spread disagreement criteria listed and used by various authors for evaluation are far too many. Based on the criteria mentioned in Materials and Methods of the 98 feet(68 patients), we had excellent results in 52 feet, good results in 28 feet, fair results in 14 feet and 4 feet poor results. We have evaluated results separately for severity of deformity, Age groups and Type of surgical procedure.

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Age of the child	No. of Feet	Outcome
1-2 years	4	All excellent (100%)
2-3 years	2	Excellent (100%)
<b>GRADE-I</b>		

Age of the child	No. of feet	Outcome
1-2 years	14	All excellent (100%)
2-3 years	30	28 Excellent (93.3%) 2 Fair (6.66%)
3-4 years	16	10 Excellent (62.5%) 4 Good (25%) 2 Fair (12.5%)
<b>GRADE-II</b>		

Age of the child	No. of feet	Outcome
3-4 years	4	All good (100%)
4-5 years	12	8 good (66.6%) 2 fair (16.6%) 2 poor (16.6%)
5-6 years	10	4 good (40%) 4 fair (40%) 2 poor (20%)
>6 years	12	8 good (66.66%) 4 fair (33.33%)
<b>GRADE-III</b>		

Age group	No. of Feet	Outcome
1-2 years	16(Grade I: 4) (Grade II: 12)	All excellent (100%)
2-3 years	28 (Grade I: 2) (Grade II: 26)	26 Excellent (92.8%) 2 Fair (7.14%)
3-4 years	20 ( Grade II: 16) (Grade III: 4)	10 Excellent (50%) 8 Good (40%) 2 Fair (10%)
4-5 years	12 ( All Grade III)	8 Good (66.6%) 2 Fair (16.6%) 2 Poor (16.6%)
5-6 years	10 ( All Grade III)	4 Good (40%) 4 Fair (40%) 2 Poor (20%)
>6 years	12 ( All Grade III)	8 Good (50%) 4 Fair (50%)
<b>Evaluation of results for different Age groups</b>		

Type of surgery	No. of Feet	Outcome
1. Soft tissue release alone	56	50 Excellent (89.2%) 2 Good (3.57%) 4 Fair (7.14%)
2. Soft tissue release + limited bony procedure	30	20 Good (66.66%) 6 Fair (20%) 4 Poor (13.3%)
3. JESS Fixator	12	10 Good (83.33%) 2 Fair (16.66%)

**Evaluation of results for different surgical procedures**

We encountered mild wound gaping after suture removal in 5 feet and mild superficial infection in 6 feet, which eventually healed with regular dressings and antibiotics. None of the patients had skin necrosis. In 4 patients we had failures, where in the patients did not maintain the cast immobilization right from the beginning and came months later with total recurrence of deformities. We got fair results after re-operating on them. 2 patients were lost for follow-up.

**DISCUSSION:** Clubfoot is the most common congenital orthopaedic condition requiring intensive treatment. In our country, because of illiteracy and lack of information amongst the masses, it is not uncommon for us to see very late presentations of clubfeet, in whom achieving a normal foot is not easy.

It is predominantly seen in males as in our series – 70.6% and is comparable with other series like-Kite (1964),<sup>3</sup> – 71% males and 29% females; Gupta and Gupta(1999) – 50%. It is bilateral in about half of the patients. Our series, 46.87%, Kite (1964)<sup>3</sup> -49%, Gupta and Gupta (1999)-50%. Many investigators agree that the deformity probably results from a combination of multifactorial genetic predisposition and some obscure intrauterine environmental factor. It is most commonly of the idiopathic variety. In our series a positive family history was seen in 2 patients (i.e. 6.25 %).Where as in other series it was 4% (Kite-1964);<sup>3</sup> 37% (Gray and Katz-1981).

On clinical examination most of our children had small callosities on lateral aspect of the foot. Though we did not have much problem with wound healing, achieving cosmetic normalcy was not possible in many of the patients, but got good functional results. We found preliminary manipulation and stretching of soft tissues useful in achieving good reduction of talonavicular dislocation and good functional results even in rigid and neglected cases. Though in the past conservative treatment was advocated in many cases (92% of Kite series 1964; 66% of Kumar et al series, 1979 underwent conservative treatment) we found operative treatment to be a better option in neglected cases.100 % of our neglected club foot patients underwent surgery and is comparable to with other series like Somppi(1984)-494%; Gupta and Gupta (1999)-100% underwent surgery. In our series children with Grade-I severity had 100% excellent results irrespective of age. With Grade -II severity, in children < 3 years age group we had 94.7% excellent results and 5.26% fair results. With Grade-III severity, we didn't have children less <3 years. In children > 3 years we had 58.8% Good results; 29.4% Fair results; 11.76% Poor results.

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We did soft tissue release alone in 28 feet. Out of which we had excellent to good results in 26 feet (92.8%) and fair results in 2 feet (7.14%). 80% of these children are < 3 years age and 100% of them either Grade I or Grade II severity. No Grade III. We did soft tissue release supplemented by limited bony procedure in 15 feet. Out of which we had good results in 10 (66%), fair results in 3 (20%), poor in 2 feet (13.3%). Of the children who have undergone this type of procedure, 73.3% are >4 years age and 86.6% of them have Grade III severity. For the application of JESS we have selected 12 feet randomly and we had good results in 10 feet (83.33%) and fair results in two feet 16.66%. Even though our JESS series is small to comment but definitely it has role in correction of neglected club foot in older children.

On total we had good to excellent results in 80.84% of our patients and poor results in 4.2% and fair results in 15% of our patients. Turco (1979),<sup>5</sup> had shown excellent results in 83 % and fair results in 8%. In spite of our patients presenting late we could get excellent results comparable to other series. One of the reasons for this could be that, our series did not include patients who had undergone previous surgeries; because multiple surgeries would cause iatrogenic epiphyseal damage and scarring which preclude good functional results.

Turco (JBJS: 1979),<sup>5</sup> had shown that his excellent to good results decreased from 90.5% in patients who had not undergone previous surgery to 71% in patients who underwent multiple previous surgeries. So, by careful planning and instituting the appropriate method of treatment in each particular case we can always achieve good results.

### CONCLUSION:

1. The outcome of soft tissue release surgery alone in cases of neglected CTEV is excellent to good (92.8%) in children younger than 3 years, provided the severity of deformity is Grade I&II.
2. Good results (66.6%) obtained in children of age more than 3 years with Grade III severity by soft tissue release supplemented with limited bony procedures may obviate the need for Triple arthrodesis in later stages.
3. In children more than 3 years age, all cases of Grade III and some of Grade II, club feet require supplementation of bony procedure.
4. JESS has a role in correction of neglected club feet in older children of more than 5-6 years of age.

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