

COMPARISON OF RESULTS OF TWO DIFFERENT INCISIONS IN POSTERO MEDIAL SOFT TISSUE RELEASE IN IDIOPATHIC CLUB FOOT

D. Ramkishan¹, S. Y. Narsimulu²

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ABSTRACT: OBJECTIVE: To assess and compare the results of two different incisions in Turco's postero medial soft tissue release. **MATERIAL & METHODS:** 48 Cases in 1-2Yr age group, 69 rigid feet of which 34 male, 14 female 12 bilateral feet, 10 left feet, 17 right feet. 5 patients have positive family history. **RESULTS:** In all cases one stage STR performed, excellent in 35 feet, good in 25 feet, skin necrosis in 6 patients. 6 patients did not turn up for follow up. The one-stage posteromedial soft tissue release performed by using a straight medial horizontal and postero medial curvilinear incisions is an excellent way of managing the problem of congenital talipes equinovarus with few complications like skin edges necrosis. The both incisions are given best results if applied in appropriate selection of child.

KEYWORDS: Club foot, Equinovarus deformity, Turco's postero medial soft tissue release, Transverse postero medial incision, curvilinear postero medial incision.

INTRODUCTION: Club foot is one of the commonest congenital condition. Its etiology is unknown, pathology is complex and the management is full of controversies. It still remains unsolved problem and it requires judicious selection of cases and use of appropriate method of treatment.^(1,2)

This article consists of comparative results of a study between the postero medial soft tissue release using a straighter postero medial horizontal incision versus a postero medial curvilinear skin incision a period of 36 months from 2006-2011.

This includes 69 feet in 48 children of which results 35 cases excellent, 25 good 9 cases poor, skin necrosis seen in 9 cases. The study concluded that incisions and techniques are chosen according to patient condition for better results. It reveals increasing awareness among parents that the deformity can be fully corrected leading to early consultation and regular follow-up.

CLINICAL EXAMINATION and CLASSIFICATION.^(2, 3, 4)

Classification grade	Type	Score	Reducibility
I	Benign	<5	>90° Soft –soft resolving
II	Moderate	5 to < 10	>50° soft-stiff, reducible, partly resistant
III	Severe	10 to <15	<50° stiff-soft, resistant, partly reducible
IV	Very severe	15 to <20	<10° stiff – stiff resistant
<i>Dimeglio et al for the classification of congenital talipes equinovarus</i>			

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Ankle dorsi Flexion(degrees)	Heel varus (degree)	Adduction of the for part Of the foot(degrees)	Tibial torsion (degrees)	Result
>10	0	0 to 10	0	Good
0 to 10	0 to 10	10 to 20	Moderate	Acceptable
0	>10	>20	Severe	Poor
<i>Ponsetti and Smoley1 classification</i>				

Grade	Severity	Residual deformity with correction
1	Mild	Neutral or beyond
2	Moderate	< 20 ⁰
3	Severe	>20 ⁰
<i>Harrold and Walker classification</i>		

RADIOGRAPHS.(4,1):

- I. Preoperatively to assess the severity of the clubfoot.
- II. Intra-operatively to determine the amount of correction achieved.
- III. Postoperatively to assess the correction obtained and to know the chances of recurrence.

Three views are taken (of both feet):

1. The A.P. view sometimes called Superio-Inferior view with the foot in 30 degrees of plantar flexion.
2. The lateral view.
3. Stress dorsiflexion lateral view.

MATERIAL AND METHODS: The clinical material is composed of 18 children with rigid clubfoot (CTEV) who were admitted and treated in Osmania General Hospital, Hyderabad during the period from Nov 2001 to April 2004.

The cases included in the study were children around the age of one year with rigid clubfoot irrespective of previous trial in conservative treatment.

Detailed history and clinical examination findings were recorded. All the routine investigations like urine examination, hemoglobin and complete blood picture blood urea and blood sugar estimation were performed.

All the cases were treated surgically by posteromedial soft tissue release as advocated by Turco, with a slight modification.

1. The deformity and postoperative correction were recorded by clinical photographs. The cases were followed by regular examination, and clinical photographs. The method of management including surgical technique, postoperative care and follow-up, were as described under here

SURGICAL TECHNIQUE: (5,4,6,7)

Under general anaesthesia and tourniquet control, in supine position and aseptic precautions, a curved posteromedial incision in made extending from the base of the first metatarsal passing backwards to a point midway between medial malleolus and tendocalcaneus and then extending vertically upwards for 5 to 6cm the leg. i.e., through curvilinear and vertical skin incisions.

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2. Straight line horizontal incision of about 6 to 8cm from base of first metatarsal passing backwards to posterior to tendoachilles insertion. Care was taken not to undermine the skin and to avoid forcible retraction of skin during deeper dissection.⁽⁷⁾

After identifying the neurovascular bundle, by careful dissection the tendon of tibialis posterior, flexor digitorum longus and flexor hallucis longus were identified and mobilized. The master knot of Henry was identified and divided beneath the navicular. Next all the three tendons were lengthened by z-plasty technique (Sutured with 4 '0' black silk).

Next the subtalar joint was exposed and posteromedial capsulotomy was done. The superficial part of the deltoid ligament and the spring ligament were divided. The posterior capsulotomy of ankle joint was rarely required.

Then the abductor hallucis muscle was identified on the medial side of foot and released completely from its origin or even excised. Steindler's stripping that is release of plantar fascia along with the small muscles of foot, was performed whenever there was significant cavus deformity.

Next the tarsal joints are opened medially by capsulotomies of talonavicular, naviculocuneiform and cuneiformo metatarsal joints. By doing so and by releasing the superficial part of deltoid ligament, by detaching the spring ligament from sustentaculum tali and by dividing the talocalcaneal interosseous ligament and bifurcated ligament the navicular is completely mobilized and reduced onto the head of talus. Next the tendocalcaneus is isolated and lengthened by Z-plasty technique.^(8,7)

After achieving full correction on the table, the tourniquet was released hemostasis secured and skin closed with interrupted simple or mattress sutures. A thick padding of sterile cotton was given. The correction achieved was maintained by a long leg POP cast with the knee in slight flexion and the foot and ankle in fully corrected position. The cast was split open anteriorly in its entire length.

POSTOPERATIVE CARE: The foot was kept elevated and a watch was kept on distal vascularity and the child encouraged to move the toes. Antibiotics and analgesic were used for up to 5days. Usually discharged within 2 to 5 days if the postoperative period was uneventful.

FOLLOW UP: After 2weeks, under general Anaesthesia, the plasters were removed and suture removal done; the foot was manipulated and a below knee POP cast applied with over correcting all the deformities. At 8 weeks postoperative the plaster was removed and parents were advised to encourage the child to walk without external splintage.

ASSESSMENT OF RESULTS (2, 9, 7)

The results were graded as excellent, good, fair and poor depending upon the correction achieved at the end of the follow up period.

The criteria used for grading the correction of deformity were

1. **EXCELLENT:** Healthy thin scar with all the deformities fully corrected and plantigrade mobile foot.
2. **GOOD:** Healthy scar, foot fully plantigrade and mobile without any equinus or heel varus but with minor degree of persistent metatarsus adductus.
3. **FAIR:** Healthy thick scar and One of Two deformities persisting to a moderate degree.
4. **POOR:** A deformed foot with two or more deformities persisting with a thick, contracted scar.

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AGE INCIDENCE

Age group	No. of cases	Percentage
Below one year	41	61.11
1- 2 years	7	38.89

SEX INCIDENCE

Sex	No. of cases	Percentage
Male	34	77.77
Female	14	22.23

LATERALITY

Side	No. of cases	Percentage
Both feet	12	61.11
Left foot	10	27.77
Right foot	17	11.11

SEVERITY OF DEFORMITY

Grading	No. of Feet	Percentage
Rigid	69	

AFFECTED RELATIVE OF PROBONDS WITH CLUBFEET

RELATIONSHIP	NO. OF CHILDREN
Father	2
Mother	-
Sibcing	1
Grand Parent	1
Uncle	1
Aunt	-
First Cousin	-

Two children had more than one relative with a clubfoot.

18 of five patients had a positive family history.

DISCUSSION: This is one condition where early, effective and continued treatment gives good results, and without treatment the deformity increases, and the foot becomes permanently deformed, with callosities and ulceration. Hence the deformity should be addressed and classified as early as possible into rigid and non-rigid types. In all cases an attempt should be made to correct the defromity by early conservative treatment. In a child aged 6 to 12 months whose deformity has not been corrected by a conservative programme the treatment of choice is a one stage posteromedial soft tissue release as advocated by Turco.^(2,7) In the present series we have treated 48cases (69 feet) of rigid C.T.E.V by one stage posteromedial soft tissue release of Turco with slight modifications i.e., through a single curved posteromedial incision, or straightmedial horizontal incision, all the contracted structures on the posterior and medial side were released.

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The most deforming force on medial side was the tibialis posterior. The tendons of tibialis posterior, flexor hallucis longus and flexor digitorum longus were lengthened by 'Z' plasty. The other important structures that were released medially are abductor hallucis, superficial part of deltoid ligament, spring ligament, master knot of Henry and capsulotomies of subtalar, talonavicular, naviculocuneiform and cuneiformo-metatarsal joints. Plantar structures were released to correct cavus deformity.^(4,1)

In our series most of the cases (61%) were on the age group of 9 months to 1 year as we believe that the timing of surgery should be such that, when the plaster is removed, the child should be able to start putting full weight on the foot and walk, to prevent any tendency to relapse.

Full correction was achieved on the table and postoperatively the foot was immobilized in an above knee POP casing with full correction. At 2 weeks sutures were removed, foot manipulated under anesthesia and a fresh above knee POP casing applied with overcorrection.

At 2 months (8 weeks) the plasters were removed and the child encouraged to walk without support as by now the bones will be held in their new alignment by mature fibrous tissue and further splinting applied in the form of D.B. splint, corrective shoes if required.

The sex incidence was children (77.77%) were 24 males and 14 (22.2%) were females. In 21 cases (61.11%) the deformity was bilateral and the remaining were unilateral. There was left side predominance in unilateral cases. There was internal tibial torsion in cases which was significant (>15 deg.) in legs.

One child was arthrogryptic with multiple deformities. Birth history and family history were not significant and milestones were normal in all children. Cases had conservative treatment previously which was unsuccessful.

In all cases we have performed a one stage posteromedial soft tissue release. After an average follow-up of 30 months the results were excellent in 35 feet, good in 25 feet. When excellent and good results were combined the result was satisfactory in all feet out of the 60 feet which were followed up. Six patients did not turn up for follow up.

The unsatisfactory results were due to wound infection, scarring or non-compliance with plaster immobilisation. The complications of postoperative period were gaping in suture line in 6 cases skin necrosis was seen in three cases mild varus deformity found.

CONCLUSIONS: Congenital talipes equinovarus (C.T.E.V) is commonest of all foot deformities being commoner in male children and bilateral in 61% of cases, idiopathic type being the commonest form.⁽⁹⁾ The deformity should be addressed as early as possible and classified into rigid and non-rigid types. All most all rigid or resistant types require surgical correction. The procedure of choice being one-stage posteromedial soft tissue release as described by Turco.

It is an excellent procedure if properly performed at an appropriate time. Once surgery is performed, it should be a complete posteromedial release and never be done half-heartedly, since the scarring and fibrosis with repeated surgeries will interfere with the correction.⁽²⁾

The best time of surgery is at the age of 9 months to one year because when the plaster is removed, the child should be able to start putting full weight on the foot and walk, to prevent any tendency to relapse and also because by this age the structures are well developed, there is good remodelling capacity and no permanent bony changes.^(8,7)

Though this is a small series and requires further follow-up until skeletal maturity as is the case with any other congenital deformity.

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We conclude that one-stage posteromedial soft tissue release performed by using a straight medial horizontal and postero medial curvilinear incisions is an excellent way of managing the problem of congenital talipes equinovarus with few complications like skin edges necrosis. The both incisions are given best results if applied in appropriate selection of child.



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AUTHORS:

1. D. Ramkishan
2. S. Y. Narsimulu

PARTICULARS OF CONTRIBUTORS:

1. Associate Professor, Department of Orthopaedics, RIMS, KADAPA.
2. Professor, Department of Orthopaedics, SVS Medical College, Mahabubnagar.

FINANCIAL OR OTHER**COMPETING INTERESTS:** None**NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:**

Dr. D. Ramkishan,
Associate Professor,
RIMS, KADAPA,
Andhra Pradesh.
E-mail: dharmakari10@gmail.com

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