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CORRECTIVE SURGERY IN CONGENITAL TALIPES EQUINOVARUS DEFORMITY: A CAMP APPROACH

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HOW TO CITE THIS ARTICLE:

Antony R. Benn, Rahul Verma, Akshataa Atul Deshkar, Vijaybabu Verma, K. S. Bajpai, Atul Manhorrao Deshkar. "Corrective Surgery in Congenital Talipes Equinovarus Deformity: A Camp Approach". Journal of Evidence based Medicine and Healthcare; Volume 2, Issue 39, September 28, 2015; Page: 6412-6417, DOI: 10.18410/jebmh/2015/878

ABSTRACT: The study was intended to assess the results of soft tissue release and bony corrective surgery in patients of moderate to severe deformed rigid club foot (CTEV) and neglected clubfoot (CTEV) at free disabled surgical camps at Chhattisgarh state. **MATERIAL AND METHODS:** In our study 50 patients were included with 70% male and 30% female with 4-16 years of age group and 70% unilateral and 30% bilateral foot involvement. Patients were admitted and operated in different free disabled surgical camps at Chhattisgarh state over the period of 36 months (1 may 2004 to 30th April 2007). Improvement in functional ability and locomotion of all operated patients were assessed by physical and clinical examination. **RESULTS:** All patients who were operated in our study showed significant improvement in functional ability and locomotion after surgery. All patients were maintaining functional ability at follow up duration of 12 months (1 year). 75% patients were walking normally, 10% cases were walking with internal rotation of leg and 5% cases were walking with midtarsal varus foot with AFO with medial bar support. **CONCLUSION:** Our study showed and established that excellent results can be obtained in congenital talipes equinovarus (CTEV) patients by soft tissue release with bony corrective surgery. The team work of devoted surgeons, paramedical and rehabilitation staff in whole duration of camps to achieve the goal. With an aim to help more number of CTEV cases by surgery, our team has started doing surgeries in small institutions, and organize charity camps to help poor patients and mankind even in small clinics.

INTRODUCTION: The commonly called clubfoot is scientifically called congenital talipes equinovarus has a tendency to show relapse irrespective of the treatment either with conservative management or surgical management, and was described by Hippocrates in 400 BC. Congenital talipes equino varus (CTEV) deformity is most common congenital disability of the foot in our country.⁽¹⁾ In every 1000 birth one child is having CTEV.⁽²⁾ CTEV may be associated with joint laxity, congenital dislocation of the hip, tibial torsion, ray anomalies of the foot absences of some tarsal bones and a history of other foot anomalies in the family.⁽³⁾ Of all these bones most relevant for this congenital deformity are the talus, calcaneus and navicular. The calcaneus and navicular are medially rotated in relation to the talus. The foot is held in adduction and inversion by ligaments and muscles.⁽⁴⁾ Cases of congenital talipes equino varus are neglected due to illiteracy, poverty, ignorance and lack of proper health services especially in villages. A disabled person in the family becomes nonearning and seems to be burden to family unless rehabilitated. Conservative management plays vital role and becomes useful if reported early. Ponseti technique

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is an minimally invasive, and inexpensive procedure for the treatment CTEV deformity in neonates.⁽⁵⁾ In conservative management of CTEV, 50% cases can be corrected within 2-3 months by serial corrective pop cast applications, if patient reported early.⁽⁶⁾

The study was intended to observe the outcome of the camp approach for the correction of CTEV. In this retrospective study total 50 patients with moderate to severe deformed rigid CTEV, neglected CTEV and post-surgical recurrence CTEV were operated in free disabled surgical camps at different institutions and districts of Chhattisgarh state with the help of NGOs, GOVT agencies and life line express.



Conservative Management

MATERIALS AND METHODS: We included 50 patients with 70% male and 30% female, with 4-16 age group out of which 70% cases were unilateral and 30% were bilateral CTEV. Patients were admitted and operated at different surgical camps for free and disabled in different institutions at different districts of Chhattisgarh state over a period of 36 months (1 may 2004 to 30 April 2007).

Choice of patients were with moderate to severely deformed rigid CTEV and neglected CTEV standing or walking with some or other gaits, with or without support.

Deformities and conditions of leg and foot of patients were assessed with physical and radiological examination at the time of admission; gait patterns were also noted in all patients clinically. Deformities in CTEV cases consists of equinus and varus of foot combined with cavus foot, internal rotation, torsion and genu valgum. Callosity, bunion and skin cracks are also seen in neglected CTEV. In the soft tissue changes, there is contracture of tendons (tendoachillis, tibialis posterior, adductor hallusis), ligaments (Plantar, deltoid, spring and master knot of henry), capsules (ankle, subtalar and tarsometatarsal joints) with abnormal location of tibialis anterior and peroneals.

Soft tissue release with bony corrective surgeries according to patients needs was performed in our study. We have excluded patients on conservative management in this study and no surgeries were performed in recurrence after surgery with marked screening in CTEV cases.



Unilateral and Bilateral Club Foot Deformities

OPERATIVE PROCEDURES: Soft tissue release with bony corrective surgery in clubfoot deformities were performed in our study. Tourniquet and cautery used in all surgery for bloodless operative field. Upto 4-10 years age group of CTEV deformities- we perform soft tissue release surgeries, which may be combined with bony corrective surgeries like cuboid enucleation and cuboidectomy. In soft tissue release surgeries, posteromedial release, tendoachilis lengthening, steindlers with ankle and sub talar capsulotomy, z plasty of medial tendons, tibialis anterior transfer laterally done for recurrent CTEV (7). We observed that avoiding single long incision in camp surgeries prevents sloughing of skin and having incision on medial and posterior side with breach of skin gives good results. Excision of bunion and callosity were also performed in these age group patients.

Above the age group 10 years patients, - soft tissue release surgeries⁽⁷⁾ with wedge resection of tarsal bone were performed to correct persistent varus deformity.⁽⁸⁾ Base of wedge is dorsolateral and incision given distally through cuboid and proximal to distal pole of calcaneum and neck of talus. Foot becomes smaller after wedge resection of tarsal bones but functionally its good and acceptable with ordinary shoes.



Operative Procedures: Steindlers



Operative Procedures: Ankle Capsulotomy



Procedure showing Cuboidectomy and Tendoachilis Lengthening

POST-OPERATIVE PROTOCOL: Immediate post-operative-Above knee pop thick slab given for five days, then patient discharged with above knee pop cast in 120° flexion at knee joint for one month in soft tissue release surgeries. Above knee pop cast in 120° flexion of knee joint for patients with soft tissue surgery and mild bony procedures like enucleation of cuboid or cuboidectomy, for one and half months. Above knee pop cast in 120° flexion of knee joint for patients with soft tissue release and large bony procedures like tarsal wedge osteotomy with or without k wire fixation for two and half months.

Patients send with analgesics, antibiotic, symptomatic and supportive medicines with proper instructions for complications and other problems and advised to come after one, one and half, two and half months according to protocol. After follow up pop cast, stitches and k-wire removed.

Then radiological examination was done for bony corrective surgery patients to see for bony union. Physiotherapy was started with parallel bar walkers, active exercise, oil massage and suitable support provided like DB splint, shoes and AFO with medial bar support, and was advised regular follow up for at least one year.

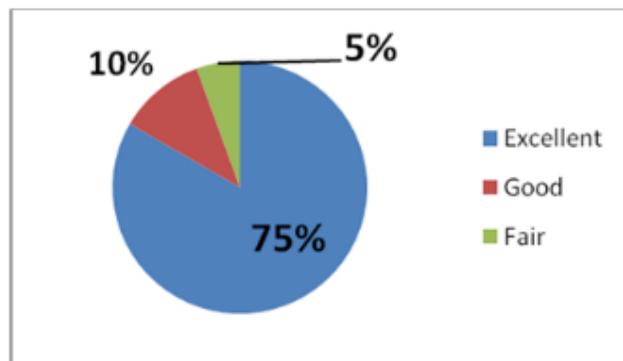
COMPLICATIONS: Superficial infection and pin track infection occurred in seven cases which were treated by antibiotics. Partial recurrence of deformities occurred in three cases which were managed by corrective cast application.

RESULTS: All registered cases turned up for first follow up, but 30% cases were lost for subsequent follow up. Results were excellent in 75% cases with no postoperative complications, with normal gait and walk. Results were good in 10% cases with mild postoperative complications, gait and walk evaluation shown mild internal rotation of leg. Results were fair in 5% cases with moderate post-operative complications, gait and walk of patient was with mild metatarsal varus foot.

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Results	Percentage of Cases	Post-operative complaint	Gait and Walk
Excellent	75%	Nil	Normal
Good	10%	Mild	Walking with internal rotation of leg
Fair	5%	Moderate	Metatarsal Varus foot

Table 1



A pie chart showing percentage of cases showing Excellent, Good and fair results postoperatively

DISCUSSION: In first stage varus and adduction of forefoot is corrected, than in second stage varus of calcaneum and equinus of forefoot is corrected, then in last stage equinus position of ankle joint is corrected.

The conservative management may not be helpful in cases of moderate to severe deformed rigid CTEV, neglected CTEV and post-surgical recurrence in CTEV cases; which needs soft tissue release with bony corrective surgery (according to patient needs). It not only corrects the deformity but also improves personal hygiene, gait and independent ambulation with or without assistive devices. This treatment should be planned according to needs of patient.

CONCLUSION: Although club foot has tendency to relapse even after the surgical correction promising results can be obtained if recurrence of deformities are properly controlled by full correction of deformities, maintaining the correction by comfortable pop cast, comfortable braces and shoes and long term regular follow up and physiotherapy. Bracing is a critical component of the current standard of treatment for clubfoot. Adherence to the bracing protocol is the main factor for the long-term success of the treatment.⁽⁹⁾

We are thankful to Dean CIMS Bilaspur and acknowledge the contribution of Akhil Bhartiya viklang Chetna Parishad, Indian Medical Association, Life Line Express of Govt of Chhattisgarh Department of Health and Family Welfare providing logistics and support for camp.

REFERENCES:

1. Ashish Anand, Debra A Sala. Clubfoot: Etiology and treatment IJO - January - March 2008/ Volume 42/ Issue 1 [Downloaded from <http://www.ijonline.com> on Tuesday, July 07, 2015, IP: 117.228.172.188]
2. Orthoinfo: Pediatric Orthopaedic Society of North America downloaded from <http://www.orthoinfo.aaos.org/>
3. Zosia Miedzybrodzka. Congenital talipes equinovarus (clubfoot): a disorder of the foot but not the hand. *J Anat.* 2003 Jan; 202(1): 37–42.
4. Raihan Arif: Orthotic variants and biomechanics in the treatment of club foot. Downloaded from <http://www.academia.edu> accessed on 01/07/2015.
5. Boden, R.A., Nuttall, G.H., & Paton, R.W. (2011). A 14-year longitudinal comparison study of two treatment methods in clubfoot: Ponseti versus traditional. *Acta Orthopaedica Belgica*, 77(4), pp. 522-528.
6. Md Saif Ullah et al. Management of Congenital Talipes Equino Varus (CTEV) by Ponseti Casting Technique in Neonates: Our Experience *J Neonat Surg.* 2013; 2(2): 17.
7. Konstantinos N. Malizos et al. Relapsed clubfoot correction with soft-tissue release and selective application of Ilizarov technique. Published online 2008 Dec 5. doi: 10.1007/s11751-008-0049-5. *Strategies Trauma Limb Reconstr.* 2008 Dec; 3(3): 109–117.
8. Robert J. Stabile and Renato J. Giorgini: A Review of Talipes Equino Varus. update on the latest treatments for clubfoot. *Podiatry Management*, February 2009 downloaded from www.podiatrym.com Page 167 to 174.
9. Lajja Desai, Florin Oprescu, Andrew DiMeo,* and Jose A Morcuende, Bracing In The Treatment Of Children With Clubfoot: Past, Present, And Future *IOWA Orthopaedic J.* 2010; 30: 15–23.

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Date of Submission: 21/09/2015.

Date of Peer Review: 22/09/2015.

Date of Acceptance: 24/09/2015.

Date of Publishing: 25/09/2015.