Case Report

Tibialis Posterior Tendon Transfer in Post Injection Common Peroneal Nerve Palsy in a Paediatric Patient–A Case Report

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Abstract

Post injection foot drop is due to common peroneal nerve damage at site of injection (gluteal region) in which dorsiflexor of foot EHL, EDL and tibialis anterior are weakend or paralysed. It can be managed by reconstructive surgery; tibialis posterior tendon transfer to EHL, EDL and 2nd metatarsal. Here objective is rehabilitation of post injection common peroneal nerve palsy foot drop in a paeditaric patient. Our method and outcome measure as first rehabilitation programme for foot drop paediatric patient (common peroneal nerve palsy) thereafter reconstructive surgery of tibialis posterior transfer to EHL, EDL and 2nd metatarsal. Last we re-educate them to tibialis posterior contraction for dorsiflexion of foot. Our result was patient was able to walk similar as normal, able to elevate her toes and foot. Patient was happy and confident with her functional foot. But patient was advised to avoid heavy work, sprinting, and active aggressive game (like foot ball). Our conclusion is patient gets benefited by this procedure.

Key words: **Foot drop, post injection nerve palsy, tibialis posterior tendon transfer.**

Introduction:

Foot drop is characterised by stepage gait, which can be detected before the patient enters the room[1]. Foot drop is due to significant weakness in dorsiflexor of toes and ankle power less than or equal to 2/5. Dorsiflexors of foot is EHL, EDL and TA. There is weakness in dorsiflexors i.e common peroneal nerve damage by any means. There is high stepage gait, high as climbing steps. This type of patient can be assessed or confirmed by simple manoeuvres, seating over couch with leg hanging down freely, foot hanged down without normal tone. Patient is unable to lift his foot, toes and also high stepping gait as in this case. But in some cases wasting of foot and leg muscle are also seen which was not significant in this case.

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Case report:

A seven years old girl came to pediatric orthopaedic department OPD with complaint of high stepping gait and unable to elevate her foot. She was reffered to Physical Medicine and Rehabilitation department for evaluation and further management. She had taken some kind of antibiotic in gluteus intramuscular injection. Then after morning she was not able to elevate her toes and foot. Then she had taken various types of treatment but not benefited. Birth history, immunisation history, milestone, family history and IQ were within normal limit. Clinical examination showed power of foot was 2/5 of right toes and foot dorsiflexors, inversion of right foot was 5/5 but left side power was within normal limit. Muscle atrophy was not significant. There was no sensory involvement. Routine examination of blood was within normal limit. Other some specific test Ca, Po4, alkaline phosphatase, vitamin D3, LDH, CKMB and protein albumin, globulin were within normal limit. Electrodiagnostic changes showed permanent damage of common peroneal nerve and tibial nerve innervation was normal.

Method of Rehabilitation Programme and Reconstruction:

Foot drop stops splint AFO, flexion extension exercise of

toes and ankle to prevent contracture of TA. There was special training to isolated contraction of TP muscle for 2 weeks (Fig 1). Patient went to planed reconstructive surgery. Now briefly reconstruction steps position of patient as supine right lower limb laterally rotated for surgery. Isolation and division of distal insertion of TP (Fig 2) done then withdrawal of resected TP tendon in lower leg (Fig 3). Now one different thing was TA resected 5cm proximal to insertion (Fig 4). There was exposure

Fig 1- *Spenil Training to Isolated Conduction of TP Muscle*

of toe extensor EHL, EDL and also 2nd metatarsal of foot (Fig 5). Then splitting of TP tendon in two long slips and one of them was re-routed sutured to EHL, EDL. The 2nd different thing was in our case in which another tendon slips reinforce the 2nd metatarsal bone with attaching TA. In our case merged two different methods Ober[2] and Srinivasan *et al*[3] gives better result. Postoperatively lower limb was kept in elevated position for 72 hours, as usual by method Ober[2] after tendon transfer plaster of paris for 4 weeks (Fig 6). Then patient went to retraining rehabilitation programme for re-education of TP contraction for 4 weeks. 1st week patient contract tibialis posterior in gravity eliminate position, 2nd week contraction of TP against gravity with leg hanging down, 3rd week partial weight bearing allowed in parallel bar, last 4th week permitted full weight bearing in parallel bar practice "heel to toe" pattern. After 2 months patient was practising "heel to toe gait" 3 times daily and AFO provided for 6 months.

Results:

Patient is able to walk similar as normal but under supervision "heel to toe" gait initially but later due to

Fig 2- *Isolation and Division of TP Muscle*

Fig 3- *Withdrawing of Respected TP Tendon*

Fig 4- *TA Resected 5cm Proximal to Insertion*

Fig 5- *Exposure of Toe Extensor*

Fig 6- *Tendon Transfer Plaster of Paris*

lack of practice intial contact of whole foot on stance phase. She can elevate her foot and ankle little amount. She is happy and confident with her functional foot. There is limitation not able to do heavy activities like sprinting, football, jumping, etc. There was no heel to toe gait but foot drop was corrected and high steping gait was removed.

Discussion:

There was a data of south East Asia more than 5 injections per capita/year. It has also been observed that nerve is within the reach of standard needle even when injection is given in the upper outer quadrant of the buttock[4]. Male > female, 50 % of these injections are administered by unregistered health care worker. Commonly involved nerves are common peroneal nerve, radial nerve and sciatic nerve. We should wait for spontaneous recovery by conservative protocol for 18 months to 24 months then proceed for reconstructive surgery.

The evolution of tendon transfer techniques for limb deformities was one of the remarkable advances in reconstructive surgery of the extremities and principles were developed over 200 years along with those for flexor tendon grafting[5]. Brand in CMC Vellore, India applied the principles of tendon transfers for surgical correction of leprosy deformities and perform the 1st claw hand correction. There are two forms of tendon transfer in lower limb TP which is either to transfer into tarsal bone[2] or splits into two slips for insertion to the tendon of EHL and EDL[3]. Before that conservative management is also important as below[6,7].

It is the usual practice after tendon transfer surgery to immobilise the part with plaster of Paris cast for 4-6 weeks[8]. Then patient undergoes 4 weeks training programme for early and best recovery.

Conclusions:

This type of procedure can give benefit to foot drop patient but there needs more work over same procedure.

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