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CASE STUDY

COMMON MISTAKES, DIFFICULTIES AND COMPLICATIONS DURING PONSETI MANAGEMENT OF CONGENITAL IDIOPATHIC CLUB FOOT

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ABSTRACT

Background: Idiopathic clubfoot is a congenital deformity with incidence of 1-2 per 1000 live births. Various techniques both surgical and non surgical are mentioned in literature for treatment of CTEV. Ponseti method is a relatively new technique with success rate of upto 94% reported in numerous studies. Current trend in treatment of this condition has shifted from extensive surgical release to conservative techniques like Ponseti method.

Objectives: We evaluated the difficulties and complications encountered during the Ponseti method for the treatment of Congenital Idiopathic Clubfoot. We also searched answers to many commonly asked questions about clubfoot. We also watched our mistakes and tried to correct them over a period of time.

Methods and Results: The study was conducted on 79 patients with 123 idiopathic clubfeet. All our patients were less than six months of age. We followed these patients for a period of 2 years and noted the difficulties and complications encountered during the Ponseti treatment and post-tenotomy bracing of these clubfeet. We noticed various difficulties and complications during ponseti treatment. Difficulties we encountered were from difficulty in palpating talar head during manipulation, difficulty in getting 60-70 degree abduction and many more. Complications we encountered were sliping of plaster cast to cutting of peroneal artry during tenotmy.

Conclusion: The Ponseti method has become the gold standard for the initial treatment of the clubfoot. There are not many studies which show the difficulties and complications associated with this method of treatment. With ever increasing number of clubffoot patients being treated by the ponseti method, there is a need to ponder into the complications associated with this method of treatment.

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INTRODUCTION

Idiopathic clubfoot is the most common musculoskeletal birth defect affecting 1-2 per 1000 live births (Wynne-Davies, 1964). The component deformities of club foot include cavus, forefoot adductus, heel varus and equinus. Most orthopaedicians now agree that initial treatment should be non-surgical and started soon after birth. In the past two decades, several reports have demonstrated successful correction in >95% of the clubfeet using the Ponseti method (David *et al*., 2009; Noam Bar *et al*., 2009; Baxter *et al*., 2009; Stephens Richards *et al*., 2008). In this method the clubfoot is corrected conservatively with serial manipulations followed by casts. Manipulation is done with the thumb of one hand placed over the talar head and the other hand holding the first metatarsal head with index finger and thumb (Ignacio V Ponseti, 1992). Cavus is corrected by lifting the first metatarsal head, and the other manipulations done serially by abducting the forefoot in supination till the foot is maximally abducted, and supination corrected which is indicated by neutral or slight valgus heel. After this equinus is corrected by either a percutaneous tenotomy of tendoachilles or stretching the tendoachilles with the palm of one hand placed under the entire foot, stretching being done in only those feet where the foot can be brought to or brought within 5 to 10 degrees of neutral with gentle manipulation to achieve further dorsiflexion of at least 15 to 20 degrees (David M Scher *et al*., 2004).

MATERIALS AND METHODS

79 patients with 123 idiopathic clubfeet were treated by us under supervision of a senior orthopaedic consultant. All patients with neurogenic, syndromic clubfoot, age more than 6 months and previously manipulated patients were excluded. Severity of deformity was assessed by Dimeglo classification

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(Dimeglio *et al*., 1995). Ponseti method of treatment was strictly followed. The talus is stabilized by placing the thumb over the head of the talus. This provides a pivot point around which the foot is abducted. Manipulation of the foot with supination followed by abduction with the other hand is done. This should not cause any discomfort to the child. In the beginning much supination is required, but supination will automatically decrease with more achieved abduction. The correction is held with gentle pressure, then released and repeated. It is very important to understand the kinematic coupling of mid foot and heel, because the Ponseti method of clubfoot treatment is based on this principle. In Clubfoot treatment, kinematic coupling is used to correct the heel varus. The heel varus in practice will be corrected by using the abduction of the mid foot as an initiator to correct the mid foot inversion and at the same time let the heel slide in valgus direction.

Fig. 1. Abrasions and diffuse inflammation around groin

Fig. 2. Plaster sore on dorsum of foot

OBSERVATIONS AND RESULTS

Out of the 123 clubfeet the talar head was difficult to palpate in 20 feet. All these feet were small, chubby, rigid and with small hyperextended big toe. It is very important to localize the head of the talus very well to prevent a wrong manipulation and failure of the treatment. The cast slipped out in 10 feet. Out of these, 6 feet were atypical in character with deep creases on posterior and plantar aspects, short and hyperextended big toe with all the metatarsals in severe plantar flexion. These feet were corrected by earlier correction of the severe equinus by applying pressure on all the metatarsal heads in upward direction (Ponseti *et al*., 2006). The cause of slippage in other 4 feet was failure on the part of the surgeon to apply a toe to groin cast in 3 children who were large sized and had struggled during cast application. The problem of poor management of casts by parents like spoilage with urine and fecal matter was more common in children with parents having a poor socio economic status who could not afford the diapers for their children. This problem was managed by asking the parents to have frequent inspection of the perineal parts. Injury caused to to normal limb by constant rubbing of the plaster against that limb was observed in 4 children. It was rectified by applying socks to both the feet with the advice of frequently checking the plastered limb to check the distal circulation. Abrasions around groin in the plastered limb occurred in 20 patients due to inability on the part of the surgeon to apply felt cotton fully around the groin and then everting it on the plaster cast and was prevented by avoiding the above mentioned mistake (Fig. 1). In three instances the babies were having very low birth weight and there was difficulty in maneuvering the foot and the babies were allowed to gain weight for one to two months before the treatment was started again. Tight plaster with swelling of the toes occurred in three instances. The parents were asked to report immediately to hospital or to nearby health centre. Parents from far off places were also taught how to remove plaster by soaking and unwrapping the plaster bandage at the earliest signs of discomfort from the child. The parents were also advised to regularly for any areas of the plaster causing pressure sores (Fig. 2). We witnessed one bleeding complication which occurred due to injury to peroneal artery, which required ligature under general anaesthesia in the first performed tenotomy of the series (Mathew B Dobbs *et al*., 2004).

DISCUSSION

Clubfoot is a complex deformity of foot that requires meticulous and dedicated efforts on part of treating orthopaedic surgeon and parents for correction of deformity. The Ponseti method has become the gold standard for the initial treatment of the clubfoot. There are not many studies which show the difficulties and complications associated with this method of treatment. With ever increasing number of clubffoot patients being treated by the ponseti method, there is a need to ponder into the complications associated with this method of treatment. Wallace *et al*. (?) reported 25 complications which included cast saw injury, abrasions, cast intolerance, maceration, blister and slough with a complication rate of 10.2%. Mathew B Dobbs *et al* reported four bleeding complications with 3 due to peroneal artery injury, and 1 due to injury to lesser saphenous vien. This study was also carried out in order to get acquainted with the problems associated with the Ponseti method and keep them in mind while managing children with clubfeet.

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