

Results of posteromedial release in resistant Talipes Equinovarus (Club Foot)

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ABSTRACT

Objective: Talipes Equinovarus (Clubfoot) is one of the most common foot anomalies which can be treated by serial casting technique with high rate of success. Surgery is indicated for deformities that do not respond to conservative treatment or for the patients that seek medical intervention too late. In this study, we reviewed the results of posteromedial release in treating resistant cases without appropriate response to serial casting.

Methodology: Between April 2005 and March 2010 we treated 133 resistant clubfeet in 72 male and 22 female patients using posteromedial release in Razi Hospital of Jundishapur University of Medical Sciences in Ahvaz, Iran and reviewed the results of the operation and the functional results according to Laaveg-Ponseti scoring system.

Results: We divided the patients into two groups according to the age of the patients at the time of surgery. The most common complication was recurrence of forefoot adduction in the patients over six months. There were wound problems ranging from mild wound edge necrosis to extensive skin slough in both groups without significant difference. The best functional results according to the Laaveg-Ponseti scoring system were found in the patients under six months of age.

Conclusion: Posteromedial release can be used in all of the cases of resistant clubfoot but in older patients it is complicated by more relapse, and less functional results.

KEY WORDS: Clubfoot, Talipes equinovarus, Posteromedial release, Laaveg-Ponseti.

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INTRODUCTION

Treatment of congenital Talipes equinovarus (club-foot) begins as soon as possible with serial casting techniques¹ with 20-95% of success rate.² However, in cases of failure of serial casting or recurrence, or

in whom parents seek medical intervention too late, surgical treatment can be performed. There are different types of surgical procedures according to the remaining deformities ranging from simple posterior release and tendon transfers to extensive procedures like postero-medial release³ and complete subtalar release.⁴ Theoretically, as the child becomes older, soft tissues become more contracted and difficult to be corrected because of longstanding deformity and secondary contractures.

In this prospective observational study we followed operated patients on whom posterior-medial release had been performed and investigated the results and complications and compared the results on the patients under 6 months of age with older patients. We analyzed the data by T-test and P-values of less than 0.005 considered as a significant difference.

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METHODOLOGY

During April 2005 and March 2010 a total number of 133 clubfeet in 94 patients (72 male and 22 female) underwent posteromedial release in Razi Hospital of Jundishapur University of Ahvaz in Iran. There were 39 bilateral cases. We divided the patients in two groups (6 months or less and more than 6 months), according to the age of the patient at the time of surgery. All of the patients had only clubfoot without any other skeletal abnormality. Most of the patients (65%) had a history of failed serial casting program and the others had come primarily without any attempt to correcting the deformity.

For all the patients posteromedial release was performed. During operation with a postero-medial incision beginning from medial aspect of the foot in the region of the naviculocuneiform joint carrying posteriorly and gently curving beneath the distal end of the medial malleolus and ascending until the musculotendinus junction of the gastrocnemius muscle, the abductor hallucis muscle was resected. All of the contracted tendons lengthened and all of the medial ligamentous structures except the deep portion of the deltoid ligament were resected. Posterior capsulotomy of the talocalcaneal and ankle joint were performed, and after complete releasing of the navicular bone, talonavicular alignment achieved. After meticulous hemostasis, the wound was closed under suction drainage.

In some cases with rigid form of clubfoot, plantar fascia release was performed with the same incision. After closure of the wound, above-the-knee casting was performed with complete correction. Patients were followed up for at least 6 months after surgery and during this period, the complications were recorded and then functional results recorded

according to clinical features and the Laaveg-Ponseti scoring system asking from the patients and parents who were not able to respond. (Table-I)

RESULTS

There were 72 male and 22 female patients in our study. Thirty-four percent of the patients were under 6 months and 66% were above 6 months (9 months to 4 years). Mild wound margin necrosis occurred in 8% of the patients without any significant consequences (Fig.1). Extensive wound necrosis (Fig.2) occurred in 3% of the patients under and 8% of the patients above 6 months of age and resulted in necrosis of the medial side of the foot necessitating split thickness skin graft in 1% of the patients. However there was no significant difference between two group of the patients. (P value >0.05).

Recurrence of the deformity occurred in 18% of the patients and in 12% there was only in forefoot adduction (Fig.3) necessitating tarsometatarsal capsular release in 2% of the patients under and 14% of the patients over 6 months of age. There was a significant difference between two groups (P value <0.005). In none of the patients under 6 months of age we observed recurrence of equines or heel varus but in 6% of the patients over 6 months degrees of varus and equines was observed which necessitated appropriate conservative or surgical treatment.

Hypertrophic scar was observed in 3% of the patients under and 4% of the patients over 6 months of age (Fig.4). A flatfoot deformity was observed in 16% of the patients after complete posteromedial release in both groups but it didn't cause any functional impairment for the patients (Fig.3). Laaveg-Ponseti functional score (Table-I) questionnaire was



Fig-1: Superficial wound necrosis.



Fig-2: Extensive wound necrosis of the medial skin. Note pressure sore due to pressure from cast on the medial side of hallux.



Fig-3: Bilateral posteromedial release in clubfoot resulting in complete correction of right foot with flatfoot deformity and residual forefoot adduction in left in a 3 years old boy.

asked from all the patients with help of the parents and the functional scores recorded and analyzed statistically. According to the results of this questionnaire, most of the patients who had undergone operation under 6 months of age had better results (62 vs 46 respectively) with significant difference ($P < 0.005$).

DISCUSSION

There are many studies regarding functional and radiographical results of different surgical interaction for resistant clubfoot. Although nowadays there is a trend to treat all clubfoot patients with Ponseti method of casting,⁵⁻⁸ or it is advised for the treatment of recurrent clubfoot in patients after posteromedial release^{9,10} and even some investigators advise using casting along with postero-medial release.¹¹ In some centers surgical treatment is chosen for the resistant cases and the reason may be lack of experience with Ponseti method of casting.

Previous reports generally advised earlier surgical intervention and extensive posteromedial release for congenital clubfoot cases.¹² Zwick et al¹³ in a short term study of 28 clubfeet divided into two groups treated by two methods (Ponseti casting Vs posteromedial release) reported a favorable short term results for the Ponseti method.

Karakurt et al¹⁴ in a study compared the results of complete subtalar release by Cincinnati and posteromedial incisions in 40 clubfeet and found 18.5%



Fig-4: Hypertrophic scar in a one year old boy undergone posteromedial release for residual clubfoot.

superficial skin necrosis and 78% of soft tissue swelling in patients treated by posteromedial release. He finally concluded that posteromedial incision is a suitable and safe incision for complete subtalar release. Hussain et al¹⁵ in a study of 70 surgically treated patients by modified Turco posterior medial

Table-I: Laaveg-Ponseti questionnaire.

<i>Satisfaction (20 points)</i>	
<i>I am:</i>	
A) Very satisfied with the end result.	20
B) Satisfied with the end result.	16
C) Neither satisfied nor unsatisfied with the end result.	12
D) Unsatisfied with the end result.	8
E) Very unsatisfied with the end result.	4
<i>Function (20 points)</i>	
<i>In my daily living, my foot:</i>	
A) Does not limit my activities.	20
B) Occasionally limits my strenuous activities.	16
C) Usually limits me in strenuous activities.	12
D) Limits me occasionally in routine activities.	8
E) Limits me in walking.	4
<i>Pain (30 points)</i>	
<i>My foot:</i>	
A) Is never painful.	30
B) Occasionally causes mild pain during strenuous activities.	24
C) Usually is painful after strenuous activities only.	18
D) Is occasionally painful during routine activities.	12
E) Is painful during walking.	6

release concluded that this operation can be successfully used in all the cases of resistant clubfoot until three years.

Yamamoto H et al¹⁶ in a review of 19 children for whom one stage posteromedial release were performed at the age of 5 years or older, found good radiographic alignment of tarsal bone but mild adduction and varus deformity as complications.

Kaewpornasawan et al¹⁷ in a study comparing modified posteromedial release and complete subtalar release in resistant clubfoot, found 15% mild forefoot adduction, 6% soft tissue infection, and 3% reoperation and 85.5% good and excellent results in patients treated by modified posteromedial release. Mazone¹⁸ also found 76.6 excellent and good results in 23 clubfeet in the patients with mean age of 7.7 months (range 3.5-19 months) treated by posteromedial release. In order to decrease the rate of reoperation and surgical revision, Wicart et al¹⁹ recommended tibialis anterior tendon lengthening (TAL) along with posteromedial release.

Although we observed less functional results in children more than 6 months compared with younger children, Yamamoto et al¹⁶ in a review of 24 clubfeet in children more than 5 years treated by posteromedial release, concluded that less favorable results were seen in children with a history of previous surgery.

CONCLUSION

Comparing the results of our study with similar studies does not show any significant difference in the outcome of posteromedial release basically. Our work is based on comparing the results of a similar approach on two different age groups and shows significant difference in functional outcome and some complications between two groups. Thus, according to our data posteromedial release is a good approach for all age groups especially under six months of age.

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