

CLINICAL STUDY**ASSESSMENT OF DENTAL ARCH EXPANSION IN CLEFT LIP AND PALATE PATIENTS**JAISWAL AJIT ¹
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(C.M.C) Ludhiana**Key words-** RPE-Rapid palatal expansion, SPE-Slow palatal expansion, Tri helix, Quad-helix.**INTRODUCTION**

Orthodontic treatment plays an important part in the overall rehabilitation of the child with cleft lip and palate. For maxillary expansion in cleft lip and palate (CLP), orthodontists use both rapid and slow palatal expansion (SPE). Slow palatal expansion procedures produce less tissue resistance around the circum-maxillary structures and therefore improve bone formation in the intermaxillary suture, which should theoretically eliminate or reduce the limitation of rapid palatal expansion (RPE).

Aims and objective of this study-

A. Was to find out whether the Quad helix appliance represents a reasonable alternative to using conventional rapid maxillary expansion appliance among cleft patients.

B. To find change in inter-canine, inter-premolar and inter-molar width after arch expansion with tri-helix and quad-helix.

MATERIALS AND METHODS

Six patients of cleft lip and palate who reported to Christian dental college, Ludhiana for treatment were selected for the study. All the patients were treated with .018 Roth straight wire appliance for alignment and either tri-helix or quad-helix or both in

progression for arch expansion. The tri-helix and Quad helix were constructed by bending 0.038" round stainless steel wire. Prefabricated molar bands were fitted on the first molars and quad helix was soldered to it. The average treatment duration for arch expansion was 12 months. For patient no 3 canine was not erupted hence inter canine width was not measured. Change in inter-canine, inter-premolar and inter-molar width was calculated on study models.

Results – Adequate arch expansion was achieved for secondary alveolar bone grafting by use of tri-helix and quad helix. The average change in inter canine width was 8.2 mm, the average change in inter premolar width was 10.1mm and the average change in inter molar width was 1.66 mm. (Table-1, graph-1). Fig 1-3 shows pre and post photograph of maxillary arch treated with tri-helix and quad helix.

Discussion- Maxillary transverse deficiency can either be treated by RPE or SPE. High magnitude forces used in RPE maximize skeletal separation of midpalatal suture by overwhelming the suture before any dental movement or physiological sutural adjustment can occur. Hence, advocates of rapid maxillary expansion believe that it

results in minimum dental movement (tipping) and maximum skeletal movement (1). The disadvantage of using rapid palatal expanders include discomfort due to traumatic separation of the mid palatal suture, inability to correct rotated molars, requirement of patient or parent cooperation in activation of the appliance, bite opening, relapse, micro trauma of the temporomandibular joint, root resorption, tissue impingement, pain and labor- intensive procedure in fabrication of the appliance.

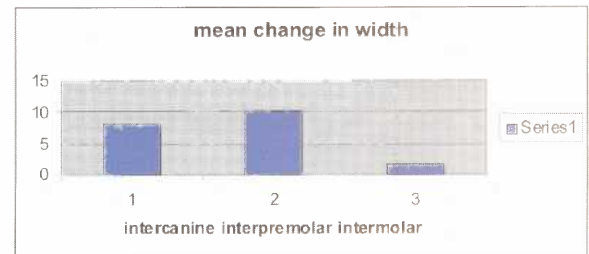
Advocates of slow expansion appliances have questioned the need of such large rapid forces for sutural separation [2]. The ease with which the palatal expansion was achieved in the current study corroborates the observations of Lilja et al [3]. In CLP patients, the palatal suture system is disturbed and either irregular or absent. These factors allow an orthopaedic response to Quad helix expansion. Other authors [4, 5] have also noted that skeletal resistance in the transverse direction is reduced in cleft palate patients because of the special anatomical situation in the jaw and palate area. The pattern of widening in this study was somewhat uniform in canine and premolar area but less in molar area which was

desirable in our cases since molar were displaced buccally in cleft palate patients.

Conclusion- Quad helix is an excellent choice for maxillary expansion in cleft lip and palate patients. The average change in inter-canine width was 8.2mm, change in inter premolar width was 10.1 mm and average change in inter-molar width was 1.6 mm.

Table 1- change in arch width
Graph -1

Patient no	inter canine				inter premolar				inter-molar			
	pre	pcst	29	change	Pre	Post	37	change	Pre	post	46	change
1	22		29	7	30		37	7	47		46	-1
2	28		34	6	19		30	11	40		38	-2
3					21		35	14	33		43	10
4	10		23	13	19		30	11	35		38	3
5	19		27	8	20		35	15	43		43	0
6	16		23	7	26		29	3	44		44	0
	mean change			8.2 mm	mean change			10.1 mm	mean change			1.6 mm



LEGENDS



Pt 1 Pre



Patient 2 Pre



Patient 3 - Pre



Pt 1 Post



Patient 2- Post



Patient -3 Post

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Source of Support: Nil, Conflict of interest: None declared