

# ESTHETIC MANAGEMENT OF GENERALIZED SPACING IN AN ADULT USING LINGUAL ORTHODONTICS : A CASE REPORT

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## ABSTRACT

Generalized spacing in adults presents both esthetic and functional challenges, often leading patients to seek orthodontic correction primarily for cosmetic improvement. Conventional labial appliances, though effective, may not be acceptable to many adult patients concerned about appliance visibility. Introduction of Lingual orthodontics in 1970s by Dr. Craven Kurz and Dr. Kinya Fujita offers an esthetic alternative, enabling effective tooth movement while maintaining complete appliance concealment. This article shows a case report of treated generalised spacing with lingual technique

## KEY WORDS

Lingual orthodontics, Adult orthodontics, invisible appliance

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## INTRODUCTION

Generalized spacing in the permanent dentition is a common esthetic concern, particularly among adult patients seeking orthodontic treatment. The presence of spacing may result from a combination of factors, including tooth size-arch length discrepancies, abnormal labial frenum attachment, periodontal problems, or habits such as tongue thrusting<sup>6,7</sup>. Beyond esthetics, spacing can also compromise phonetics, masticatory efficiency, and periodontal health, thus affecting a patient's overall quality of life<sup>6</sup>.

With the growing demand for esthetic orthodontic solutions, adults increasingly prefer treatment modalities that are inconspicuous yet effective<sup>1,4,7</sup>. Lingual orthodontics, in which brackets are bonded to the lingual surfaces of teeth, offers an excellent esthetic alternative to conventional labial fixed appliances<sup>3,4</sup>. This technique allows for comprehensive treatment without visible appliances, meeting the esthetic expectations of adult patients while achieving optimal functional and occlusal outcomes<sup>2,3</sup>.

This case report presents the orthodontic management of an adult patient with generalized spacing using a lingual fixed appliance. The treatment demonstrates how lingual orthodontics can successfully close spaces, improve esthetics, and maintain periodontal health, thereby providing an effective and esthetically pleasing treatment option for adult patients concerned about appliance visibility<sup>1,4,5</sup>.

## CASE REPORT

A 26 years old female patient reported to the department with the chief complaint of gap in upper & lower front teeth region. The extraoral examination revealed a mesoprosopic facial form, convex profile, protrusive upper and lower lips. The intraoral examination revealed generalised spacing and proclined maxillary and mandibular anterior teeth. overjet of 5mm is observed. Class I molar relations bilaterally and canine relation is class II on right side, class I on left side.



**Fig 1: Extraoral pre treatment photographs**



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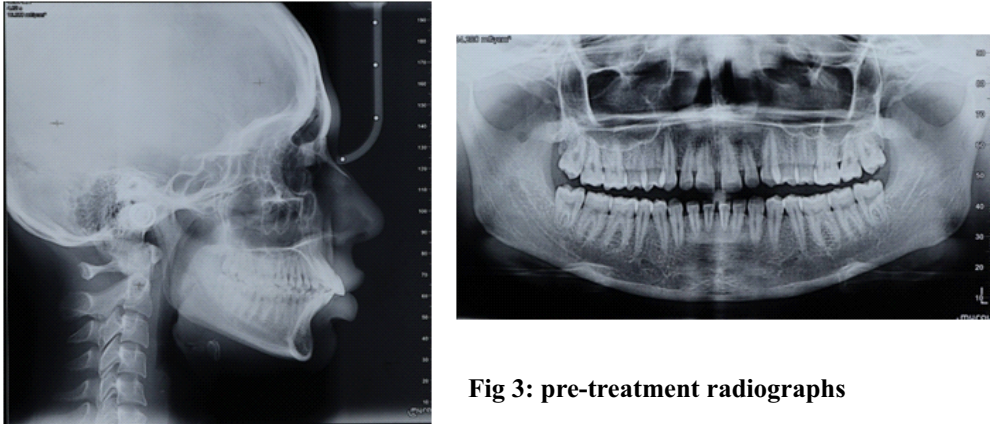
The cephalometric analysis revealed a class II skeletal base, with ANB angle of  $4^\circ$ , SNA= $77^\circ$ , SNB= $73^\circ$ . UI/NA 9mm/  $38^\circ$ , LI/NB 9mm/ $43^\circ$ , IMPA  $115^\circ$

## DIAGNOSIS

A 26 years old female patient with Angle's Class I Malocclusion on Class II Skeletal bases with average growth pattern, Spacing present in upper and lower anterior region, proclined upper and lower anteriors with protrusive upper and lower lip and convex profile

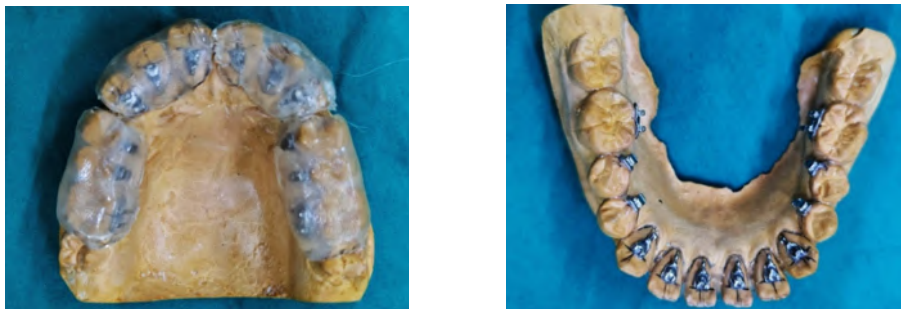
## TREATMENT OBJECTIVES

1. To correct the inclination and align the proclined upper and lower anteriors over the basal bone.
2. To correct Spacing in upper and lower anterior region
3. To correct rotation irt 14,15,24,44
4. To maintain the class I molar relation and class I canine relation bilaterally.
5. To attain normal overjet and overbite.
6. To improve the smile and aesthetics and overall appearance.



**Fig 3: pre-treatment radiographs**

Parameter	Pre - Treatment
SNA	77°
SNB	73°
Upper CI to A-Pog	11mm
Inter-incisal angle	95°
Upper CI to NA (linear)	9mm
Upper CI to NA (angular)	38°
Lower CI to NB ( linear)	9mm
Lower CI to NB ( angular )	43°
IMPA (Tweed)	115°
MPA (Down's)	23°
FMA	24°



**Fig 4: Indirect bonding**



## TREATMENT PLAN

Patient was planned to be treated with non extraction protocol. Dentoalveolar correction is done by DTC ORG orthosystem (0.018 slot in anterior and 0.022 slot in posterior region ) Lingual Appliance in Continuous arch mechanics using simplified BACCI bonding system with indirect bonding method.

### Retention Protocol:

**Upper:** fixed flexible spiral wire retainer.

**Lower:** fixed flexible spiral wire retainer.

## INDIRECT BONDING TECHNIQUE

### TREATMENT PROGRESS

1. **Alignment:** 0.012" NiTi Mushroom shaped archwire followed by 0.016" NiTi Mushroom shaped archwire
2. 0.017" x 0.025" TMA wire for torque control.
3. 0.016" x 0.022" SS wire during space closure.
4. Finishing was done with 0.012" AJW wire with finishing bends and settling elastics.



**Fig 5: Mid Treatment Photographs**



**Fig 6 :Extraoral Post Treatment Photographs**



**Fig 7 :Intraoral Post Treatment photographs**



**Fig 8: Post-Treatment Radiographs**

## DISCUSSION

The demand for esthetic orthodontic treatment among adults has grown remarkably over the past two decades<sup>6</sup>. Unlike adolescents, adult patients are often reluctant to accept visible orthodontic appliances due to professional and social reasons<sup>7</sup>. In such cases, lingual orthodontics provides an excellent esthetic alternative, offering complete appliance invisibility without compromising treatment efficiency<sup>1,4</sup>.

In the present case, generalized spacing was successfully managed using a lingual fixed appliance. The chief advantage of the lingual system lies in its concealed position, which fulfills the esthetic expectations of adult patients while allowing full three-dimensional control of tooth movement<sup>5,8</sup>. Studies have shown that lingual appliances produce comparable treatment outcomes to conventional labial systems in terms of alignment, space closure, and occlusal finishing<sup>2</sup>.

Biomechanically, lingual orthodontics presents

certain challenges, such as torque control, speech adaptation, and tongue discomfort during the initial stages of treatment<sup>2,8</sup>. However, with improved appliance design, customized bracket bases, and advancements in indirect bonding techniques, these limitations have been significantly minimized<sup>3,8</sup>. In this case, torque loss in anterior region was advantageous as patient had increased inclination of anterior teeth. patient adaptation was achieved within a short period, and treatment progress was smooth without any major complications.

Adult orthodontic treatment also requires careful consideration of periodontal health. Generalized spacing often coexists with reduced alveolar support or gingival recession<sup>6,7</sup>. Regular maintenance and gentle force application were crucial in this case to ensure space closure without compromising periodontal stability. The favorable post-treatment results, including healthy gingival margins and stable occlusion, emphasize the importance of controlled biomechanics and good oral hygiene maintenance<sup>6,7</sup>.

Overall, the outcome of this case highlights the

effectiveness of lingual orthodontics in managing generalized spacing in adults while maintaining high esthetic standards. It reinforces the idea that lingual orthodontics is not only a cosmetic alternative but also a biomechanically efficient and patient-friendly modality for comprehensive orthodontic treatment<sup>1,4</sup>.

## CONCLUSION

The present case demonstrates that lingual orthodontics is a highly effective and esthetic treatment modality for adult patients presenting with generalized spacing. The treatment achieved excellent space closure, harmonious alignment, and improved smile esthetics while ensuring complete appliance invisibility throughout the therapy.

Lingual orthodontic systems offer distinct advantages for adult patients seeking discreet orthodontic care without compromising treatment outcomes. With proper case selection, meticulous bonding, and controlled biomechanics, clinicians can achieve predictable and stable results comparable to labial orthodontics. This approach not only enhances patient satisfaction but also broadens the scope of orthodontic treatment acceptance among esthetically conscious adults.

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