

A Review

Accelerated Orthodontics – A Review Literature

Dr. Vivek Chaudhary¹, Dr. Puneet Batra², Dr. Karan Sharma³, Dr. Amit Srivastava⁴, Dr. Mir Yasser Abdullah⁵

Senior Lecturer¹
BDS MDS,
Dept. of Orthodontics &
Dentofacial Orthopaedics,
SGT University, Gurugram
Professor²
Dept. of Orthodontics &
Dentofacial Orthopaedics,
Director PG Board of Studies
Manav Rachna Dental College,
Faridabad
Private Practitioner³
Dept. of Orthodontics &
Dentofacial Orthopaedics,
Reader⁴
Dept. of Orthodontics &
Dentofacial Orthopaedics,
ITS Greater Noida
Private Practitioner⁵
Dept. of Orthodontics &
Dentofacial Orthopaedics,
Jammu & Kashmir

Abstract

Extended treatment time is a major concern for the patients who seek the orthodontic treatment. Several methods have been used by many clinicians for reducing overall treatment duration. Accelerated orthodontics enable in reduction of overall treatment time. Various drugs, devices and surgical intervention are used for obtaining final orthodontic treatment outcome in less time.

INTRODUCTION

Orthodontic treatment which takes several years in completion can result in adverse effects like dental caries, enamel decalcification, root resorption and adverse periodontal conditions.¹ Several attempts have been made by clinicians to reduce the overall treatment duration. Accelerated orthodontics uses various different treatment modalities for reducing the overall treatment time. The present article attempts to highlight various treatment options available in accelerated orthodontics.

Surgical Technique

Heinrich et al introduced surgically facilitated accelerated orthodontics in the year 1959. In his study various malocclusions like deep overbite, mandibular incisor protrusion were corrected using corticotomy (Figure1).¹

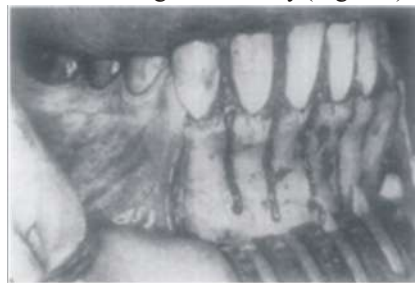


Figure-1 Correction of mandibular incisor protrusion using corticotomy.

In the year 1994 another study was done on wistar rats by Avinoam Yaffe in which the presence of RAP (Regional Accelerated Phenomena) was noted after full thickness mucoperiosteal flaps were performed. RAP is the phenomena in which the cortical bone undergo localized remodelling process

which further leads in acceleration in tooth movement.²

A study was concluded by Wilcko WM et al in 2001 which demonstrated the used of corticotomy on two patients. In this study corticotomies were performed on both lingual and buccal cortical plates using full thickness flaps followed by placement of placement of bone graft. (Figure-2)(Figure-3).³



Figure-2 Corticotomy on the buccal aspect of maxilla



Figure-3 Bone graft application on the corticotomy

A study concluded by Kim et al

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demonstrated that cortical incision can result in enhanced tooth movement in cat without elevation of the mucoperiosteal flap.⁴ Further devices like Piezoelectric knife have been used for increasing the tooth movement.(Figure-4)



Figure-4 Piezoelectric knife being used on the buccal segment

MOP (Micro Osteo-Perforation) is another method of enhancing the tooth movement. MOP is done with the help of Propel device (Figure-5).



Figure-5 Propel device for MOP (Micro Osteo-Perforation)

The propel device is a simple device which is used in making micro perforations in the buccal cortical plates. The device can be used after administering local anesthetic agents.(Figure-6)⁶



Figure-6 Micro Osteo-Perforation being performed using propel device

Low Intensity Laser Therapy

Another substitute of the surgical method is the utilization of laser for inducing accelerated tooth movement. Doshi-Mehta et al in their study used low intensity (aluminium gallium arsenide) diode laser was used in the patients (Figure-7). The study resulted in 30% increase in the tooth movement. Other advantages of using low intensity lasers are (1) reduction in pain (2) less chair side time.⁷



Figure-7 Application of laser

Drugs

Various drugs can be used for accelerating tooth movement. Drugs like Vitamin D, Misoprostol, Parathyroid hormone and Interleukins can be helpful in accelerating tooth movement.⁸⁻¹⁰



Figure 8 -AccelDent Vibratory device

Vibration

Non invasive devices which doesn't require any kind of surgical exposure can be used for accelerating tooth movement. AcceleDent vibratory device (Figure-8) is one of the devices which helps in accelerating the tooth movement.¹¹

CONCLUSION

Accelerated orthodontics can prove to be very effective therapy in reducing the treatment time. With latest advances like lasers and newer devices, the technique of accelerated orthodontics can further lead to reduction in treatment duration.

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