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# Scientific Editorial:

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## Conversion of Epithelial cells to neurons

Breakthrough's in the research always help us clinicians to give satisfactory results to our patients. In a new study by Stanford University School of Medicine, it has been proved that the Human skin cells can be directly converted into functional neurons in a period of four to five weeks with the addition of just four proteins. Previously as we all are aware of ,the first step was to create induced pluripotent stem cells and now this new technique which bypasses the first step converts Human Skin Cells into functional neurons directly thereby making it easier to

generate patient/disease specific neurons for in vitro.This study may infact help in mimicking the neurological disease in the lab. Marius Wernig, MD, (assistant professor of pathology) etal is the senior author of the research, published online May 26 in Nature.

I hope you enjoy this issue of Dental Follicle.

Dr. Syed Nabeel

Editor -in-Chief

## GINGIVAL RECONTOURING WITH DIODE LASERS: A CASE REPORT

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### Abstract

Over the last few decades LASERS (Light Amplification by Stimulated Emission of Radiations) are rapidly gaining place in every field and dentistry is no exception. The current article presents a case illustration of a young female patient who underwent gingival recontouring with diode laser after the commencement of orthodontic treatment

**Keywords:** Diode lasers, Gingival Recontouring, Biostimulation

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### Introduction

With the increasing application of principles of cosmetic dentistry, which allows the dentist to finish the esthetics of the smile to a much finer degree, soft tissue lasers are proving to be an asset to dentistry.<sup>1,2</sup>

The inherent advantages of laser therapy over conventional methods include adequate hemostasis, decreased scarring, site-specific delivery of laser energy, immediate aesthetic result, minimal requirement for anesthetic, minimized requirement for sutures, enhanced healing, maintenance of a clear and clean surgical field and less postoperative pain and inflammation.<sup>2</sup>

With the introduction of newer wavelengths, lasers are becoming an efficient tool for a variety of newer applications in dentistry. Diode lasers are solid state semiconductors having wavelengths between 810–980 nm which is in the same range of the absorption coefficient of melanin. Their wavelength targets the pigments in soft tissue and pathogens as well as inflammatory and vascularized tissue and therefore, provide optimum performance in periodontal, surgical

and endodontic procedures.<sup>3,4</sup>

The applications of diode lasers in dentistry include removal of granulation tissue, sulcular debridement and sterilization, pulpotomies, contact surgical procedures like gingivectomy, operculectomy, frenectomy, removal of unesthetic gingiva/gingival recontouring, implant uncovering, lesion removal, treatment of apthous ulcers, herpetic lesions, biopsies and dentinal hypersensitivity.<sup>4,5</sup> Moreover, the advent of office-based lasers, which are compact, portable, and easy to manipulate within the oral cavity have further added to their increasing popularity among dentists.<sup>6</sup>

### Case Illustration

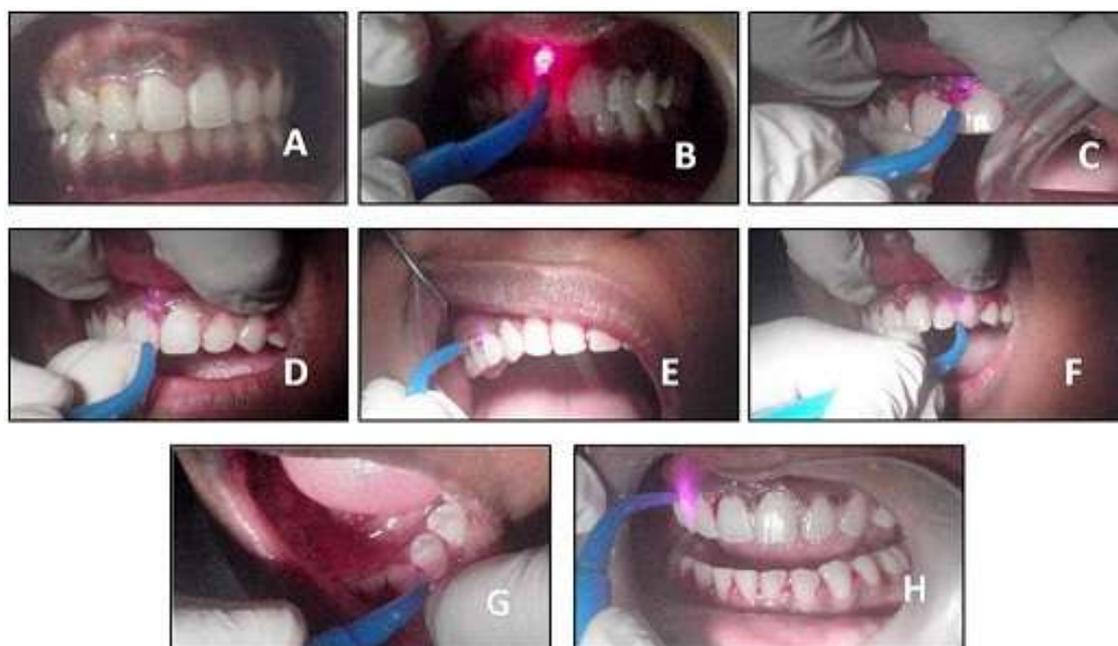
This young female patient (Figure 1-A ) had undergone orthodontic treatment one year back . She reported later to the dental clinic for cosmetic evaluation of the same. After clinical examination, it was decided to further refine the rounded and uneven maxillary anterior gingival margins and interdental papilla by gingival recontouring using a diode laser. A preoperative photograph was taken and topical anesthetic was applied on the gingival margin. The diode laser with a 300  $\mu$  fiber-optic cable connected to a quartz tip was used in a

contact mode with power setting at 1.2 W (Watts). Before surgery the tip of the laser fiber was initiated or primed by simply taping the fiber tip on a wooden cork to concentrate the heat energy (Figure 2).

The laser fiber was aimed at the free gingival margin parallel to the tooth surface and was moved apically with a horizontal reciprocating motion until the desired cosmetic result was obtained (Figure 1-B to G). The procedure was performed along with high speed suction as it helps in reducing the charred odor and also removing the laser plume.<sup>7</sup>

Biostimulation with Low Level Laser Therapy (LLLT) was achieved by application of an ampule of vitamin E over the surgical site and using diode laser in a defocused mode at power setting of 0.8 W (Figure 1-H). The patient was prescribed a dosage of 500 mg paracetamol (SOS) for post-operative pain control.

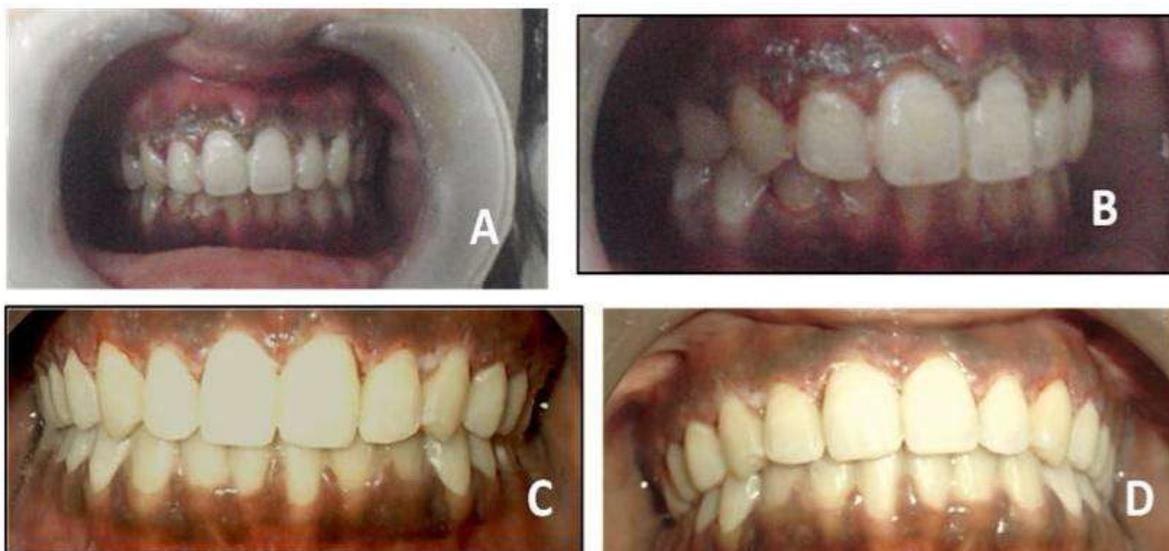
Post-operative photographs were taken immediately after the commencement of the treatment (Figure 3-A&B) and later after one week (Figure 3-C) and three months follow up respectively (Figure 3-D).



**FIGURE 1: (A) Shows pre-operative photograph of the patient showing uneven gingival margins; (B-G) Gingivectomy performed with diode lasers; (H) Biostimulation achieved with diode lasers in a defocused mode.**



**FIGURE 2: Conditioning or priming of fibre tip on a wooden cork**



**FIGURE 3: (A & B) Immediate post-operative photographs after gingival recantouring with diode laser;  
(C & D) Post- operative photographs after one week and three months follow up (respectively) showing normal gingival contours are restored with much improved appearance.**

## Discussion

Important considerations in finishing any dental treatment now-a-days include concepts that are important in cosmetic dentistry namely- crown heights, tooth proportionality, and gingival shape and contours.<sup>1,2</sup>

In the current case illustration, the diode laser proved to be an excellent soft tissue surgical tool for cutting and coagulating gingiva and mucosa. The contouring of the gingival margins and interdental papilla were precise as we had tactile feedback with the fiber. There was no bleeding and also the wounds sealed during the procedure. Biostimulatory effect achieved with LLLTs is further known to reduce discomfort, suppresses inflammatory process by inhibiting PGE<sub>2</sub> and promote activation of human gingival fibroblasts.<sup>8</sup>

One most important aspect while discussing dental lasers which should never be overlooked or compromised is the laser safety. The dental practitioners before activating any laser within their practice, along with his dental team, must update themselves about laser physics and promote safe and effective use of lasers on patients.

## Conclusion

In the end we would conclude by saying that the introduction of diode lasers to our routine dental practice, definitely holds a promising future as a soft tissue surgical tool. When used with optimal safety measures, lasers will provide a cutting edge in the future of

minimally invasive dentistry and become standard of care for many soft tissue procedures.

## References

1. Sarver DM. Principles of cosmetic dentistry in orthodontics: part 1. Shape and proportionality of anterior teeth. *Am J Orthod Dentofacial Orthop* 2004;126:749-53.
2. Sarver DM, Yanosky M. Principles of cosmetic dentistry in orthodontics: part 2. Soft tissue laser technology and cosmetic gingival contouring. *Am J Orthod Dentofacial Orthop* 2005;127: 85-90.
3. Pick RM, Pecaro BC, Silberman CJ. The laser gingivectomy. The use of the CO<sub>2</sub> laser for removal of phenytoin hyperplasia. *J Periodontol* 1985;56:492-6.
4. Coluzzi DJ. Lasers and soft tissue curettage: an update. *Compend Contin Educ Dent* 2002;23(11A):1104–1111
5. Kravitz ND, Kusnoto B. Soft-tissue lasers in orthodontics: an overview. *Am J Orthod Dentofacial Orthop* 2008;133(4 ):110–114
6. Robert A. Strauss R.A. ,Fallon S.D. Lasers in contemporary oral and maxillofacial surgery. *Dent Clin N Am* 2004; 48: 861–888
7. Hilgers JJ, Tracey SG. Clinical uses of diode lasers in orthodontics. *J Clin Orthod* 2004;38:266-73.
8. Aykol G, Baser U, Maden I, Kazak Z, Onan U, Tanrikulu-Kucuk S, Ademoglu E, Issever H, Yalcin F. The Effect of Low-Level Laser Therapy as an Adjunct to Non-Surgical Periodontal Treatment. *J Periodontol* 2011; 82( 3): 481-488.

## TOOTH FRAGMENT REATTACHMENT: AN ESTHETIC ALTERNATIVE AND REPORT OF TWO CASES

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### Abstract

It has been estimated that approximately one quarter of the population under the age of 18 years sustain traumatic injury in the form of anterior crown fracture indicating trauma to anterior teeth is relatively common among children and teenagers. Reattachment of a fractured fragment to the remaining tooth can provide better and long lasting esthetics, improved function and a positive psychological response, faster and less complicated procedure. This article discusses tooth fragment reattachment techniques and presents clinical cases of coronal fracture involving enamel, dentin and pulpal exposure.

**Keywords:** Coronal fracture, Dental trauma, Dental fragment reattachment, Resin composite

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### Introduction

Tooth trauma has been and continues to be a common occurrence that every dental professional must be prepared to assess and treat when necessary. It may leave not only damage to the dentition but also a psychological effect of the trauma to the child and his parents. The teeth that are most commonly involved are the maxillary central incisors<sup>1</sup>, because they occupy a more vulnerable position in the arch.

A number of techniques have been developed to restore the fractured crown. Early techniques include stainless steel crowns, basket crowns, orthodontic bands, pin retained resin, porcelain bonded crown and composite resin<sup>2</sup>.

The first published case of reattaching a fractured incisor fragment was reported in

1964 by pediatric dentist at Hebrew University, Hadassah School of Dentistry<sup>3</sup>. Tennery (1978) was the first to report the reattachment of a fractured fragment using acid-etch technique<sup>5</sup>. Subsequently, Stalkey has reported similar cases<sup>5</sup>.

The introduction of composite restorative materials in combination with the use of the acid-etch technique to bond composite to enamel, made possible the restoration of the fractured incisor tooth, with little or no additional tooth preparation<sup>2,6</sup>.

The use of such reattachment technique may offer several advantages over the conventional acid-etch composite restoration. Among the advantages of reattachment are<sup>3</sup>;

- Good aesthetics, colour match to the remaining crown portion preservation of incisal translucency.

- Conservation, maintenance of original tooth contours, preservation of 'identical' occlusal contacts.
- Wear similar to adjacent/opposed teeth.
- Financial and economic aspects of a conservative, one-visit treatment.
- More durable restoration than a class IV resins restoration.
- Colour stability of the enamel.
- Positive emotional and social response from the patients for preservation of natural tooth structure.

Reattachment of dental fragment has become possible due to the improvement of adhesive technique and restorative materials. The possibility of dentin hybridization allows successful performance of dentinal treatment previously difficult by means of conventional techniques.

The purpose of this article is to discuss the considerations for dental fragment reattachment technique and to present clinical cases report of fracture involving enamel, dentin and pulp.

## Case Reports

### **Case1:**

A 11-year-old male patient reported to the Department of Pediatric and Preventive Dentistry, Darshan Dental College and Hospital, Udaipur, following trauma to maxillary central incisor tooth. Trauma had occurred due to fall while playing 1 day ago. The child patient brought broken crown fragments along with his mother. Patient's medical history was non-contributory. The patient was in pain as a result of a large pulpal exposure. Examination revealed that the

teeth had horizontal fracture involving enamel, dentin and pulp (Fig. 1A).



Fig 1A  
No mobility of the injured teeth was recorded and surrounding tissues were healthy. A periapical radiograph showed that the root formation was complete with no extrusion. The teeth fragments were immediately maintained in normal saline during whole period prior to restoration (Fig. 2A).



Fig 2A

Pulp was extirpated, the canal dressed following instrumentation and the canal obturated one week later. The retained root and the fractured fragment were treated with the components of a Scotch bond adhesive system. A small increment of resin composite was applied to the tooth fragment, which was then reattached to its proper position. Excess composite was removed and the composite light cured from labial and palatal directions while fragment was kept in position under pressure. The teeth were polished with polishing discs (Fig. 3A). Postoperative instructions to the patient were given to deter from loading the anterior teeth.



Fig 3 A

At the 1-year follow-up, the radiographic evaluation revealed a successful fragment reattachment procedure.

### **Case2:**

A 12-year-old female patient had a fractured maxillary central incisor tooth reported to the Department of Pediatric and Preventive Dentistry, Darshan Dental College and Hospital, udaipur. Trauma had occurred due to fall while playing 5 hour ago (Fig. 1B). The child patient brought broken crown fragment along with her father (Fig. 2B).



Fig 1B



Fig 2B Examination revealed that the teeth had horizontal fracture involving Enamel, Dentin and Pulp. No mobility of the injured teeth was

recorded; periapical radiograph showed that the root formation was complete. The pulp was exposed, so root canal treatment was initiated and the root canal obtained 1 week later.

The adaptation of the fragments was checked. After the placement of rubber dam, phosphoric acid gel 37.5% was applied to the enamel as the fragment and the teeth for 20 seconds, limited to 2 mm beyond the fracture margin. Air-water spray was used to remove the acid and the surface was air-dried. Scotch bond adhesive system was applied to the tooth fragment, which was then reattached to its proper position. Visible light polymerization was applied to 60 seconds to the facial and palatal surfaces of the tooth, while the fragment was kept in position under pressure. The teeth were polished with polishing discs (Fig. 3B).



Fig 3B

The patient was informed of the possibility that the fragment would detach again and was instructed to avoid loading that tooth. After 10 months follow-up; repair was performing satisfactory with no periapical changes.

### **Discussion**

Apart from dental caries, traumatic injuries in young children and adolescents are one of the most common causes for dental treatment. The fracture of a tooth may be a most traumatic incident for a young patient, but it

has been found that there is a positive emotional and social response from the patient to the preservation of natural tooth structure.

Anterior crown fracture comprises of 26-76% in the permanent dentition<sup>7</sup>. The dentist plays an important role in the management of injured cases and he has to take into consideration every possibility of saving a tooth that has received trauma. The remarkable advancement in adhesive systems and resin composites has provide a favourable prognosis for the reattachment of a tooth fragment. However, this technique can be used only when the intact tooth fragment is available. Diagnosis of a pulpal lesion becomes extremely important when the restoration of fractured anterior teeth is considered. The success of restorative treatment will depend on steps taken to maintain pulpal vitality. Endodontic treatment is advised in case of necrosed pulp. The presented clinical cases represent an alternative to the use of resin composite or porcelain to restore fracture anterior teeth. The reattachment of normal tooth fragment eliminates the problem of wear and unmatched shades associated with different restorative materials and techniques<sup>8</sup>. Dental trauma constitutes the significant threat to youth and might exceed the prevalence of dental caries and periodontal disease in future<sup>9</sup>. Tooth fragment reattachment procedure offers an ultraconservative, cost effective, safe, fast and esthetically pleasing result when fragment is available. The reattachment of the tooth fragment as a restorative procedure becomes possible only when it is available. This can be improved with different adhesive techniques and restorative materials.

restorative evaluation of traumatized permanent teeth. *Int J Paed Dent* 1997; 7: 217-226.

2. Hegde RJ. Tooth fragment reattachment – an esthetic alternative: Report of a case. *J Indian Soc Pedo Prev Dent* 2003; 21(3): 117-119.

3. Murchinson DF, Burke FJT, Worthington RB. Incisal edge reattachment; indications for use and clinical technique. *Br Dent J* 1999; 186(12): 614-619.

4. Tennery NT. The fractured tooth reunited using the acid etch bonding technique. *Tex Dent J* 1988; 96: 16-17.

5. Starkey PE. Reattachment of a fractured fragment to a tooth. *J Indian Dent Assoc* 1979; 58:37-38.

6. Baratieri LN, Monteiro S. Tooth fragment reattachment: Fundamentals of the technique and the case report. *Quint Int* 2003; 34: 99-107.

7. John R, Prabhu NT, Munshi AK. Reattachment of fracture maxillary incisor crown – a case report. *J Indian Soc Pedo Prev Dent* 1998; 16(1): 17-20.

8. Chu FCS, Yim TM, Wi SHY. Clinical considerations for reattachment of tooth fragments. *Quintessence Int* 2000; 31: 385-391.

9. Thejokrishna.P, Prabhakar AR, Kurthukoti AJ. Reattachment of Embedded Tooth Fragment: A Case Report. *Annals and Essence of dentistry* 2010; 2(3): 77-81.

## References

1. Robertson A, Robertson S, Noren JG. A