

Intentional Replantation Of Periodontally Involved Hopeless Tooth By Using Autologous Platelet Rich Fibrin - A Case Report

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Abstract - Intentional reimplantation is a procedure in which tooth extraction is performed followed by reinsertion of the extracted tooth into its own socket after performing the desired procedure. In this article, intentional reimplantation is described and discussed as a treatment approach for a periapical lesion that is in maxillary central incisor. After 1 year, the patient was asymptomatic, the tooth was still functional and a recall intraoral periapical radiograph showed an intact periodontal ligament space and lamina dura with no evidence of gross root resorption or ankylosis.

I. INTRODUCTION

Intentional replantation (IR) involves the purposeful removal of a tooth and its reinsertion into the socket after proper endodontic manipulation and repair. Intentional replantation is a treatment option when more conventional forms of treatment either fail or are impossible. Generally, it is thought that it may be considered as a viable mode of treatment in certain situations to preserve the natural dentition.

II. INDICATIONS

- ❖ All other endodontic non-surgical and surgical treatments have failed or are deemed impossible to perform.
- ❖ limited mouth opening that prevents the performance of non-surgical or peri-radicular surgical endodontic procedures.
- ❖ root-canal obstructions.
- ❖ restorative or perforation root defects that exist in areas that are not accessible via the usual surgical approach without excessive loss of root length or alveolar bone.

III. CONTRAINDICATIONS

- ❖ Long, curved roots;
- ❖ Advanced periodontal diseases that have resulted in poor periodontal support and tooth mobility
- ❖ Multi-rooted teeth with diverging roots that make extraction and reimplantation impossible
- ❖ Teeth with non-restorable caries

IV. CASE REPORT & CLINICAL PROCEDURE

A 23-year-old male patient, a resident of Channagiri, Karnataka reported to our OPD with the chief complaint of pain & loose upper front tooth since a week.

IV.A. HISTORY OF PRESENTING ILLNESS

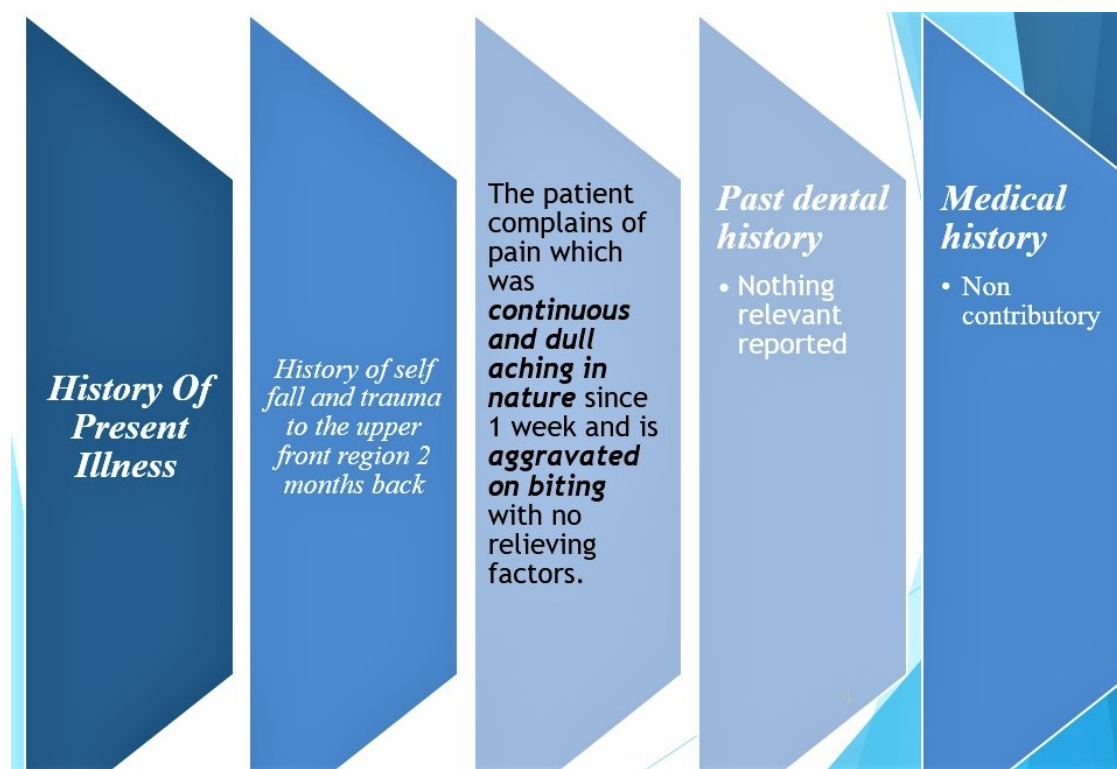


Fig 1: Table showing the patient's History

IV.B. PERSONAL HISTORY

- ◆ **Diet** – Mixed
- ◆ **Tooth-brushing habits** – Patient brushes his teeth once daily with a medium bristle toothbrush for 2-3 minutes in a horizontal motion
- ◆ **Habit history** – Areca Nut chewing in the last 6 years

IV.C. CLINICAL EXAMINATION

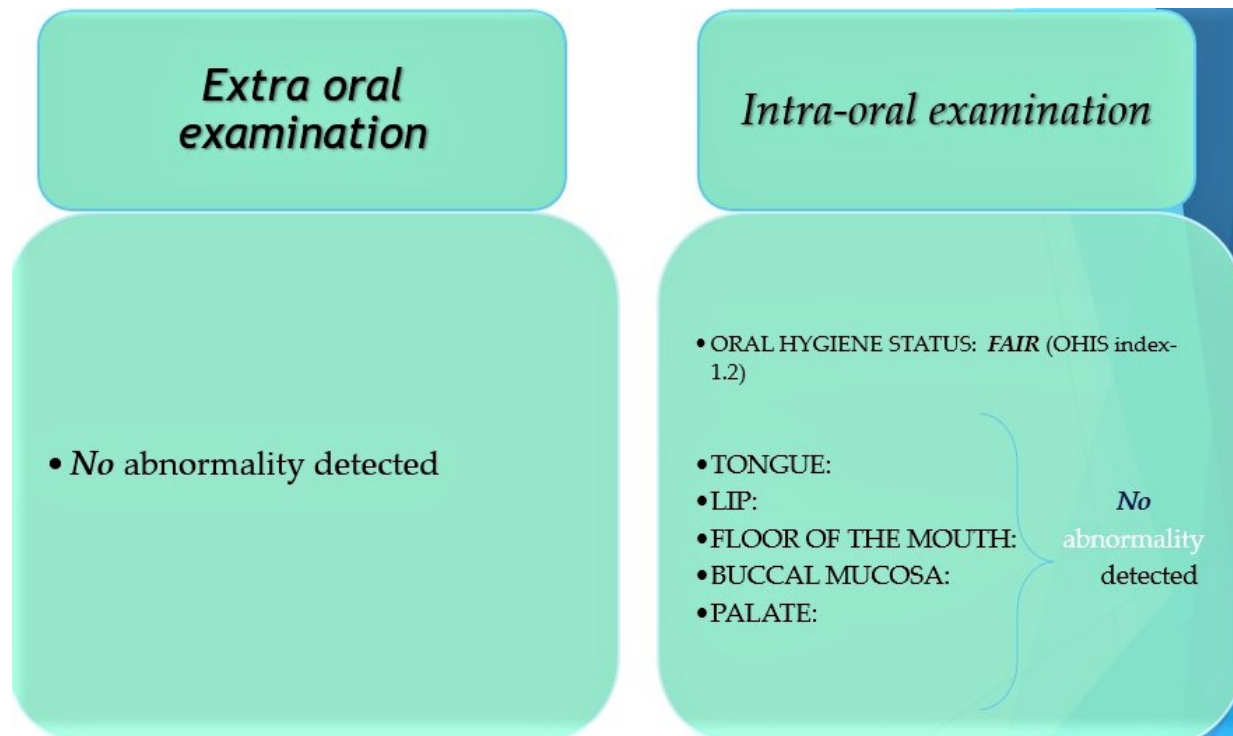


Fig 2: Table showing extra-oral & intra-oral examination charts

Exudate	Present i.r.t 21																																
BOP	Present																																
Texture	Loss of stippling i.r.t 21																																
Contour	Scalloped with rolled out margins i.r.t 21																																
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Size	Normal																																
Consistency	Soft and edematous i.r.t 21																																
Colour	Reddish Pink with melanin pigmentation i.r.t 21																																
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BOP	Present																																
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Fig 3: Table showing Gingival Status of the patient wrt 21


Periodontal status

- Pockets present wrt 21,31,32,36,47 : 5-7 mm

Grade 3
mobility: 21

- Grade 1 mobile 31, 32, 41, 42

pre-operative IOPA



Other findings

- No of teeth present : 31
- Missing 26
- No loss of contact
- Attrition 31, 41, 42
- Competent lip seal
- No deleterious habits
- Angle's Class I malocclusion
- Normal overjet and increased overbite.

Fig 4: Periodontal Status of the patient

IV.D. INVESTIGATIONS

◇ **Complete Hemogram -**

Hb: 13gm%

PCV: 39 %

Bleeding time: 1 min 45 sec

Clotting time: 3 min 20 sec

◇ **I.O.P.A** w.r.t 21

◇ **O.P.G**

IV.E. DIAGNOSIS

CHRONIC GENERALIZED GINGIVITIS WITH LOCALIZED PERIODONTITIS.

However, the patient was not willing for the extraction of the tooth & an implant placement was not affordable for the patient.

Keeping all these constraints in mind, Intentional Replantation was planned for the patient.

IV.F. TREATMENT

In the **Non-surgical phase**, Patient education, motivation and Oral hygiene instructions were given, Scaling & Root planning (SRP) performed. Splinting done and the patient was re-evaluated.



Fig 5: Pre-operative photograph after SRP, splinting



Fig 6: Pre-operative IOPA showing the defect

SURGICAL PHASE:

In the surgical phase full thickness mucoperiosteal flap was reflected revealing bone loss till the apex (Fig 7A). Once the flap was reflected, atraumatic extraction was done w.r.t 21(Fig 7B). The atraumatic extraction was performed using a periosteal elevator. Once the tooth was extracted, it was placed in a dappen dish containing tetracycline solution for the purpose of **root-biomodification**. The tooth was sent to the department of Endodontics for the purpose of conducting Root Canal Treatment. Extra-oral RCT was performed with the help of an Endodontist. In the meanwhile, patient's own blood was drawn using a 10 ml syringe & A-PRF+ was prepared.

PREPARATION OF A-PRF+:

For preparation of A-PRF+, sample of 10ml of blood will be collected from the patient from the median cubital vein and centrifuged at a speed of **208 g for 8 min**. After the centrifugation, the tubes will be kept standing vertical for 5 mins. The fibrin clot will be located in the middle of the tube between the red corpuscular phase at the bottom and the acellular plasma at the top of the

tube. The clot will be removed by using sterile tweezers and placed in a dedicated sterile metal box.

PROCUREMENT OF THE BONE GRAFT MATERIAL:

Alloplastic bone graft material **SYBOGRAF™ PLUS** was used. This is a sterile synthetic nanocrystalline hydroxyapatite bone graft material.

The A-PRF+ & the bone graft was mixed evenly in a dappen dish and was carried with the help of a spoon excavator and placed inside the socket. Once placed, replantation of the central incisor was done and sutures placed (Fig 7C).



Fig 7A: Mucoperiosteal flap reflected



Fig 7B: Atraumatic extraction



Fig 7C: Sutures placed

IV.G. RESULTS

At one year follow-up, clinically there was no mobility, no associated pain, sinus & swelling (Fig 8A). Radiographic findings showed sufficient bone fill at the distal aspect of the central incisor (Fig 8B).

Periodontal prognosis appeared to be FAIR at one year follow up.



Fig 8A: One-year Clinical Follow-up



Fig 8B: Radiographic view at one year follow-up

V. DISCUSSION

A tooth with periodontal destruction extending *beyond the root apex* is considered “*hopeless*”, and extraction is the only possible treatment option. Intentional replantation is the purposeful extraction of a tooth to perform endodontic treatment, curettage of apical soft tissue when present and replacement of the tooth in its socket. (Kratchman S, 1997) Although a permanent restoration may be planned after a successful extraction of a tooth, intentional replantation helps to restore an original tooth to function in mouth instead of replacing it with prosthesis. In the present case report, considering the *patient’s age, economic status* and *in intention to save the natural tooth for better esthetics*, replantation was planned. Several evidences have testified replantation as a successful substitute to extraction for a periodontally involved hopeless teeth. (Demiralp et al, 2003, Lee et al, 2004) Recently, ***combined regenerative techniques*** have been used successfully with this procedure allowing ***additional bone formation and attachment gain*** thereby increasing the success rate. (Demir B et al, 2007) It was reported previously that the combined use of ***Choukroun’s PRF (Platelet Rich Fibrin)*** (a second-generation platelet growth factor and ***nano hydroxyapatite crystals*** for treatment of replantation exhibited successful clinical and radiographic results. (Demiralp et al, 2003). The present case was similarly treated using a ***combination of PRF and alloplastic material***. The involved tooth in the current report was ***mobile and devoid of bone support*** hence it can be anticipated that the exposed root would be lacking vital periodontal ligament cells, resulting an ***infection*** leading to ***ankylosis*** and external ***root resorption***. To prevent these complications, the tooth was ***root planed to completely eliminate any remaining non-vital PDL cells and necrotic cementum*** resulting in better tissue healing for bone as well as gingiva. The extracted tooth was placed in ***tetracycline-HCl*** solution (***100 mg/ml***) mainly because of its ***anti-resorptive, antibacterial, anti-inflammatory and anti-collagenase*** properties.

VI. CONCLUSION

With proper case selection, Intentional replantation with regenerative technique can be promising for successful long-term result and can be a treatment option to extend the life of a natural teeth. ***Moreover, the positive psychological value to the patient in using his/her natural tooth is an added benefit.***

VII. REFERENCES

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