



Tooth Autotransplantation in Central Odontogenic Fibroma Socket

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ABSTRACT

Autogenous Tooth Transplantation, Or Auto transplantation, Is The Surgical Movement Of A Tooth From One Location In The Oral Cavity To Another In The Same Individual. There Are High Success Rates And Is An Excellent Alternative For Tooth Replacement. Although The Indications Are Limited, Careful Patient Selection And Appropriate Technique Can Lead Us To Exceptional Esthetic And Functional Results. One Advantage Of This Procedure Is That Placement Of An Implant Supported Prosthesis Or Other Form Of Prosthetic Tooth Replacement Is Not Needed. The Present Case Is Of A 16 Years Old Male Patient Where A Badly Carious 46 Was Extracted And Replaced By A Developing 48. Follow Up Revealed That The Tooth Was Non Vital And Therefore A Regenerative Endodontic Therapy Was Performed. Two Years Follow-Up Showed Excellent Bony Regeneration Around The Transplanted Tooth Which Was Sound Esthetically As Well As Functionally.

Key Words- *Auto transplantation, Central Odontogenic Fibroma, Dental Implant, Regenerative Endodontic Therapy.*

Introduction

Tooth Autotransplantation Which Was Introduced By Apfel In 1950 And Popularized By Miller In 1956 Is A Widely Used Treatment Modality To Transplant A Sound Embedded, Impacted Or Erupted Tooth Into Well Prepared Extraction Socket Of Other Tooth.^[1] It Is A Viable Treatment Option For Replacement Of Missing Tooth When A Sound Donor Tooth Is Available. Auto-transplantation Which Is Regarded As Successful

Treatment Modality Offers Improved Arch Form, Esthetics, Mastication, Speech, Dentofacial Development and Arch Integrity If Performed Properly. Additionally It Also Prevents Migration Of Adjacent And Opposing Teeth While Maintaining The Natural Spacing. Morphology Of The Alveolar Ridge Is Also Maintained Through Proprioceptive Stimulation^[2].

The Transplantation Of A Tooth Is Considered A Conservative Alternative Approach Of Oral

Rehabilitation To More Invasive Methods. The Rehabilitation Of A Missing Tooth In A Young Patient Can Usually Be Done By Either Fixed Prosthesis Or Dental Implant. Fixed Prosthesis Always Impart Detrimental Effects On Adjacent Teeth Due To Tooth Preparations Whereas Dental Implants Are Contraindicated In Growing Patients And Also It Cannot Be Used In Patients With Little Financial Condition To Afford The Costly Dental Implant Treatment. [3,4]

Thus, Autotransplantation May Be Considered As A Most Effective Alternative To Any Other Oral Rehabilitation Method In Young Growing Patient. The Present Case Describes A 16 Year Old Boy In Whom A Partially Developed 48 Was Transplanted In Extraction Socket Of 46 Which Was Extracted Due To Gross Destruction Because Of Caries. As The Transplanted Tooth Was Found To Be Non-Vital After 6 Weeks Post Transplantation Regenerative Endodontic Therapy Was Instituted. 24 Months Follow Up Of The Patient Suggested Excellent Bony Regeneration Around The Transplanted Tooth Which Was Sound Esthetically As Well As Functionally.

Case Report

A 16 Years Old Boy Reported To The Department Of The Oral And Maxillofacial Surgery, Narsinhbhai Patel Dental College, Visnagar With The Complaint Of Pain In Relation To The Lower Right Back Tooth Region Since 1 Week (Figure 1). Pain Was Mild, Intermittent In Nature Which Was Relieved By Taking Analgesics. Clinical Examination Revealed Presence Of Grossly Destroyed Lower Right First Molar Due To Caries (Figure 2). Orthopantomogram Confirmed The Clinical Findings And Showed Complete Destruction Of The Crown Of The Tooth Which Was Involving The Root Up to The Furcation Level And Presence Of Periapical Radiolucency Suggesting Periapical Pathology (Figure 3). It Also Reveals The Presence Of Unerupted Partially Developed 48 In Which Two-Third Root Formation Was Completed. So Extraction Of 46

Tooth Followed By Transplantation Of 48 Into The Extraction Socket Was Planned.

After Administration Of Local Anesthesia Bayonet Incision Was Placed And Sufficient Exposure Of 46 And 48 Teeth Were Done (Figure 4 & 5). 46 Tooth Was Extracted As A traumatically As Possible To Prevent Injury To The Periodontal Tissues (Figure 6). Whole Tooth Along With Periapical Lesion Was Sent For Histopathological Examination To Know The Etiology Of Gross Destruction. Later Histopathological Report Revealed The Presence Of Central Odontogenic Fibroma Which Is A Very Rare Tumor Of Odontogenic Origin With Only 17 Cases Reported So Far In The Literature. Simultaneously 48 Tooth Was Removed As Atraumatically As Possible (Figure 7), Flushed With Saline And Was Placed In The Extraction Socket Of 46. Sutures Were Placed (Figure 9). Splinting Was Done With The Help Of Ligature Wire To Stabilize The Transplanted Tooth.

After 6 Weeks Vitality Test Was Carried Out And The Transplanted Tooth Was Found To Be Non-Vital (Figure 10). Patient Was Kept On Follow Up Period For Upto 3 Months. It Was Found On The Follow Up Visit That There Was External Resorption Of The Roots Hence Regenerative Endodontic Therapy Was Instituted. Bleeding Was Induced Followed By Placement Of PRF And Biodentin And Restored By Composite (Figure 11). 2 months Following The Therapy Splint Was Removed And Tooth Was Found To Be Stable. Radiographs Suggested New Bone Formation Around The Transplanted Tooth. After 2 Years Of Follow Up Tooth Was Found To Be Esthetically Sound And Functionally Efficient (Figure 12).



Figure 1-frontal profile view of the patient

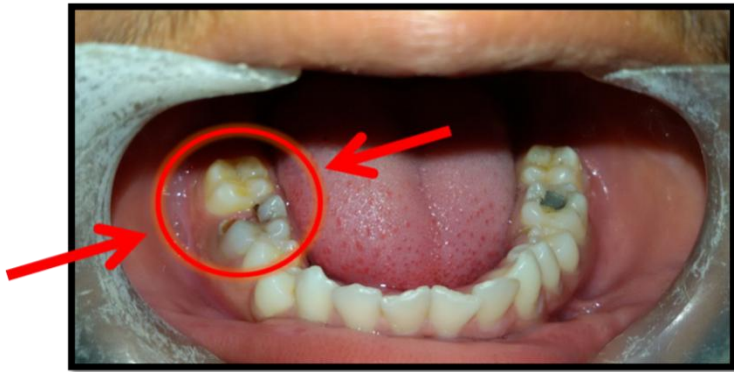


Figure 2- preoperative intraoral photograph showing badly



Figure 7- extracted 48 tooth



Figure 3- orthopantomogram of the patient



Figure 8- immediate post operative IOPA



Figure 9- closure



Figure 4- exposure of 48 tooth



Figure 10- follow up IOPA at the end of 4 weeks



Figure 5- extraction socket of 46 tooth



Figure 11- follow up IOPA at the end of 4months



Figure 6- extracted 46 tooth



Figure 12- follow up IOPA at the end of 2 years



Figure 13- intraoral photography at the end of 2years

Discussion

Loss Of The Lower First Molar Tooth Prematurely Results In Mesial Migration Of The Posterior Teeth, Supra Eruption Of Opposing Teeth, Loss Of Space And Consequent Changes In The Occlusion Which Can Be Devastating For The Patient. Fixed Prosthesis And Implants Are Possible Treatment Modalities Which Can Be Employed In This Kind Of Situations For Rehabilitation But They Have Their Own Drawbacks. Fixed Prosthesis Leads To Unnecessary Reduction Of The Adjacent Teeth Which Is Inevitable. Implant Technology In Recent Years Has Provided With More Predictability In Success Rate & Esthetic Outcomes. Autotransplantation Which Is A Surgical Movement Of A Sound Impacted, Embedded Or Erupted Tooth From One Location To The Other Location Of Oral Cavity Of The Same Individual Has One Major Advantage Over Implants That It Can Be Done In Young Growing Adolescents And Children Whereas Implants Will Not Grow Along With The Growing Patients And Results In Infra Occlusion Of The Replaced Tooth. The Outstanding Feature Of The Transplanted Tooth Is Their Potential To Erupt In Harmony With Adjacent Teeth And Growing Jaws.^[1]

Transplantation Of An Immature Third Molar With Incompletely Formed Roots Possibly Serve As A Suitable Treatment Alternate As It Helps To Maintain Alveolar Bone.^[4] Tooth With Either Open Or Closed Apices May Be Used As Donor; However, To Achieve The Most Predictable

Results, Tooth Having Between One-Half To Two-Thirds Completed Root Development Can Be Used.^[5-8] It Has Been Reported That Successful Transplant Of Tooth Preserves The Alveolus, Provides Functional Stimulation And Diminishes The Extent Of Newly Formed Bone Resorption.

One Of The Histological Features That Were Found From The Extracted Tooth Was Central Odontogenic Fibroma. Central Odontogenic Fibroma Is A Rare Benign Neoplasm Which May Evolve From A Dental Germ (Dental Papilla Or Follicle) Or From The Periodontal Membrane, And Therefore Is Invariably Related To The Coronal Or Radicular Portion Of Teeth^[2,3] It Has Female Predilection Of 2.8:1, Usually Affecting Patients In Their Second And Sixth Decade Of Life. Lesions Are Similarly Found In Anterior Regions Of Maxilla And Mandible. Tumors Are Mostly Asymptomatic, But May Be Associated With Displacement And Mobility Of The Adjacent Teeth Due To Their Expansile And Slow Growing Nature.^[9,10] In Our Case It Was Accidental Finding On Histopathological Examinations.

Approximately 95% Of Transplantation Procedures Involving Donor Tooth With Open Apices Of Roots, Revascularization Of The Pulpal Tissues Will Occur, Which Is Essential For The Pulp Vitality And Normal Root Development.^[1,11] In The Present Case Even After 6 Weeks Tooth Didn't Respond Positively To The Vitality Test So It Was Decided To Opt For Regenerative Endodontic Procedure. Platelet Rich Fibrin And Biodentin Were Used To Regenerate The Pulpal And Periodontal Tissues. Biodentine Is A Fast-Setting Tricalcium Silicate-Based Material With Prolonged Alkalinizing Properties Which Has Ability To Release Ions Involved In Mineralization Processes. It Makes Major Contribution To Formation Of Reparative Dentine And It Maintains Pulp Vitality In Patients For Direct Pulp Capping. As A Direct Pulp Capping Agent It Is Fast Setting, Has Better Handling Property And Good Bioactivity.^[12,13] Two Years

Follow-Up Suggested Excellent Bone Regeneration Around The Transplanted Tooth Which Was Stable And Sound Esthetically As Well As Functionally.

Conclusion

Tooth Autotransplantation Procedure Is An Atraumatic, Non-Invasive And Efficient Alternate For Replacement Of Missing Tooth Giving Exceptional Esthetic And Functional Results With Cost Effectiveness Unlike An Artificial Dental Implant Where A Need Arises To Place A Dental Prosthesis Following Its Placement Into The Oral Cavity And Subsequently Results In Being More Expensive.

Excellent Results Achieved In The Present Case Suggest That Autotransplantation Is An Excellent Alternative For The Replacement Of The Missing Tooth Specially In The Cases Where Transplanted Tooth Has Open Apices. Regenerative Endodontic Therapy In Nonvital Transplanted Teeth Yield Good Results.

Reference

1. Aldress A, Bawazir O, Alqutub M. Autotransplantation As A Treatment Modality Of Macrodonia: A Case Report. OHDM: 2014; Vol 13.
2. Dube K, Paul B, Shankaran A, Sharma A. Successful Autotransplantation Of An Immature Third Molar- A Case Report. IOSR-JDMS: 2013; 4(1): 39-42.
3. Heer J. Calcium Hydroxide Therapy And Bony Regeneration Following Autogenous Tooth Transplantation: Case Report And Three Year Follow Up. British Dental Journal: 2007; 203: 403-405.
4. Pacini N, Nery D, Carvalho D, Lima N, Miranda A, Macedo S. Dental Autotransplant: Case Report. RSBO: 2012; Jan-Mar:9(1):108-13.
5. Cohen AS, Shen TC, Pogrel MA. Transplanting Teeth Successfully: Autografts And Allografts That Work. JADA: 1995; 126(4):481-5.
6. Lundberg T, Isaksson S. A Clinical Follow-Up Study Of 278 Autotransplanted Teeth. Br J Oral Maxillofac Surg: 1996; 34(2):181-5.
7. Kugelberg R, Tegsjo U, Malmgren O. Autotransplantation Of 45 Teeth To The Upper Incisor Region In Adolescents. Swed Dent J: 1994; 18(5):165-72.
8. Kahnberg K. Autotransplantation Of Teeth: Indications For Transplantation With A Follow-Up Of 51 Cases. Int J Oral Maxillofac Surg: 1987; 16(5):577-85.
9. Ramer M, Buonocore P, Krost B. Central Odontogenic Fibroma-Report Of A Case And Review Of The Literature. Periodontal Clin Investig: 2002; 24:27-30.
10. Marco T, Fernandes A, Durighetto A, Cardoso S, Adriano M. Central Odontogenic Fibroma: A Case Report With Long-Term Follow-Up. Head & Face Medicine: 2010; 6-20.
11. Marcusson K, Lilja-Karlander E. Autotransplantation Of Premolars And Molars In Patients With Tooth Aplasia. Journal Of Dentistry: 1996; 24: 355-358.
12. Nayak R, Vachhani K, Sonigra H, Attur K, Gupta A, Patel C. A Novel Approach For Management Of Deep Carious Lesion With Biodentine: Case Report. International Journal Of Advanced Research; 2016, 4(4): 295-298.
13. Gupta A, Makani S, Vachhani K, Sonagria H, Attur K, Nayak R. Biodentine: An Effective Pulp Capping Material. Sch. J. Dent. Sci., 2016; 3(1):15-19