



Journal Homepage: - www.journalijar.com
**INTERNATIONAL JOURNAL OF
 ADVANCED RESEARCH (IJAR)**

Article DOI: 10.21474/IJAR01/5970
 DOI URL: <http://dx.doi.org/10.21474/IJAR01/5970>



RESEARCH ARTICLE

AUTOTRANSPLANTATION: A BETTER WAY OF REPLACEMENT.

Dr. Chinmay H Patel, Dr. Payal Patel, Dr. Kamal Bagda, Dr. Rimil Nayak, Dr. Anshu Gupta and Dr. Kruti Kachoriya.

Manuscript Info

Manuscript History

Received: 04 October 2017
 Final Accepted: 06 November 2017
 Published: December 2017

Abstract

This piece of research deals with an interestingly observed interdisciplinary challenging educational issue associated with children's learning performance phenomenon in classrooms. more precisely, it addresses an answer for the critically challenging educational question : how any of the students could focus on teachers' interactive speaking in noisy environmentally overcrowd class?. more signals resulting in CPE at classroom. By the end of this paper, some interesting simulation results presented after taking into account the comparative studies of two essential ANN parameters namely : learning rate and gain factor values. Versus varying neurons' number of the hidden layer associated to self-organized ANN paradigm model. These results revealed the effect of interrelation between various learning rate values against different values of signal to noisy ratio considering student's selective responsive attention.

Copy Right, IJAR, 2017,. All rights reserved.

Introduction:-

An edentulous space in an alveolar process can be a challenge to the dental surgeon. There are various options available to replace a missing tooth with removal prosthesis, fixed prosthesis or implants which are often limited by bone availability and are expensive. Tooth transplantation is an excellent alternative for replacing missing teeth as it can serve and function as a normal tooth.^[1]

Tooth autotransplantation refers to the extraction of a tooth from one location and its replantation in a different location in the same individual. The new location may be a fresh extraction socket after extraction of a nonrestorable tooth, or an artificially drilled socket on an edentulous alveolar ridge. Its definition also encompasses the surgical repositioning of a tooth within the same socket.^[2]

Autogenic transplantation of teeth was described for the first time in the dental literature by the Swedish dental surgeon Vidman in 1915. Transplantation offers potential benefits such as bone induction and the reestablishment of a normal alveolar process in addition to tooth replacement. Even if the transplant fails later, there is an intact recipient area that could be used for an implant.^[3]

Autotransplantation is advantageous as it allows improved masticatory function and esthetics as well as maintains arch space and volume of alveolar bone. However, several complications, such as root resorption, ankylosis, fracture of donor tooth during extraction can occur.^[4,5]

Case Report:-

A 40 years old male patient named Arvindbhai Thakor reported to the department of conservative dentistry and endodontics at narsinhbhai Patel dental collage and hospital with the chief complain of pain in lower left back region of jaw. Pain is dull and intermittent in nature which is aggravated on chewing.

On clinical examination grossly decayed tooth irt 36(Fig1). Tooth is tender on percussion. Intra oral periapical radiograph shows radiolucency involving enamel dentin and pulp, and periapical radiolucency irt 36(Fig2). Prognosis is poor irt 36. In contrast mandibular left third molar had healthy condition without an opposing tooth. Considering the financial difficulty of the patient, autotransplantation was preferred to implant installation. The mandibular left thied molar was planned to be transplanted to mandibular left first molar

The procedure was performed in one stage. The third molar was extracted and placed back into the extraction socket until first molar was removed and the recipient site was prepared with #4 surgical carbide round bur in a low-speed handpiece under sterile saline irrigation. The donor tooth was then placed into the recipient socket and its fitting was evaluated. Stabilization was achieved using a 0.8 mm stainless steel wire and 4-0 silk sutures. The enamel on the buccal surfaces of the autotransplanted third molar and adjacent tooth (right mandibular first molar) was etched with 37% phosphoric acid for 30 s. Adhesive was then applied to the enamel and the stainless steel wire was fixed on the etched enamel with light-cured composite resin. Since only one tooth was used for stabilization, the temporary fixation had semi-rigid characteristics and the autotransplanted tooth remained splinted for 2 weeks

For the post-surgical period, the patient was prescribed with an antibiotic (Amoxicillin 500 mg three times a day), an analgesic (diclo para 550mg three times a day), liquid and pasty diet for 1 week and mouthrinses with a 0.12% chlorhexidine solution for the same.

Pulp extirpation, cleaning and shaping of the root canals were performed 7 days after the surgical procedure Clinical and radiographic follow-ups were conducted 2, 3 and 6months after autotransplantation and showed that the treatment was successful

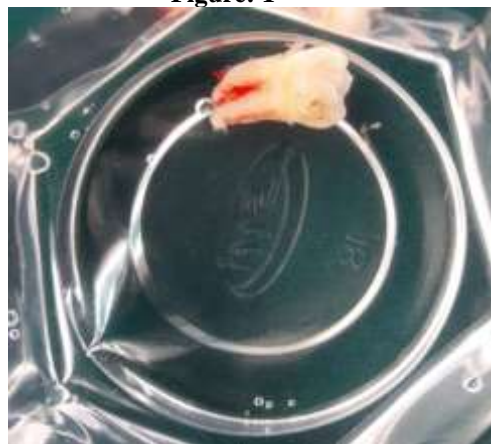
**Figure: 1****Figure: 2****Figure: 3****Figure: 4**



Figure: 5



Figure: 6

Discussion:-

Implant technology has taken great strides in recent years in terms of predictability in both success rate & aesthetic result. Comparison between autotransplantation & implantation as treatment options in replacing missing teeth seems inevitable. One major advantage of transplantation over implantation is its applicability. in the management of patients before puberty growth has finished. Implants will not grow with the growing patients and result in infraocclusion.^[2]

The science of autotransplantation has progressed, as evidenced by the high success rates reported in studies over the past decade. Successful tooth transplantation offers improved esthetics, arch form, dentofacial development, mastication, speech and arch integrity. A transplanted third molar also maintains natural space, with little or no root resorption, alveolar bone volume, and the morphology of the alveolar ridge through proprioceptive stimulation.^[6] The outcome of ATT depends on wise case selection and consideration of all biological aspects. A prerequisite for this method, however, is a thorough knowledge of the factors that influence the long-term success rate. Preservation of the periodontium of the grafted tooth is the key to a successful clinical outcome. Autotransplantation possesses many distinct advantages over fixed prosthesis or implants in terms of function, cost, time, esthetics, and ease with which complications can be managed.^[7]

The factors affecting the prognosis of autotransplantation are donor tooth, recipient site, the duration and method of splinting after surgery, and the timing of endodontic treatment of the transplanted tooth.^[8] Above all, the decisive factor of the prognosis is the healing of periodontal ligament (PDL) cells, which depends on the vitality of PDL cells attached to the root surface of the donor tooth.^[9,10] Therefore, extraction without damaging the root surface of the donor tooth and fast transplantation in the recipient site are the key points for the successful autotransplantation.

The literature reports excellent success rates following tooth transplantation when the appropriate protocol is followed. Andreasen^[11] found 95% and 98% long-term survival rates for incomplete and complete root formation of 370 transplanted premolars observed over 13 years. Lundberg and Isaksson^[12] had success in 94% and 84% of cases for open and closed apices respectively in 278 autotransplanted teeth over 5 years. Kugelberg^[13] achieved success rates of 96% and 82% for 45 immature and mature teeth transplanted into the upper incisor region over 4 years.

The most common cause of failure of the autotransplant is chronic root resorption. More specifically, the causes of tooth loss following transplantation from most common to least common are inflammatory resorption, replacement resorption (ankylosis), marginal periodontitis, apical periodontitis, caries, and trauma. Inflammatory resorption may become evident after 3 or 4 weeks, while replacement resorption may not become evident until 3 or 4 months after transplantation. The incidence of both types of resorption can be decreased with atraumatic extraction of the donor tooth and immediate transfer to the recipient site to minimize the risk of injury to the periodontal ligament.^[14]

Conclusion:-

Autogenous transplantation should be considered as a viable option for treatment of an edentulous space. Although it has not been established as a traditional means of replacing a missing tooth, it warrants more consideration.

References:-

1. Khan A, Fatima T, Tehseen, Tandon P. Autogenous Tooth Transplantation: Better Way of Replacement: Review and Case Report. J Clin Case Rep 2015;5:11
2. Eddie CK YAU. Tooth Autotransplantation as a Treatment Option. Dental Bulletin 2009;14(6) .
3. Ustad F, Mukram FA, Kota Z et al. Autotransplantation of teeth: A Review. Am. J. Med. Dent. Sci 2013;1(1): 25-30
4. Leffingwell CM .Autogenous tooth transplantation: a therapeutic alternative. Dent Surv.1998;56: 22-26.
5. Cho JH, Hwang HS, Chang HS, Hwang YC Application of orthodontic forces prior to autotransplantation - case reports. Int Endod J 2013; 46: 187-194.
6. Tsukiboshi M. Autogenous tooth transplantation: A reevaluation. Int J Periodontics Restorative Dent 1993;13:120-49.
7. Josefsson E, Brattstrom V, Tegsjo U, Valerius-Olsson H. Treatment of lower second premolar agenesis by autotransplantation: four-year evaluation of eighty patients. Acta Odontol Scand 1999; 57(2):111-5.
8. Clokie CML, Yau DM, Chano L. Autogenous tooth transplantation: an alternative to dental implant placement? J Can Dent Assoc 2001;67:92-96.
9. Tsukiboshi M. Autotransplantation of teeth: requirements for predictable success. Dent Traumatol 2002;18:157-180.
10. Lee SJ, Jung IY, Lee CY, Choi SY, Kum KY. Clinical application of computer-aided rapid prototyping for tooth transplantation. Dent Traumatol 2001;17:114119.
11. Andreasen JO, Paulsen HU, Yu Z, Bayer T, Schwartz O. A long-term study of 370 autotransplanted premolars. Part II. Tooth survival and pulp healing subsequent to transplantation. Eur J Orthod 1990; 12(1):14-24
12. Lundberg T, Isaksson S. A clinical follow-up study of 278 autotransplanted teeth. Br J Oral Maxillofac Surg 1996; 34(2):181-5
13. 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
14. Cameron M.L. Autogenous Tooth Transplantation: An Alternative to Dental Implant Placement. J Can Dent Assoc 2001; 67:92-6