*IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*
*e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 16, Issue 9 Ver. IV (Sep. 2017), PP 19-23*
*www.iosrjournals.org*

# Autotransplantation of Mature Mandibular Third Molar

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***Abstract:*** *Autotransplant can be an alternative restorative option in which the tooth is moved from one location to another in the same patients oral cavity. It is defined as repositioning of an erupted, semierupted or unerupted tooth, in the same individual. The first evidence of this procedure was given by the Swedish dentist Vitman in 1915. It is a biological process in which the transplanted tooth is able to induce bone formation and re-establish normal alveolar process This technique demands careful patient selection and thorough knowledge of the influencing factors and it can prove as an excellent alternative to dental implants. This article highlights autotransplant as an easy, economical and a feasible restorative option.*

***Keywords:*** *Autotransplant, mandibular molar tooth, transplant.*

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Date of Submission: 01 -09-2017 Date of acceptance: 13-09-2017

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## I. Introduction

Tooth transplantation was found by ancient Egyptians. The dental intervention was first documented by Abul Calcassis in 1050. The first recorded evidence of tooth bud transplantation was given in detail by Ambroise Para. Tooth transplantation can be divided into 3 types 1) Autogenous 2) Homogenous 3) Heterogenous. Autogenous tooth transplantation also called as Autotransplantation in which a vital or endodontically treated tooth is transferred from its original location to the other site in the same individual. The main advantage of the procedure is the development of maxillary and mandibular alveolar bone is unaffected. It has a high success rate, economical and feasible but the success depends on the donor tooth and the recipient site. The donor tooth should be positioned in such a way that it can be extracted atraumatically. The tooth with an abnormal root morphology should be avoided. Teeth with an open or closed apex won't affect the transplantation but the development of at least 2/3$^{rd}$ of its total root length should be completed.

## Case:

A 26 year old male patient reported to the department of Oral and Maxillofacial Surgery with the chief complaint of fractured 47. Clinical and radiographic examination revealed vertical fracture and mobility with respect to 47 and a mesioangular impaction with respect to 48. On account of vertical fracture and poor prognosis, 47 was indicated for extraction. The impacted 48 was sound and mature tooth with normal root morphology and hence was ideal for transplantation. The patient was explained the treatment procedure, risks and benefits then an informed consent was taken after recording the medical history. 47 and 48 was extracted atraumatically. Root canal treatment was performed extra-orally within 30 minutes. Care was taken to prevent any damage to the PDL cells of the extracted tooth by immersing the tooth in milk throughout the extra oral procedure. During the Root canal treatment the roots were wrapped with sterile gauze submerged in milk. After obturation the access cavity was restored with composite restoration. This root canal treated tooth was splinted by using 24 gauze stainless steel wire and was further stabilized using the following technique. A proximal box was prepared on the distal aspect of 46 and the mesial aspect of the splinted tooth. A continuous restoration of composite was placed adjoining the distal aspect of 46 and the mesial aspect of the splinted tooth. This technique facilitates the vertical and horizontal stability of the splinted tooth.

Usually splinting by using stainless steel wires does not provide stability in the buccolingual direction. However if we place the composite in accordance of the above mentioned technique, it provides three dimensional stability which means that the tooth movement is not possible along the axis of the tooth as well as the buccolingual direction. Also, as the composite resin binds mechanically to the tooth structure it allows micro-mechanical movements in the tooth. These micro movements can aid in the healing procedure.

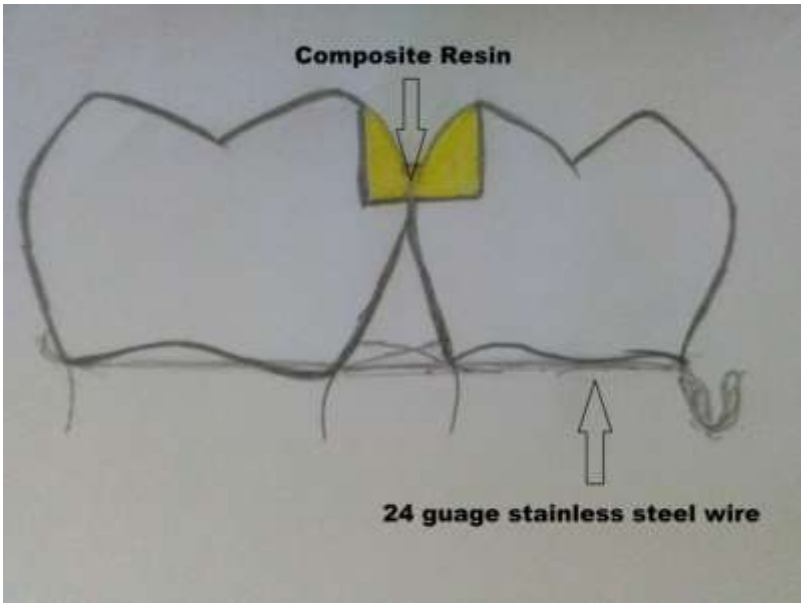


**Fig -1**

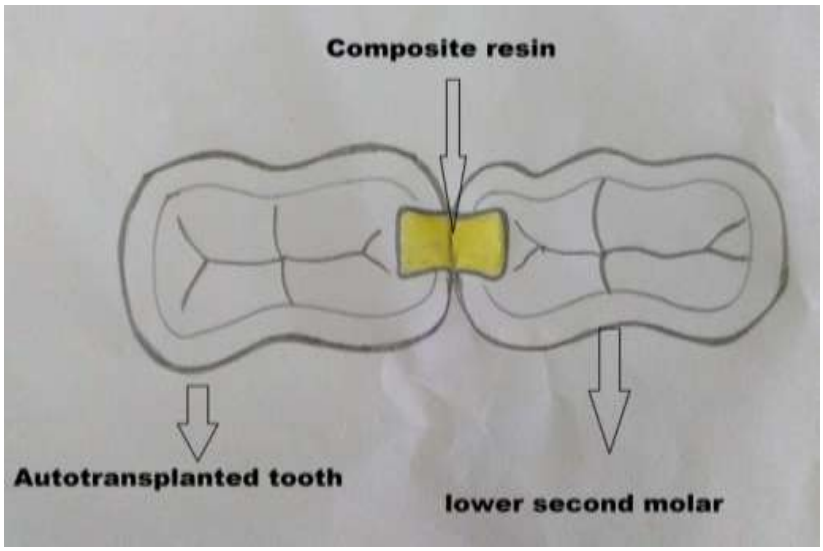


**Fig – 2**

**Fig 3** – Preoperative

Fig 4 - Post op

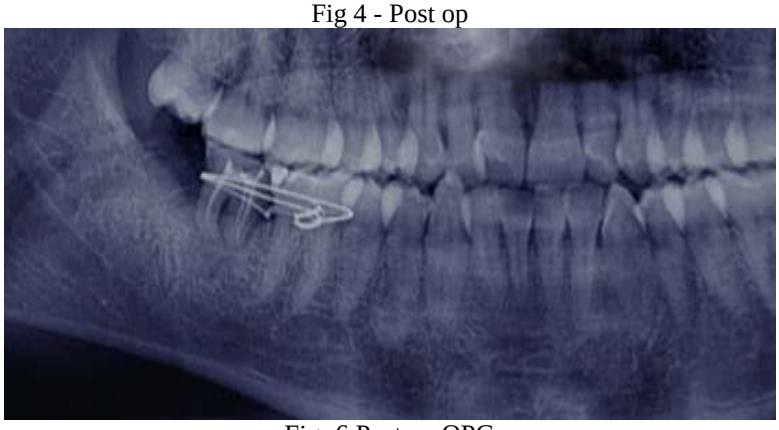

Fig- 6 Post op OPG

## II. Discussion

For successful treatment of autogenous tooth transplantation is the vitality of the periodontal ligament attached to the transplanted tooth and the root morphology of the tooth to be transplanted should not be complex. The recipient site should be non infectious. Extraction should be atraumatic and during the procedure, extra-oral period of tooth should not be long (1, 10, 11). The periodontal ligament is sensitive to pH and osmotic potential, and its viability is reduced if extraoral dry time is increased (13). Previous studies showed that the viability of periodontal ligament exposed to the extraoral environment decreased rapidly after 30 minutes (12, 14). In our case, the teeth to be transplanted were wrapped with gauze wet with milk during preparation of the recipient site. The tooth transplantation was performed within 30 minutes. The pulp of a completely mature tooth cannot regenerate. Therefore, if the tooth to be transplanted is accessible, endodontic treatment should be completed before transplantation. Otherwise, the endodontic treatment should be initiated 1 to 2 weeks after autogenous tooth transplantation. The 1to2 week interval is very important because if endodontic treatment is performed too early after autogenous tooth transplantation, additional injury to the periodontal ligament may occur, whereas after 2 weeks, inflammatory resorbtion may develop from the infected root canal (5). During autogenous tooth transplantation, extraoral endodontic treatment prolongs the extraoral time, and during manipulation of the instruments, Hertwig's epithelial root sheath of the root cemental surface is injured, increasing the possibility of root resorbtion (11). A long time is required to form the bone socket at the recipient site after extracting the tooth to be transplanted by referring to the shape of the extracted tooth. Skilled surgeons could form a recipient site in a short time using techniques similar to implant drilling. However, it may require more than 30 minutes in most cases. When a longer time is required, the period of time that the donor tooth is exposed to the extraoral cavity becomes longer. In addition, while fitting the extracted tooth to the bone socket, the root surface may be injured. The CARP, software is used to produce a shape identical to the real tooth. This was first applied clinically in the 1980s (15). To prepare a model of the donor tooth, three-dimensional data on the tooth to be extracted are obtained and converted into a Digital Imaging and Communications in Medicine format file. Then, a resin or starch model tooth is prepared using computer prototyping (2,16). When the data

are sent to a company specializing in preparing computeraided rapid prototypes, a model can be prepared in 3 or 4 days. If a CARP model identical to the tooth to be transplanted is prepared before surgery, the bone preparation time is shortened, and injury to the root surface is reduced. Fong stated that maxillary transplants should not be done because of the extreme variation in the size and shape of the maxillary third molars and because of the proximity of the maxillary antrum to the molar sockets. (15) The most important factor in bone formation is the cervical approximation of the transplanted tooth and bone in the recipient area. If the cervical approximation is good, because the bone tissue below the cervical portion is a closed wound and there is a lower chance of infection and tendency to heal well without problems (2). When a maxillary tooth is moved to the mandible because the buccolingual width of the maxillary tooth is wider than the recipient area in the mandible in most cases excessive bone must sometimes be removed. In such cases, if the maxillary tooth is rotated before it is placed, it can be positioned in an anatomically appropriate manner without removing excessive alveolar bone (2).

In autogenous tooth transplantation, long-term firm fixation may have negative effects on healing, whereas nonrigid fixation for 7 to 10 days stimulates the activation of alveolar ligament cells and bone healing (8,9). Tsukiboshi et al reported that the tooth should be fixed for between 2 weeks to 2 months depending on whether the mobility is reduced. Tooth transplantation was judged successful if the tooth was fixed in its socket without residual inflammation and satisfactory masticatory function without discomfort. No pathological condition was apparent Radiographically with normal lamina dura. The prognosis of autogenous tooth transplantation depends on the level of root development, the formation of the root apex, the condition of the periodontal ligament of the transplanted tooth, the method of tooth fixation, the match between the transplanted tooth and recipient socket, and the time of endodontic treatment (1,8). Transplanted teeth have a poor outcome because of the failure of periodontal reattachment or the occurrence of root resorbtion in the engrafted cementum-root surface (2,16). The failure of cementum reattachment may be induced by periodontal inflammation, inflammation in the alveolar socket, or in cases with insufficient early fixation after transplantation. Therefore, transplantation is contraindicated in cases with infection in the root apex. During tooth extraction, chronic inflammatory tissues should be removed completely. The cause of the failure in cases may the poor periodontal condition caused by the incomplete removal of chronic inflammatory tissues, early stabilization not successful and splint fixation was required for 3 months, however, the level of tooth mobility did not decrease and it was considered a failure and extracted. Autogenous tooth transplantation is a procedure used in cases when restoration is impossible because of, for example, severe dental caries, root fracture, alveolar problems, or the failure of endodontic treatment. It involves transplanting and fixing another of the patient's teeth. If the cases are selected properly and appropriate surgery and maintenance are performed, the success rate is relatively high, and it contributes greatly to prolonging the function of the natural teeth.

## III. Conclusion

This case of autotransplant demonstrates that autotransplantation of a mature mandibular third molar has potential to replace a molar tooth with bad prognosis molar tooth with a natural tooth instead of a prosthesis or osseointegrated implant.

## References

[1]. Reich PP. Autogenous transplantation of maxillary and mandibular molars. J Oral Maxillofac Surg,;66, 2008, 2314–7.
[2]. Natiella JR, Armitage JE, Greene GW. The replantation and transplantation of teeth. A review. Oral Surg Oral Med Oral Patho,29, 1970, 397–419.
[3]. Tsukiboshi M. Autogenous tooth transplantation: A reevaluation. Int J Periodontics Restorative Dent.,13,1993, 120–49.
[4]. Ustad F, Ali FM, Kota Z, Mustafa A, Khan MI. Autotransplantation of teeth: A review. Am J Med Dent Sci,1, 2013, 25–30.
[5]. Unni KN, Singh VP. Autotransplantation of teeth: An overview. Amrita J Med,8, 2012, 16–22.
[6]. Tsukiboshi M. Autotransplantation of teeth: Requirements for predictable success. Dent Traumatol,18, 2002,157–80.
[7]. Mendes RA, Rocha G. Mandibular third molar autotransplantation - literature review with clinical cases. J Can Dent Assoc., 70, 2004, 761–6.
[8]. Cohen AS, Shen TC, Pogrel MA. Transplanting teeth successfully: Autografts and allografts that work. J Am Dent Assoc, 126,1995, 481–5.
[9]. Ravi Kumar P, Jyothi M, Sirisha K, Racca K, Uma C. Autotransplantation of mandibular third molar: A case report. Case Rep Dent 2012. 2012 62-91.
[10]. Cross D, El-Angbawi A, McLaughlin P, Keightley A, Brocklebank L, Developments in autotransplantation of teeth. Surgeon. 2013, 49–55.
[11]. Lee SJ, Jung IY, Lee CY, Choi SY, Kum KY. Clinical application of computer-aided rapid prototyping for tooth transplantation. Dent Traumatol,17, 2001, 114–9.

[12]. Andreasen JO. Effect of extra-alveolar period and storage media upon periodontal and pulpal healing after replantation of mature permanent incisors in monkeys. Int J Oral Surg,,10, 1981, 43–53.
[13]. Andreasen JO, Skougaard MR. Reversibility of surgically induced dental ankylosis in rats. Int J Oral Surg,1, 1972, 98–102.
[14]. Cvek M, Lindvall AM. External root resorption following bleaching of pulpless teeth with oxygen peroxide,1, 1985, 56–60.
[15]. Andreasen JO. Review of root resorption systems and models. Etiology of root resorption and the homeostatic mechanisms of the periodontal ligament. In: Davidovitch Z, editor. The Biological Mechanisms of Tooth Eruption and Root Resorption. Birmingham, Alabama: EBSCO Media; 1988, 9–21.
[16]. Thomas S, Turner SR, Sandy JR. Autotransplantation of teeth: Is there a role? Br J Orthod. 25 , 1998, 275–82.

*Dr. Tushar Manohar Rothe. "Autotransplantation of Mature Mandibular Third Molar." IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) 16.9 (2017): 19-23