

Autotransplantation of 3rd Molar with Open Apex: A Case Report

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ABSTRACT

Introduction: Autotransplantation is a fast, feasible and economic option for replacement of teeth that are indicated for extraction.

Case Report: This paper presents successful autotransplantation of a immature mandibular right 3rd molar (48) to replace mandibular left 1st molar. The mandibular 1st molar was non restorable due to extensive caries and root resorption. After extraction of mandibular left 1st molar and right 3rd molar, the recipient site is prepared and the donor tooth was reimplanted into the extracted socket of 1st molar site. After one year, clinical and radiographic examination revealed satisfactory outcome with no signs or symptoms suggestive of pathology.

Conclusion: Autotransplantation of 3rd molar with open apex can be effectively used to replace missing molars.

Keywords: Autotransplantation, Open Apex, Platelet rich plasma

INTRODUCTION

The goal of dentistry is to replace missing teeth to restore masticatory function and aesthetics. Treatment of such situation is either removable partial prostheses or a fixed bridge framework, which not only cause discomfort to the patient but also involves the preparation of one or more healthy teeth.¹

In autotransplantation, there is a transfer of the tooth from one portion of the alveolar arch to the another site in the same individual. The recipient site is formed as a result of an extraction procedure or a freshly prepared surgical site.² A tooth bud with early formation of Hertwig's epithelial root sheath (HERS) can be transplanted with a good prognosis if it is well encased in bony socket that is wrapped with soft tissues.³

A successfully transplanted tooth should provide improved esthetics, speech and arch integrity. It should promote dento-facial development and masticatory function. It also aids in maintaining natural space with little or no evidence of resorption of roots.⁴

The successful autotransplantation of third molars was initially reported by Fong in 1953.⁵ However at present, due to innovation in osseointegrated implant placements, autologous transplantation of tooth or autotransplantation is rarely indicated. However, osseointegrated implants placement is contraindicated in patients in which growth is still anticipated, thus making this procedure a possible alternative for young patients.²

The success of transplantation of tooth depends on careful selection of case and an understanding of the biological principles, which gives a clear suggestive criteria for autotransplantation of teeth such as: premature loss of tooth, impacted or ectopically erupted teeth, traumatic tooth loss, tumor, congenitally missing tooth in one arch with crowding of teeth in

the opposing arch, replacement of congenitally absent teeth.⁶

CASE REPORT

A 17 year old boy came to the Department of Pedodontics, Subharti Dental College, Meerut with a complain of pain in lower left back tooth region. He also complained of multiple carious teeth. Oral pantomograph (OPG) was taken which revealed that the 36 was grossly decayed with an evidence of external root resorption. It was decided to extract the 1st molar followed by transplantation of 3rd molar of fourth quadrant. An impression was taken with alginate and was poured with type III dental stone, through which acrylic splint was fabricated.

The procedure was performed in one stage. The 36 was extracted and the recipient site was prepared with #4 surgical carbide round bur in a low-speed handpiece under irrigation with sterile physiologic saline solution. The impacted 3rd molar of 4th quadrant was then extracted which was then placed in saline under sterile conditions. Platelet rich plasma (PRF) was placed into socket, which was obtained from the patients own blood. The donor tooth was then treated with acidulated phosphor fluoride (APF) gel and then placed into the recipient socket and its fitting was evaluated. Stabilization of transplanted tooth was achieved using a 0.8 mm stainless steel wire with acrylic splint. Splint was removed after 2 week and healing appeared satisfactory. The patient was recalled and reviewed after 3, 6 and 12 months.

DISCUSSION

Dental rehabilitation can be achieved after the loss of one or more teeth with several techniques, including removable partial dentures, fixed prosthetic framework, osseointegrated implant placement or autotransplantation. The first studies reporting on successful transplantation of autologous teeth were published in the 1950s.⁵

Autotransplantation involves placement of teeth from one site to another site in the same individual either into extracted spaces or surgically prepared sites.⁷

It is essential to establish a criteria for assessing the success or failure of autotransplantation. A key factor for successful outcome is to maintain the viability of periodontal ligament cells of the tooth to be transplanted as these cells are very

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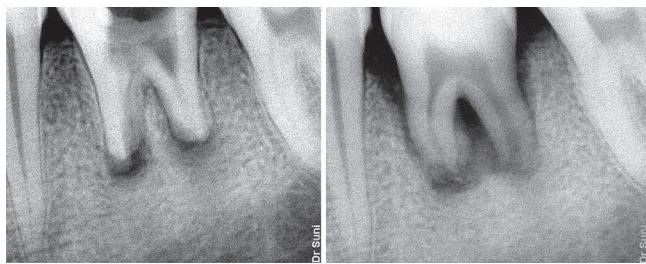


Figure-1: Pre operative radiograph of 36; **Figure-2:** Post operative - 3 month follow up

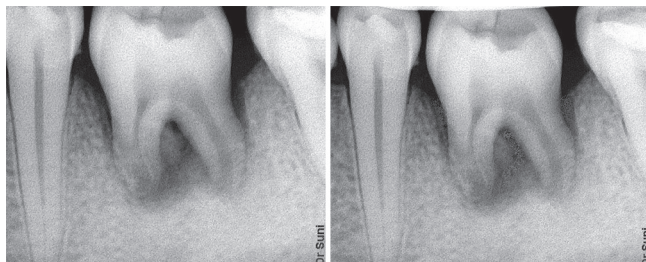


Figure-3: Post operative - 6 months follow up; **Figure-4:** Post operative – 1 year follow up

sensitive to osmotic changes. Hence, if extraoral dry time is prolonged their viability may be reduced.⁸

The earliest success rate of autogenous tooth transplantation was approximately 50% because of the difficulty in predicting development of the root after transplantation and increased rate of dental root resorption.⁹ The incidence of dental root resorption after transplantation has declined over time and the success rate has increased rapidly, drawing a rise in clinical interest towards this procedure.¹⁰ Tsukiboshi reported a 90% survival rate and an 82% success rate in 250 cases observed for 6 years.¹⁰

In the present case platelet rich plasma (PRP) is used due to its procoagulant effect, as it contains growth factors that are involved in initiation and sustainment of wound healing by accelerating bone repair, promoting fibroblastic proliferation and promoting vascularity of tissues.¹¹ Periodontal healing initiates with the restoration of the gingival attachment, which is usually completed within few weeks. The periodontal ligament fibers are re-formed after 2 to 4 weeks. Avoidance of any kind of trauma is also important for the success of the transplant. Else, trauma may become an extra cause of impaired healing.¹⁰

For better prognosis, splinting for a greater period of time or rigid splinting of the transplanted tooth is avoided as it will adversely affect its healing outcome. Most reports advise semi splinting for 7 to 10 days,⁹ as it permits some functional movement of the transplanted tooth there by stimulates periodontal ligament cellular activity and bone repair.

CONCLUSION

In growing patients, bridgework and implants are not practically feasible because they may restrict the normal growth of facial bones, particularly alveolar process and are therefore contraindicated in such cases.⁶ Therefore when space closure following extraction of tooth seems to be an undesirable option, the transplantation of a tooth with incomplete root formation may serve as an alternative option because in such

case both alveolar growth and root development will be unhindered.⁶ Although age of the patient is not only the perfect criteria for its successful outcome, but still studies indicates that better results can be achieved when it is performed at an early age.¹⁰

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