

## A PROSPECTIVE STUDY CARRIED OUT ON REPLANTATION AND TRANSPLANTATION OF TEETH AT AFID, RAWALPINDI

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### ABSTRACT

*A prospective study was carried out at Armed Forces Institute of Dentistry, Rawalpindi on replantation and transplantation of teeth from 1987 to 1991. 200 cases were studied in different age groups. Results revealed that the prognosis was directly proportional to the age of the patient, i.e., younger the patient better was the prognosis. Again vitality rate was 24.6% in cases with open apices and zero % in cases with closed apices. Similarly the prognosis was better in the anterior teeth (80.8%) than in the posterior teeth (75%).*

### INTRODUCTION

Despite the recent advances in preventive dentistry millions of teeth are lost annually. Replacement of these teeth is necessary because of their functional and aesthetic requirements. The two conventional methods of replacement are removable and fixed prosthesis. The third alternative and the only biological solution to this problem is the transplantation and replantation of teeth.<sup>1,2</sup> Replantation is returning of a tooth to its own socket, after traumatic avulsion, accidental extraction or extraction on therapeutic grounds. Whereas transplantation is transferring of a tooth from one socket to another. It may be taken from the same mouth (auto transplantation) or from the mouth of another individual (homotransplantation) or even from the mouth of some other species (heterotransplantation).<sup>3,4</sup> It is not an elective procedure and is only indicated when conventional orthodontic therapy fails to bring the impacted malposed tooth to normal occlusion.<sup>5,6</sup> The procedure of tooth transplantation has the advantages of maintaining or restoring alveolar bone volume and gives the opportunity to replace a missing tooth with involvement of neighboring teeth as prosthetic abutment.<sup>7</sup> The causes

of failure of tooth transplantation are inflammatory root resorption and ankylosis.<sup>8</sup> Ankylosis and root resorption can be prevented if teeth are extracted with minimal trauma to the cementum and periodontal ligaments.<sup>9,10,11</sup> Success rate of autotransplantation has been raised from 60% to 95%.<sup>3</sup> This is all because of detailed preoperative clinical and radiological assessment of transplants regarding their location, morphodifferentiation, histodifferentiation, advancement in operative skill, and mesiodistal width in relation to the available space in arch.<sup>12</sup>

The aim of this article is to emphasize and consider all the impacted/malposed teeth first for replantation and transplantation rather than surgical removal.

### HISTORY

Replantation and transplantation of teeth is one of the most ancient methods of treatment in dentistry. It is as old as dental medicine itself and has been found in old literature of even 2000 BC.

Avecinna (1050) an Arab surgeon reported a case of replantation of a tooth that was accidentally

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extracted. Amboise Para (1594) reported a case of homotransplantation where a healthy tooth was purchased and transplanted in the mouth of a princess to restore her smile. Pierre Fauchard (1728) a famous French dentist reported a case of homotransplantation with success for a period of six years. Here an accidentally lost tooth of an army officer was replaced with a tooth from a soldier's mouth. Proper documentation of successful biological implants goes back to early 1950.

Apfel (1950), Andeeasen (1966), Natiella (1970) Castelli and Najeleti (1980) & F. Khoury (1986) have worked a lot on tooth replacement with natural implants.

## MATERIALS AND METHODS

A study was conducted on replantation and transplantation of teeth at Armed Forces Institute of Dentistry, Rawalpindi from 1987 to 1991. 200 cases were selected and divided into two groups, anterior and posterior. In the first group there were 150 cases, mostly impacted canines and avulsed central incisors. In the second group there were 50 cases, mostly impacted 3rd molars. (Fig 1) Again in the first group, 100 patients were females and 50 were males (Fig 2) likewise in the 2nd group 30 patients were females and 20 were males. (Fig 3) All these patients were divided into three age groups. In the first age group of anterior teeth total cases were 20, (13 females & 7 males). In the second age group of anterior teeth total cases were 100, (70 females & 30 males) while in the 3rd age group total number of cases were 30 (17 females & 13 males) (Fig 2). Likewise the cases of second group, i.e., posterior teeth were divided into three age groups of 10 to 15 years, 15 to 20 years and 20-30 years. (Fig 3)

After thorough investigation, clinical and radiological examination, evaluation of periodontal integrity, general morphology of donor teeth and supporting structures, study models were prepared and occlusal splints were fabricated in centric occlusion. All the patients were instructed regarding the operative procedures, pre & postoperative complications and prognosis. They were placed on preoperative antibiotic cover for 24 hours.

All the transplants were carried-out under local anaesthesia and aseptic conditions. The patients were

given printed instructions regarding postoperative care, diet, oral hygiene measures and follow-up schedule. They were placed on postoperative antibiotic cover for 07 days. Stitches were removed on 7th postoperative day. The splints were removed in 6th postoperative week. Follow-up examination was done after 01 week, 6 weeks, 01 month, 03 months, 06 months and then annually.

## OPERATIVE PROCEDURES

Two types of surgical procedures were carried out;

- One stage procedure for anterior teeth
- Two stage procedure for posterior teeth

## RESULTS

In case of anterior teeth, in the first age group, 19 survived and 01 failed, thus securing 95% success. In the second age group, 81 survived and 19 failed, thus securing 81% success result. Similarly in the third age group, success was in 17 cases and 13 were failures thus securing success of 56.6%. (Fig 4).

In case of posterior teeth, in the first age group, total cases were zero. In second age group, success was in 27 cases and failure was in 3 cases, thus securing 90% success. In third age group, 12 cases were successful with 8 failures, thus securing success rate of 60%. (Fig 5) Again the total number of cases with open apices were 126. Out of these 31 cases responded to electric pulp tester, thus securing 24% vitality rate. Whereas the total number of cases with closed apices were 43 and none of them reacted to electric pulp tester, securing zero percent vitality rate. (Fig 6)

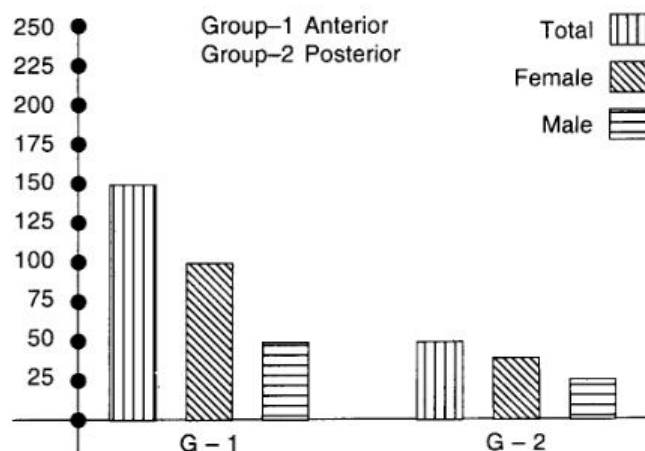


Fig 1. Graphic Presentation of Cases

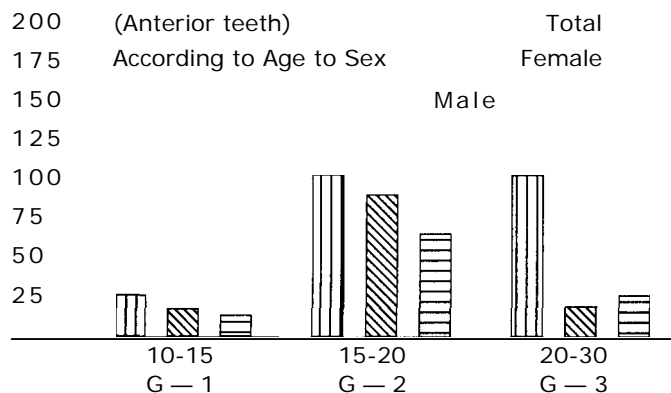


Fig 2. Graphic Presentation of Cases



Fig 3. Graphic Presentation of Cases

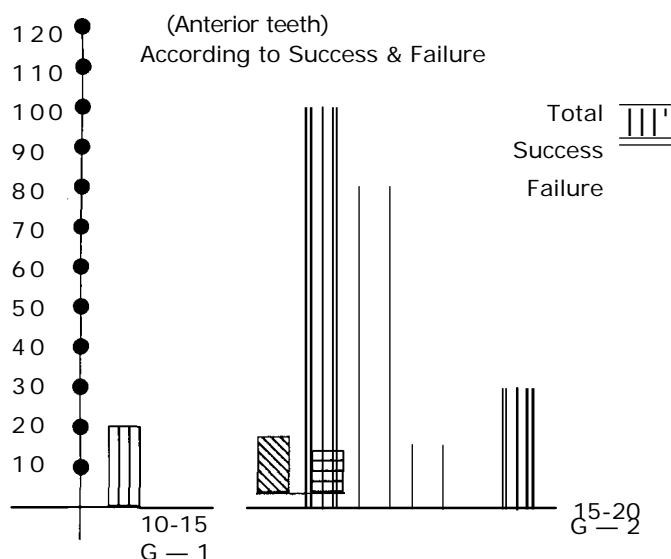


Fig 4. Graphic

Presentation of Cases

## DISCUSSION

Replantation is not an elective procedure of treatment. It is generally accepted that if tooth is returned to its socket within 30 min shows 100% success. However, we replanted teeth after 06 hours with preoperative root canal treatment with good progno-

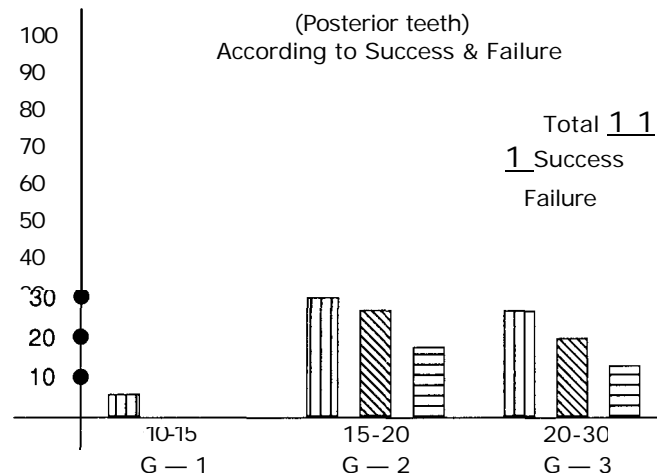
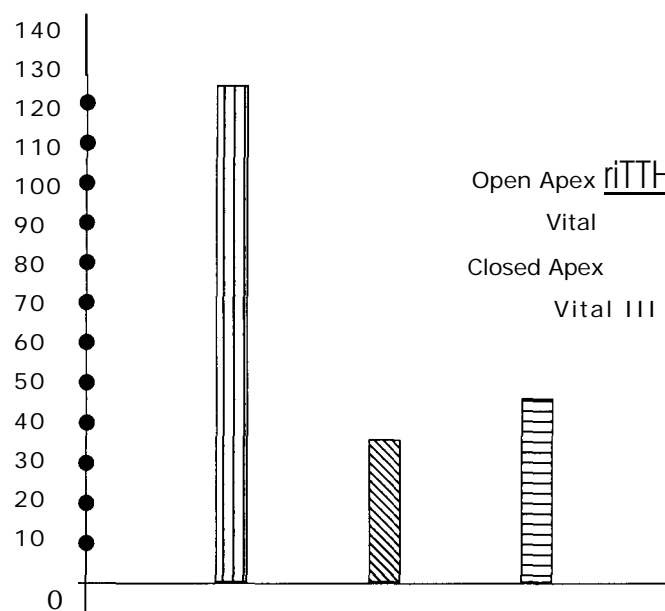


Fig 5. Graphic Presentation of Cases



Fig

6. Graphic Presentation of vitality of teeth with open closed Apices

sis. Three types of resorption take place after the replantation and transposition of teeth; surface resorption, deep resorption and inflammatory resorption. The last one is considered to be the main cause of failure. Wherever there is any significant inflammation after transplantation, root canal treatment should be carried out immediately. Transplantation is not an alternate to conventional orthodontic treatment. It is only indicated where conventional orthodontic treatment fails to bring the tooth/teeth to the normal occlusion. Successful transplantation demands absolute motivation of the patient, a traumatic extraction of the donor tooth, sufficient width of the recipient socket, good oral hygiene and experience of the opera-

tor. Pre& postoperative antibiotic cover, splinting of the transplant and periodic check-ups are also mandatory.

## CONCLUSION

Tooth transplantation is an established treatment method in dentistry, which has been modified from time to time with advancement of knowledge and modification of surgical techniques. Successful prognosis of this treatment modality demands good motivation of the patient, proper examination, proper case selection, correct surgical technique, experience of the operator and regular postoperative check-up.

Constant fluctuation in success rate invites the research workers to unveil the hidden mysteries influencing the prognosis of this kind of treatment.

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