

Utilization of nature tooth in temporary removable denture

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In primary or mixed dentition stage, a patient could loss primary or permanent incisor by accident. The dentist may apply appropriate method to reserve the tooth. Here, we present a method to utilize the avulsed nature tooth as artificial tooth to make a temporary removable denture. The advantage of this method is to provide the denture tooth in well shape, sized and color. In restorative dentistry of pediatrics, this temporary removable denture keeps the child's esthetic, function and speech.

Key words: nature tooth, temporary removable denture.

Introduction

The teeth most frequently involved in a traumatic episode causing avulsion or fracture are the maxillary central incisors (1). If the tooth avulsed, depending on the length of time after avulsion, the dentist could consider to replant it or not (2). If the tooth fractured, the dentist could do endodontic treatment, or other operative dentistry treatment (3). If these treatments failed, the tooth will be premature lost.

The other reason could cause the premature lost teeth is malpositioned teeth

which are most frequently due to malformative roots. If it could not be able to correct by the orthodontic treatment, extraction might be the only choice of treatment. Consequently, the patients' esthetics, function and speech will be affected. In adolescent, the earlier would the tooth be lost, the worse could the tooth alignment result.

In the past, for the premature loss of anterior tooth in children, several methods were mentioned to fabricate the temporary space maintainer. One is to use an acrylic prosthetic tooth as a pontic. The pontic is retained onto the two adjacent acid-etched teeth by being inserted

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with two flexible braided rectangular spiral wire and cemented with composite resin (4). However, this technique is rather time consuming and expensive. George suggested that we could use a nature extracted or avulsed tooth, instead a acrylic tooth, as a pontic (5). It is retained directed by using the spiral wire. In his article, he did not mention the application for primary teeth, neither the using of removable denture. Thus the purpose of this article is to introduce a method that can be immediately used in a temporary denture after the primary or permanent teeth that have been extracted or lost. We use the part of crown as a denture tooth for the temporary restoration which maintains esthetics, function and space.

MATERIAL AND TECHNIQUE

The steps of using nature tooth to make an immediately removable denture are as follow:

- A. Prepare the nature tooth for denture tooth (Figure 1.)
 1. Remove the root from the cemento-enamel junction leaving the complete crown.
 2. Clean the pulp chamber tissue from the lingual surface.
 3. Thin the lingual surface, and make a crossing groove for retention.
 4. Adjust the tooth size, including mesial, distal and cervicle edge.
 5. Shaping the tooth to the final form to match the remaining teeth.
- B. Molde preparation (Figure 2.)
 1. Decide the retainer tooth.
 2. Block out the undercut area.
 3. To bend the retention clasps with 0.028 inch stainless steel wire.

4. Fabricate the denture base with heat cure resin or self cure resin.

5. Readjustment and polishing.

C. Try in (Figure 3.)

1. Relieve the occlusal interference.
2. Adjust the clasps to obtain the appropriate retention.

CASE PRESENTATION

Case 1. Loss of primary incisor due to traumatic injury (Figure 4.)

A boy, aged 4 years 2 months, fell from the stairwell and avulsed the maxillary left central incisor. For consultation, his parents came to the pedodontic department of Chung Shang Medical and Dental College Hospital. After oral examination, besides the avulsion of left central incisor his lower incisor also bites deeply on maxilla. Upper lip had mild laceration. The boy was brought to our hospital about 40 minutes after the tooth was avulsed. We immediately decided to perform tooth replantation and stabilized it with an acid etch composite resin splint.

After one week, on routine examination, the splinted tooth appeared firm and mild tender to palpation. After this appointment, We followed up every 3 weeks. Not until the 18th weeks, the tooth condition was well, the splint was then moved.

Accidentally, the patient was sent to our department again 7 months after his prior injury. Coincidentally, he hit on the chair with the same tooth-maxillary left central incisor. It avulsed again. The tooth was out of socket over 90 minutes after injury. So we did not try to replant it. Because it was still 2 to 3 years be-

fore the permanent incisor eruption (6), for the point of esthetics, speech, function and space maintaining, we decided to make an immediate removable denture. We chose the canine and primary second molar as the retainer teeth and used C clasp on second molar bilaterally.

After finished, the parents were satisfied with that denture. Since the denture tooth was made from the patient's nature tooth, the boy liked it a lot.

Case. 2 Maldeveloped root tooth. (Figure 5.)

A boy, aged 10 years, came to pedodontic department for the uneruption on right maxillary central incisor. The result of oral examination showed that left central incisor erupted. Bilateral lateral incisor also erupted, but both of them were peg laterals. We take the periapical film on maxillary anterior teeth area. The right central incisor was impacted. The root apex of left central and right lateral incisor were not developed completely. To confirm the finding we changed the cone angulation and took another x ray film. We found that the right central incisor had no root and only the crown formation. It was a rootless tooth.

We extracted the intact tooth by the periodontal flap surgery, and measured the tooth: the mesiodistal width was 8.8mm, the incisal edge to cemento-enamel was 12.2mm, the total length was 14.7mm, and buccolingual was 6.6mm. The length of the abnormal tooth was a little smaller than that of his normal counterpart.

After extraction, it looked very unesthetically. Space might also be lost for mesial tipping of both lateral incisor and left central incisor. We decided to make

one removable denture for patient. Because we keep the extracted crown perfectly, it could be used as a denture tooth. The remaining space was 7.6mm, the extracted tooth size was 8.8mm. We must to shape the tooth size and form. Same as the case 1. We made C clasp on the primary canine, and Adam's clasps on the first permanent molar.

After finished, Both the patient and his parents were satisfied with that denture. We also suggested the patient come back for routine follow up till other teeth erupted.

DISCUSSION

The usage of the patient's own tooth instead of the artificial tooth can make the denture perfectly in most cases. And from the patients' point of view, it is much easier to be accepted esthetically and functionally (7). In the present articles, using the nature tooth as pontic has been presented. The similar approach was used as a fixed type in the past. IN our department, we used it on the removable denture for temporary restoration instead.

Usually, most of dentists replace the avulsed primary tooth with a maxillary acrylic denture at primary teeth stage (8). Use of a porcelain fused to gold anterior bridge in replacing a missing primary incisor is also reported (9). These two methods can take good care of children. But on the other hand, usually the general practitioner treatment did not treat the child who suffered from the lost of primary anterior teeth. They think the permanent teeth will erupt in the future. But we think it is really not good for child's psychology. Owing to loss tooth,

the child might feel embarrassing and dare not to laugh anymore.

Bayardo noted that whether the space should be maintained or regained on the lost of anterior primary teeth was still controversial and should be evaluated from child to child (10). He thought that space should be kept (11). But Thruo thought that was not necessary (12). IN our clinical observation, we believe it is good to keep the space when primary anterior teeth was lost immaturely in child. We suggest to make one appliance to have eathetics, function and maintain the space.

In the mixed dentition, when early lost of permanent anterior teeth happens, according to Finn's suggestion, a temporary appliance was constructed and should be worn until all permanent anterior teeth erupted. It can help to prevent the alveolar bone lost, and the pulp chambers receded. It is important to allow preparation for fixed replacement in the future (13). Thus, if there is no way to do replantation or to correct position of maldeveloped tooth, the permanent tooth must be lost or extracted early in mixed dentition. The patient-own-toothed-temporary denture is indicated.

Utilization of nature tooth as a pontic has many advantage but there are still some disadvantage. In clinic treatment, our experience tells us that the direct bonding requires the clinician's complete knowledge of enamel conditions and characteristics, concentration of the etching solution, length of etching peeriod, isolation techniques and proper use of the different composites. It is easily fail, if one is not familiar with the bonding method, especially in primary tooth. In child, if prepa-

ration takes a longer period, the patient's cooperation will decrease. In the daily life, the child pays little attention on bonded tooth. All these factors will cause the bonded method to fail. Under the circumstances, we may use removable appliance method to improve the rate of success.

The advantages of utilizing nature teeth as denture teeth are as follows: 1. It is easy to operate and to save the chair time. We only need to take the impression from patient's mouth, recon-tour tooth, bend clasp. adding base resin to make a temporary denture appliance. 2. If patient has poor oral hygiene it is easier to keep clean. 3. If it is necessary, we can add some adjunctive appliance on this removable appliance to gain the minor alignment of tooth. 4. Both the primary or mixed dentition is suitable for this method.

But there are some disadvantages of removable appliance: 1. At the beginning, when the first time patient wears it, speech disturbance happens. One should encourage the patient to adjust it. 2. Sometimes the steel clasp may be shown when patient opens his mouth. 3. Some patients are allergy to resin, who are not indicated to use this type of restoration. 4. Children might feel that the appliance is too big for them. 5. It needs to come back for checking up for a period of time. After all, when this method is indicated, it depends on patient's condition to make up mind whether to use fixed or removable type.

In conclusion, whenever the primary or permanent anterior teeth immature lost, we should let the patient to have a healthy oral condition. We may consider

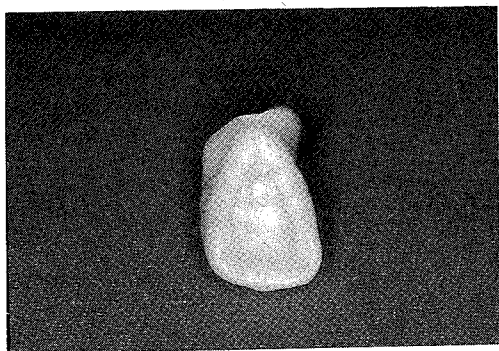


Figure 1. In tooth preparation, we recontour size and form of tooth, make undercut groove for retention.

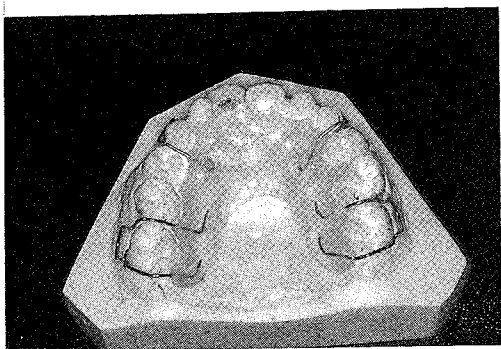
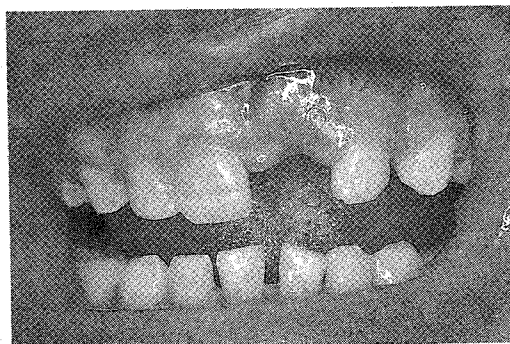


Figure 2. In model preparation, we choose the retentive teeth, bend the retentive clasp, align the denture tooth.

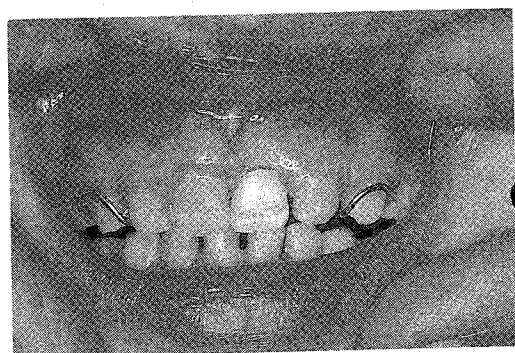


Figure 4. The apparent of teeth; A). Before wearing denture. B). After wearing denture.

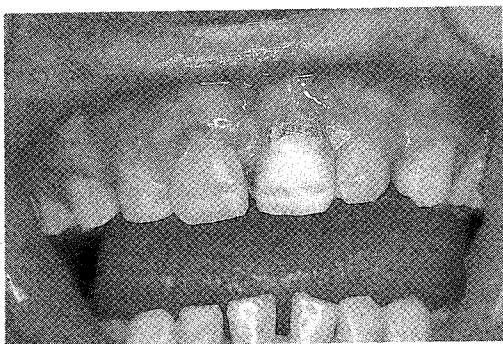


Figure 3. After made up, trying and adjusting the denture.

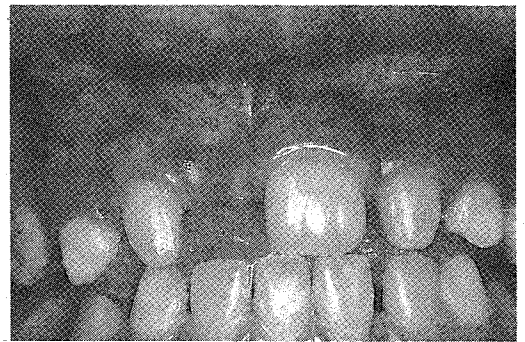
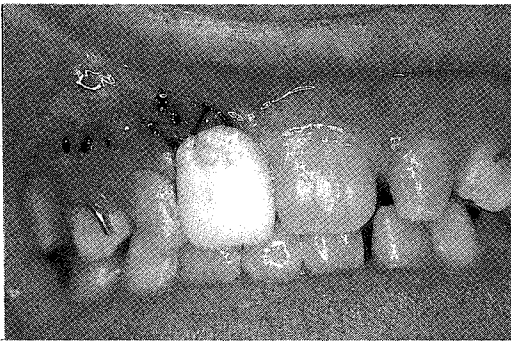


Figure 5. The appearance of teeth: A). Before wearing denture. B). After wearing denture.

the way of utilizing nature tooth to make a temporary appliance. Of course, appropriating patient selection is an important factor. But our main purpose is to preserve patient's esthetics and function of teeth.

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使用自然牙齒做爲暫時活動假牙的義齒

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臨床上，在乳牙或是恆牙混和齒列時期，當乳牙或恆牙門牙在意外傷害中掉落。我們可以利用這掉落的門牙當假牙，作出一個暫時性的活動假牙。使用這種義齒的優點為提供良好的牙齒外形、大小和顏色，對於兒童的口腔修復方面，它可以提供維持美觀、功能和發音的效果。

關鍵字：自然牙、暫時活動義齒、混合齒列時期。

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