Esthetic Restoration of Multiple Congenitally Missing Anterior Teeth with Oral Implants: A Clinical Case Report

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Having multiple congenitally missing anterior teeth heavily influences the patient's countenance and pronunciation. There are few reports on the esthetic restoration of such situations with oral implants. This clinical case history report presents a multidisciplinary approach to treat a young woman with multiple congenitally missing anterior teeth using implant-supported prostheses. The treatment steps and clinical implications are discussed. *Int J Prosthodont 2016;29:614–617. doi: 10.11607/ijp.4901*

Having congenitally missing anterior teeth heavily influences the patient's countenance and pronunciation. In particular, the prevalence of dental agenesis in women is 1.37 times higher than that in men. Patients with congenitally missing anterior teeth usually suffer from deviated upper and lower midlines, abnormal overlap and overbite, retention of deciduous teeth, reduction of lower facial height, reduced chewing ability, and other functional problems.[1]

Orthodontic treatment such as mesially moving posterior teeth to close the space may be used for patients with few missing anterior teeth. However, the indication is limited.[2] On the other hand, prosthodontic treatment alone does not guarantee sufficient esthetic results either. Esthetic restoration of anterior hypodontia should take a multidisciplinary approach, which combines the benefits of orthodontic, periodontic, and prosthodontic treatments.[2,3]

In recent years, successful implant restoration of patients with individual congenitally missing anterior tooth has been reported. However, there are few reports on implant restorations for multiple missing anterior teeth, which have more challenging and less predictable esthetic and functional outcomes.

Case History Report

A 21-year-old woman was referred to the department with the chief complaint of congenitally missing teeth. Intraoral examination revealed an Angle class I malocclusion, many missing teeth and sporadic diastemas, normal overbite and overjet, and acceptable periodontal condition. The clinical crown lengths of the maxillary central incisors were short, and there were no signs or symptoms of temporomandibular joint dysfunction (Figs 1a to 1c).

Orthodontic treatment was planned as the first step to close the sporadic diastemas and create adequate restoration space. After 2 years (Figs 1d to 1f), the patient was given different treatment options. She selected implant-supported dentures to rehabilitate the missing teeth and accepted a crown-lengthening surgery to acquire esthetic width-to-length ratio of the maxillary anterior teeth. The result of cone beam computed tomography revealed that the alveolar buccolingual widths were 4 mm in the maxillary right canine and 3 mm in the maxillary left canine and mandibular lateral incisors. All implant placement sites had adequate vertical bone mass (Figs 1g to 1j).

During the initial surgical phase, the maxillary deciduous canines were extracted and the crown lengths of the maxillary central incisors were extended to ideal size through removal of part of the mucoperiosteum and alveolar bone. The alveolar ridge at maxillary right canine and left lateral incisor and canine was trimmed into a natural scalloped edge. Implants (TS 3.5 × 10 mm, Osstem) were immediately placed at the maxillary canines, and a labial guided bone regeneration procedure was performed (Figs 2a to 2d).

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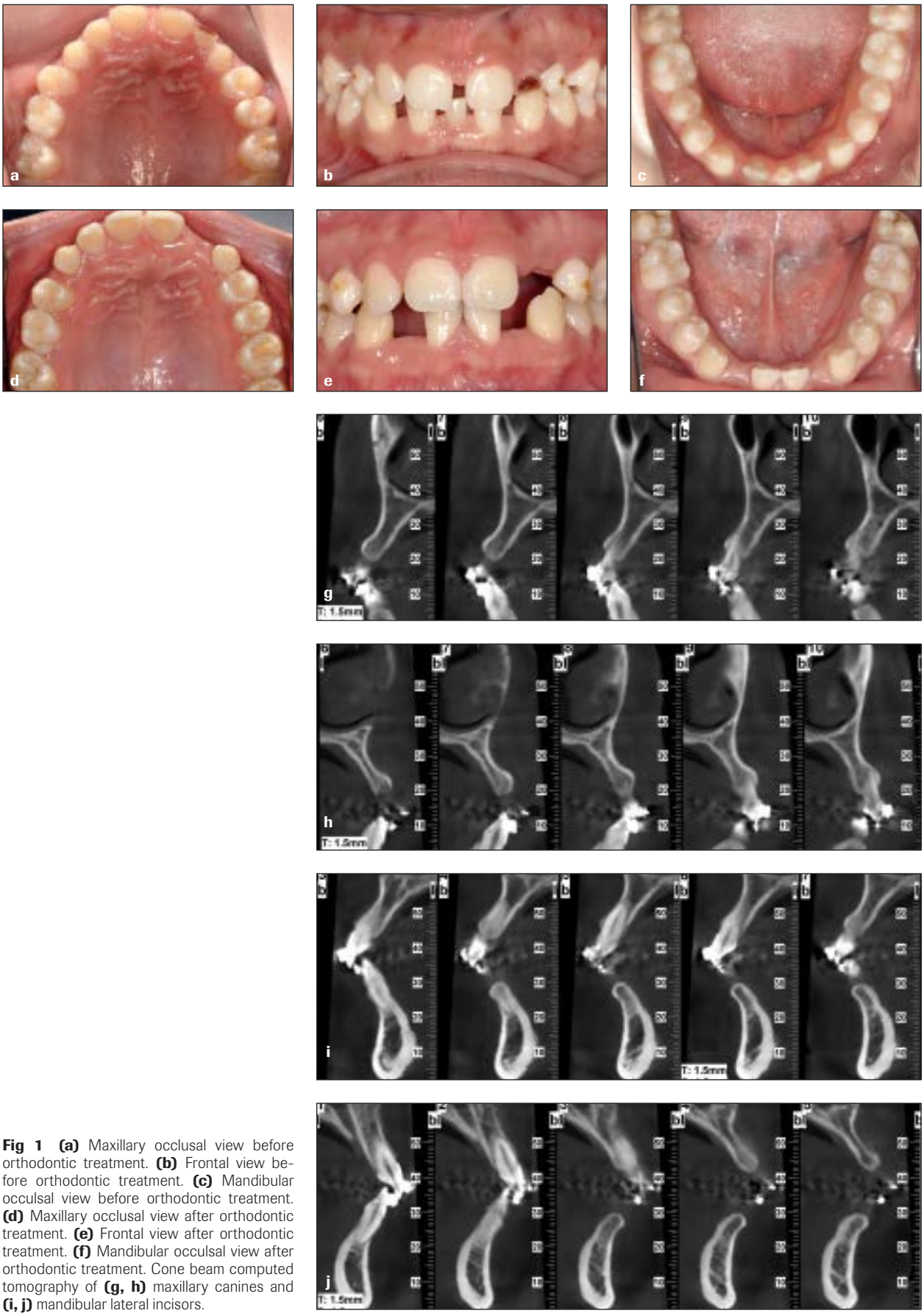

Fig 1 **(a)** Maxillary occlusal view before orthodontic treatment. **(b)** Frontal view before orthodontic treatment. **(c)** Mandibular occulsal view before orthodontic treatment. **(d)** Maxillary occlusal view after orthodontic treatment. **(e)** Frontal view after orthodontic treatment. **(f)** Mandibular occulsal view after orthodontic treatment. Cone beam computed tomography of **(g, h)** maxillary canines and **(i, j)** mandibular lateral incisors.

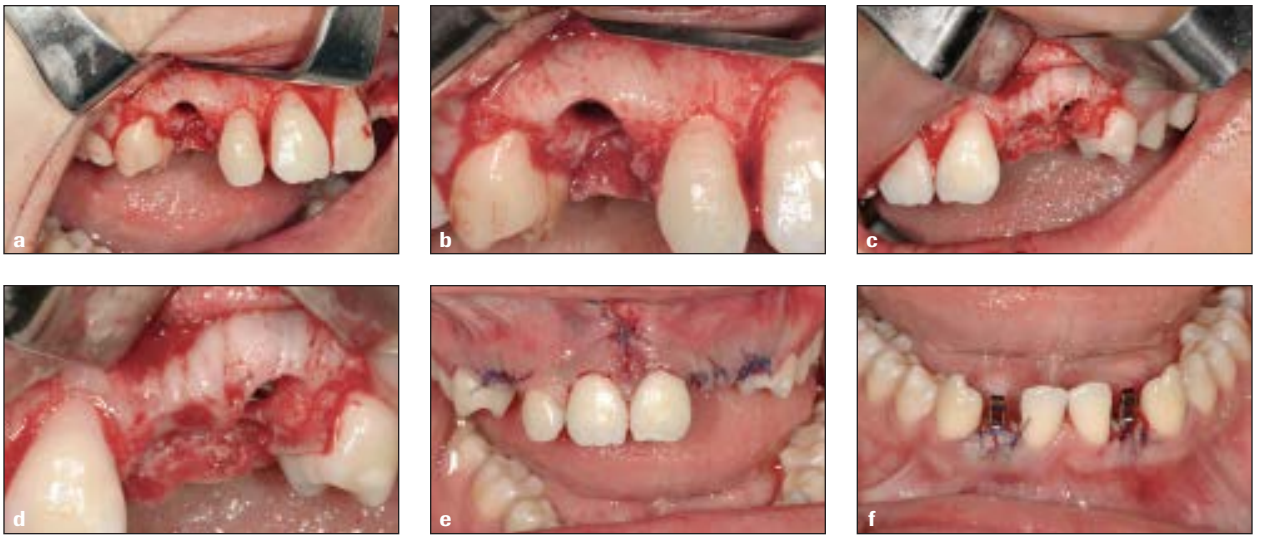

Fig 2 Implant placement. **(a, b)** The crowns of the maxillary central incisors were lengthened and an implant was immediately placed in the maxillary right canine site. **(c, d)** The same operation was performed in the left maxilla and the wound was carefully sutured. **(e)** Postoperative view of the maxilla. **(f)** Postoperative view of the mandible.

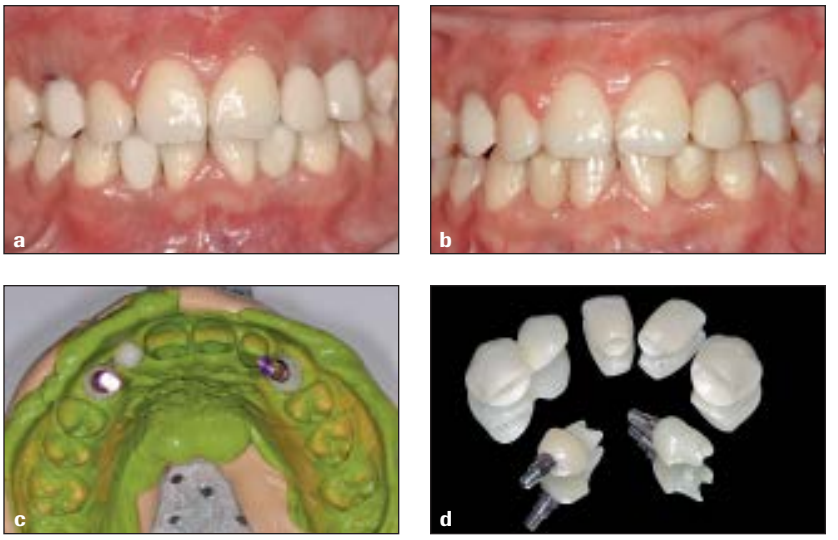

Fig 3 **(a)** Provisional teeth were fixed 1 month after the surgery. **(b)** Satisfactory gingival papillae height and fullness were obtained after 5 months. **(c)** The impression was taken using provisional teeth as the impression post. **(d)** The zirconia abutments, crowns, and cantilever bridge.

Two small-diameter implants (MS 2.5 × 10 mm, Osstem) were placed in the mandibular lateral incisors. The wound was carefully stitched and the suture was removed after 2 weeks (Figs 2e and 2f).

Provisional teeth were fixed after 1 month for gingivoplasty. The gingival papillae at the maxillary lateral incisors and canines had achieved sufficient height and fullness after 5 months (Figs 3a and 3b). The final impressions were taken using provisional teeth as the impression post to record the gingival profile (Fig 3c). Zirconia abutments, crowns, and cantilever bridge were prepared (Fig 3d). A satisfactory esthetic result was achieved (Figs 4a to 4f). The postoperative panoramic radiograph showed good osseointegration with no obvious bone resorption around the implants (Fig 4g). The patient was followed up for 18 months without any abnormal soft tissue reaction.

Discussion

Similar to most tooth extraction patients, anterior hypodontia patients have a deficient osseous ridge in the labial aspect of the edentulous area and excessive bone in the vertical direction. Consequently, in this case the alveolar crest was trimmed into a scalloped edge according to the location and contour of the alveolar ridge of adjacent teeth.[4] In addition, due to the lack of stimulation from the tooth root and the

Fig 4 **(a)** Intraoral right lateral view after treatment. **(b)** Intraoral frontal view after treatment. **(c)** Intraoral left lateral view after treatment. **(d, e, f)** Confident smile and esthetic appearance. **(g)** Panoramic radiograph after prostheses placement.

retention of deciduous teeth, the restoration space after orthodontic movement is generally inadequate. Therefore, small-diameter implants were proposed.[5] Finally, because of incomplete tooth eruption or orthodontic intrusion seen in anterior hypodontia patients, the gingival curve of natural teeth needed to be adjusted to obtain an ideal width-to-length ratio. However, the esthetic outcome at the site of consecutively missing anterior teeth was still compromised. Potential mechanical risks of the single implant-supported cantilever denture should be followed up.

Conclusions

A young woman with multiple congenitally missing anterior teeth was restored with implant-supported zirconia crowns and a cantilevered bridge leading to satisfactory esthetics and function. However, long-term follow-up evaluation is needed and more case histories should be observed to evaluate the treatment option.

Acknowledgments

This study was financially supported by the National Natural Science Foundation of China (81570956) and the Bureau of Science and Technology of Wuhan (2015060101010051, [2014]160). The authors reported no conflicts of interest related to this study.

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