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Rehabilitation of occlusion on a severe atrophic mandible by four implants-supported fixed conometric denture after bilateral inferior alveolar nerve repositioning

KEYWORDS
Conometric retention;
Atrophic mandible;
Nerve repositioning;
Implant supported fixed denture

Restoring a full edentulous maxilla or mandible with only 4 dental implants can be a reliable treatment.[1] The denture can be fixed or removable and the retention can come from attachments, bars, screws or cement.[1—3] Nowadays, conometric retention is considered as a good alternative option in advance.[4,5] Despite the improvement of retention, in severe atrophic mandible, the chewing function was still restricted by anatomic limitation: the presence of inferior alveolar nerve and mental foramen.

Here, we presented a female patient who suffered from severe resorption of mandibular alveolar ridge and floating of her lower partial denture (Fig. 1A and B). Keeping her residual mandibular teeth and implantation at teeth 32 and 34 (above mental foramen) for a new implant-supported removable denture was suggested first. However, she refused any removable solution and demanded a fixed-molar-occlusion denture. After treatment plan discussion and risks explanation for many times, the treatment plan was confirmed as follows: bilateral maxillary sinus lifting, bilateral inferior alveolar nerve repositioning, extraction of all the mandibular teeth, alveoloplasty, 4 Ankylos® implants, and placement of 3 temporary mini-implants under general anesthesia at one time. Maxillary first molars were planned to restore with an implant after 9 months of sinus augmentation procedures. Bilateral inferior alveolar nerves repositioning procedures were done smoothly with piezosurgery®, and hollowing of the mandible was noted through the bone windows (Fig. 1C). Because of the hollowing, the implants could not be inserted parallelly (Fig. 1D). Due to insufficient primary stability and guided bone regeneration procedures, 4 Ankylos® implants were in submerge manner. She stood the operations well and had her new temporary implant-supported lower denture 3 days after the surgery. Six months later, under stage II surgery, good implant stability and new bone formation were confirmed. Healing abutments were connected for soft tissue healing. Three weeks later, she was sent for the prosthetic procedures: paralleling the 4 conometric abutments to each other, tightening them by manual suggestion, impression with open tray technique, and framework try-in (welding with conometric coping). After the accuracy between the conometric coping and abutment was confirmed, the denture could be fabricated as usual way (Fig. 1E, F, and G). The patient was satisfied with her final denture after occlusal adjustment. She also enabled to do the cleaning easily with interdental brush. After one-year follow-up, her lower lip numbness recovered to a satisfied level (self-score: 9). No loose or detachment of the denture was noted. There was also no sign of peri-implant mucositis or peri-implantitis. No breakage or mechanical complication was noted (Fig. 1I). She was totally satisfied with the esthetic result as well as chewing and speech function of this conometric fixed denture.

Comparing to other fixed or removable implant-supported denture solution, conometric retention denture is more simplified in its structure and needs less maintenance

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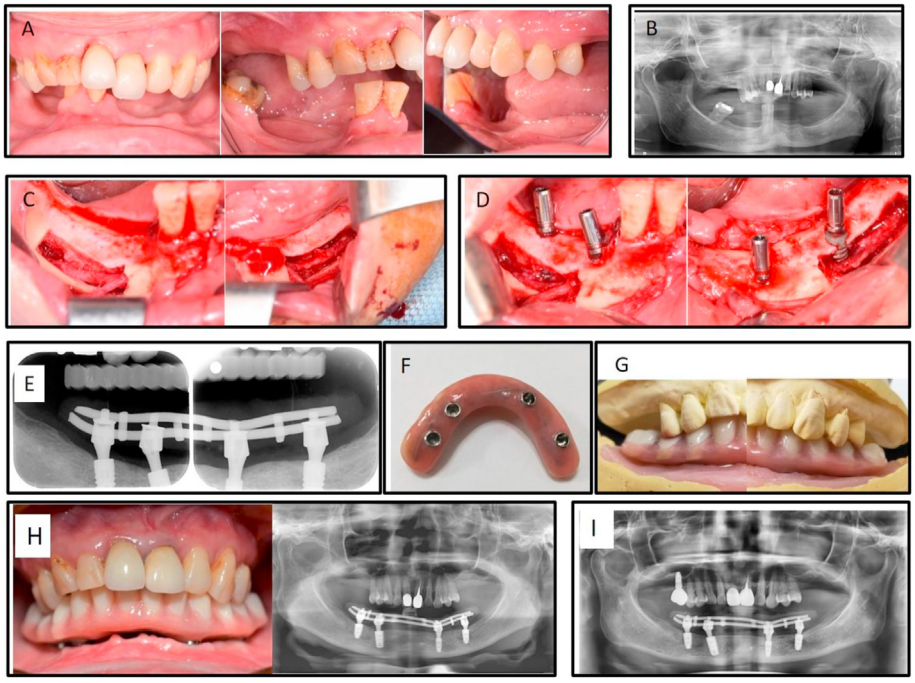

Fig. 1 Clinical and radiographic photographs of our patient. (A) Pre-operation intraoral condition. Ridge was resorbed equal or below the floor of mouth. (B) Pre-operation panoramic radiograph showing that mental foramens were located at the first premolar areas. (C) Inferior alveolar nerve repositioning and hollowing of the mandible. (D) Poor paralleling of implants. Tooth 36 implant body exposure was also noted. (E) Conometric coping was precisely fitted to conometric abutment. (F) Tissue surface of the denture. (G) Conometric denture: the first molar occlusion was prefabricated. (H) Intraoral condition and panoramic radiograph after fixed conometric denture delivery. (I) One-year follow-up. No periodontal defect was noted around the implants.

procedures. In this case, even the opposite occlusion was the nature dentition, the denture stood well so far. In summary, the advantages of fixed conometric denture are: reliable retention, screw and cement-free, and no need of consumables, like retention cap for locator.[3,5]

Declaration of competing interest

The authors have no conflicts of interest relevant to this article.

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