The Use Of 6mm Long Implants In Cases With Limited Bone Height: A Preliminary 6-Month Clinical Study

Fig. 12  Case 3 - Panoramic x-ray after insertion.

Fig. 13  Case 3 - The implant in position 3.3 was lost because of residual infection and replaced by a 3mm l 13mm UNO implant after 2 months. During this period the other implants received a resin provisional restoration. 2X 4, 2mm L6.

Fig. 14  Case 3

Fig. 15 Case 3

Fig. 16  Case 3 - Intraoral x-ray at 6 months after bridge fixation. See the direction of the mandibular nerve.
Clinical case presentation: Case 1

1. Preoperative panoramic radiograph showing the extraction site.
2. Immediate implant placement after removal of the vestibular flap.
3. Healing abutment with definitive provisional restoration.
4. Final restoration in place.
5. Peri-implant soft tissue probing depth measurement.
6. Postoperative panoramic radiograph.
7. Panoramic radiograph showing the dental arch.
8. Clinical case presentation: Case 2

1. Preoperative panoramic radiograph showing the extraction site.
2. Immediate implant placement after removal of the vestibular flap.
3. Healing abutment with definitive provisional restoration.
4. Final restoration in place.
5. Peri-implant soft tissue probing depth measurement.
6. Postoperative panoramic radiograph.

Materials and Methods
Study was approved by IRB (Helsinki).

Background
Limited bone height restricts the use of standard length implants. Short implants may be used in these cases as an alternative to standard implants. Short implants may be used in reduced bone conditions.

Clinical case presentation: Case 2

1. Preoperative panoramic radiograph showing the extraction site.
2. Immediate implant placement after removal of the vestibular flap.
3. Healing abutment with definitive provisional restoration.
4. Final restoration in place.
5. Peri-implant soft tissue probing depth measurement.
6. Postoperative panoramic radiograph.

Materials and Methods
Study was approved by IRB (Helsinki).

Background
Limited bone height restricts the use of standard length implants. Short implants may be used in these cases as an alternative to standard implants.

Conclusion
Within the limitations of the present study, it can be concluded that short implants are a viable treatment option when splinted, especially in the rear mandible areas, when supplementary implants in free end situations, at least for 6 months after loading. Short implants are a viable solution for the use of implants in reduced bone conditions. Nevertheless, further investigations are recommended in order to determine their role in the future.

References
3. 3. Short Dental Implants: A Literature Review and Rationale

Discussion
There are several studies which suggest that short implants can support prosthetic restorations quite adequately, but still clinical experience with short implants indicates that short implants may support prosthodontic restorations with satisfactory but still clinical documentation is sparse. The purpose of this study was to evaluate the clinical performance of short implants in reduced bone conditions.

Materials and Methods
Study was approved by IRB (Helsinki).

Background
Limited bone height restricts the use of standard length implants. Short implants may be used in these cases as an alternative to standard implants.

Clinical case presentation: Case 3

1. Preoperative panoramic radiograph showing the extraction site.
2. Immediate implant placement after removal of the vestibular flap.
3. Healing abutment with definitive provisional restoration.
4. Final restoration in place.
5. Peri-implant soft tissue probing depth measurement.
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Materials and Methods
Study was approved by IRB (Helsinki).

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Within the limitations of the present study, it can be concluded that short implants are a viable treatment option when splinted, especially in the rear mandible areas, when supplementary implants in free end situations, at least for 6 months after loading. Short implants are a viable solution for the use of implants in reduced bone conditions. Nevertheless, further investigations are recommended in order to determine their role in the future.

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Background
Limited bone height restricts the use of standard length implants. Short implants may be used in these cases as an alternative to standard implants.
Clinical case presentation: 

**Case 1**

- **Fig. 1**: Preoperative x-ray. Note the reduced bone height above the implant site.
- **Fig. 2**: Final restoration in position.

**Background**

Limited bone height limits the use of standard length implants. Short implants have been proposed as an alternative for length and a more predictable outcome. The aim of this study was to evaluate the effectiveness of short implants in reduced bone conditions.

**MATERIALS AND METHOD**

Study was approved by the IRB (Helsinki). Twenty-three 6 mm implants (Seven, MIS Implants, Bar-Lev, Israel) were inserted using the pilot drill provided with the implant. Final drilling diameter and depth were achieved with the drill provided with each implant. Implants were covered with flaps and healing screws were placed. At the time of uncovering, the implant to bone contact was measured. Twenty-two implants (16 mm, MIS Implants) were inserted with the same protocol but with a 2 mm shorter implant. Implants were loaded with fixed partial dentures. All 6 mm implants required bone augmentation.

**Surgical procedure**

The implants were inserted using the pilot drill provided with the implant. Final drilling diameter and depth were achieved with the drill provided with each implant. Implants were covered with flaps and healing screws were placed. At the time of uncovering, the implant to bone contact was measured. Twenty-two implants (16 mm, MIS Implants) were inserted with the same protocol but with a 2 mm shorter implant. Implants were loaded with fixed partial dentures. All 6 mm implants required bone augmentation.

**Results**

All implants showed good primary stability at placement. Fixtures were lost during the healing period. Prior to loading, all splinted fixtures were examined with cone beam tomography and bone density was measured. In addition, bone loss was measured preoperatively, at 3 months, and at 6 months of loading. None of the implants lost bone contact to osseous tissue.

**Conclusion**

Within the limitations of this preliminary study, it can be concluded that short implants are a viable solution for the use in conjunction with standard implants especially in the rear mandible areas, where the bone height is often found in the maxilla. Bone remodeling is often found in the mandible, especially when used in type III or IV bone that may be used in combination with longer implants, it is recommended that short implants are used in combination with longer implants where available.

**References**

The Use Of 6mm Long Implants In Cases With Limited Bone Height: A Preliminary 6-Month Clinical Study

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Background
Limited bone height restricts the use of standard length implants. Short implants have been used as an alternative for lengthy and expensive augmentation procedures. Recent clinical studies indicate that short implants may support prosthetic procedures. However, evidence is sparse. The purpose of this study was to evaluate the clinical behavior of short implants in limited bone conditions.

Materials And Method
Study was approved by the Ethics Committee. Twenty three implants were placed in 17 patients. All patients were healthy with good oral hygiene, but smoking was not an exclusion criterion. Twelve mm long implants (Osstem, Seoul, Korea) were used in maxilla, and higher surface contact between implant and cortical bone. The purpose of this study was to evaluate the clinical behavior of short implants in reduced bone conditions.

MATERIALS AND METHODS
Study was approved by the Ethics Committee. Twenty-three implants were placed in 17 patients. All patients were healthy with good oral hygiene, but smoking was not an exclusion criterion. Twelve-mm long implants (Osstem, Seoul, Korea) were used in maxilla, and higher surface contact between implant and cortical bone.

Results
All implants showed good primary stability at placement. Six implants were lost during the healing period. Prior to loading, all implanted implants were checked for periimplant radiolucencies. None of the implants were lost during the loading period in either the maxilla or mandible. Implant survival rates at 6 months were 90% in the maxilla and 95% in the mandible. No periimplant radiolucencies were observed around any of the implants.

Conclusions
Within the limitations of this preliminary study, it can be concluded that short implants are a viable solution for the use of short implants in limited bone conditions. The hypothesis was: “Short implants in limited bone height restrict the use of standard implants or to each other. None of the implants were immediately loaded. All implants showed good primary stability and probing depths were no more than 4 mm. None of the implants were immediately loaded. All implants showed good primary stability and probing depths were no more than 4 mm.

References
4. Clinical case presentation: 3
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Fig. 1. Case 3 - Panoramic x-ray after insertion.

Fig. 2. Case 3 - The implant in position 3.3 was lost because of residual infection and replaced by a 3mm l 13mm UNO implant after 2 months. During this period the other implants received a resin provisional restoration. 2X 4,2mm L6.

Fig. 3. Case 3 - Intraoral x-ray at 6 months after bridge fixation. See the direction of the mandibular nerve.

Fig. 4. Case 3 - The implant in position 3.3 was lost because of residual infection and replaced by a 3mm l 13mm UNO implant after 2 months. During this period the other implants received a resin provisional restoration. 2X 4,2mm L6.

Fig. 5. Case 3 - Panoramic x-ray after insertion. See the direction of the mandibular nerve.
Case 3 - The implant in position 3.3 was lost because of residual infection and replaced by a 3mm l 13mm UNO implant after 2 months. During this period the other implants received a resin provisional restoration. 2X 4, 2mm L6.

Case 3 - Intraoral x-ray at 6 months after bridge fixation. See the direction of the mandibular nerve.