

Flat vs. sloped implant shoulder configuration for immediate implant placement and provisionalization: 12-year results of a prospective study

- The **architecture of extraction sockets** often presents with **different vertical bone heights**
- To **improve support and long-term preservation** of the varying bone levels an implant system with a **sloped shoulder (OsseoSpeed Profile** (Astra Tech AB, Mölndal, Sweden)) was developed in addition to the traditionally **flat shoulder** implant (**OsseoSpeed**)
- This **prospective study compares the clinical performance** of OsseoSpeed and OsseoSpeed Profile implants in a **one-stage procedure with immediate insertion and immediate provisionalization** in the esthetic zone within a **follow-up period of 10 to 15 years**



Method

- **37 OsseoSpeed** implants (Fig. 1a) in 20 patients
- **21 OsseoSpeed Profile** implants (Fig. 1b) in 16 patients
- placed **immediately into extraction sockets**
- **in the esthetic zone** of the maxilla between 15 and 25
- **flapless reconstruction** of facial bony deficiencies with **autogenous bone chips**
- **immediate provisional restorations**



Fig. 1a



Fig. 1b

Primary outcomes: implant survival and success | marginal bone levels (MBL)

Secondary outcomes: peri-implant probing depths (PPD) | Pink Esthetic Score (PES)

Results

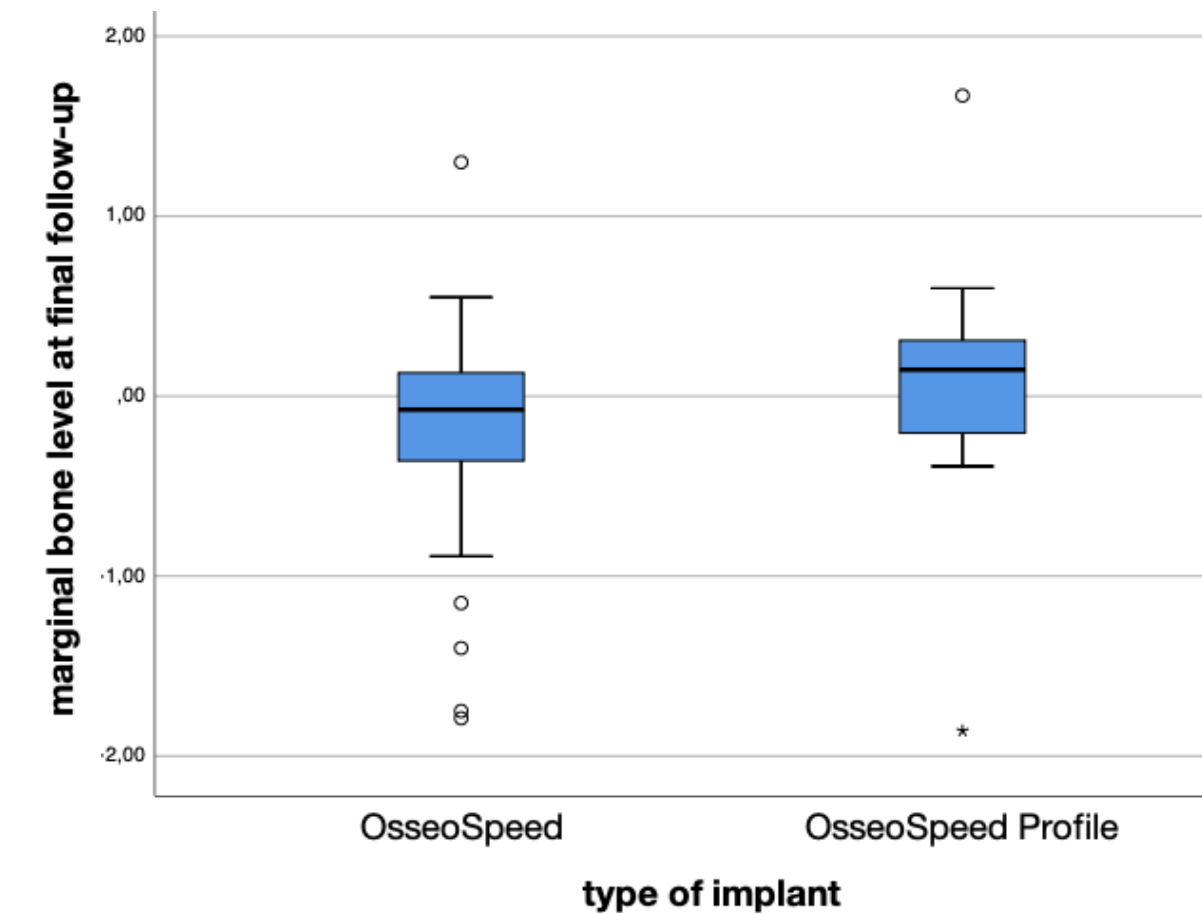


Fig. 2: Marginal bone level in relation to implant shoulder at final follow-up (in mm, mean value mesial/distal) ($p = 0.74$).

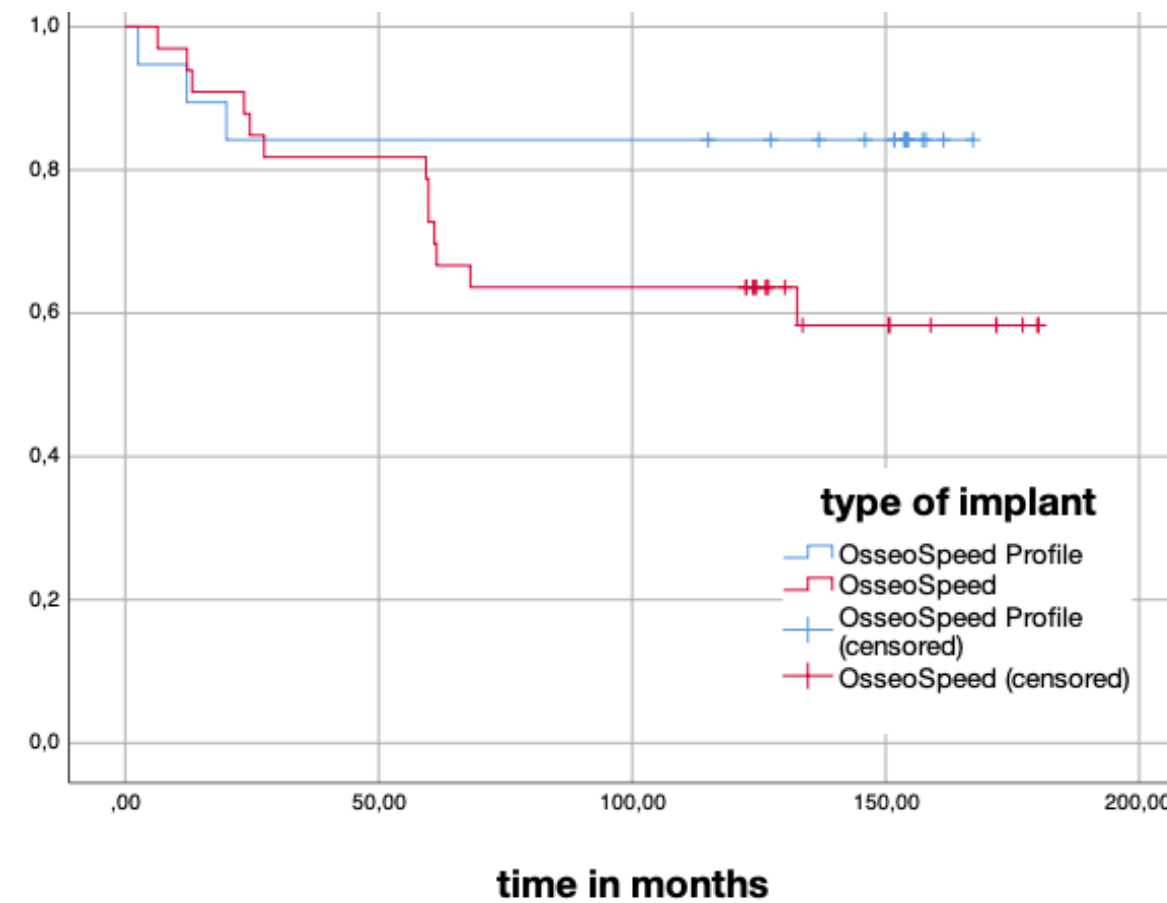


Fig. 3: Success rate according to criteria less than 1 mm bone loss, implant failure and ≤ 5 mm probing depths ($p = 0.107$).

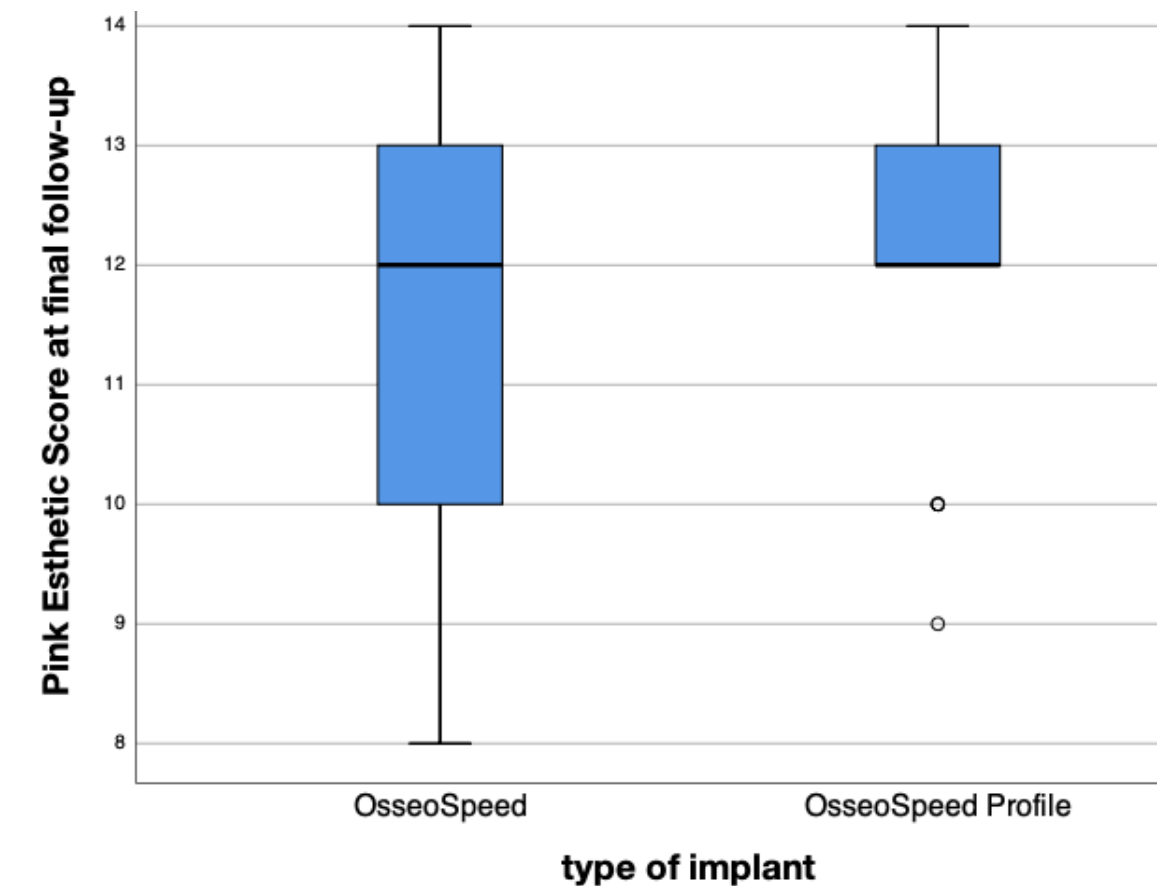


Fig. 4: Pink Esthetic Score at final follow-up around OsseoSpeed and OsseoSpeed Profile implants ($p = 0.355$).

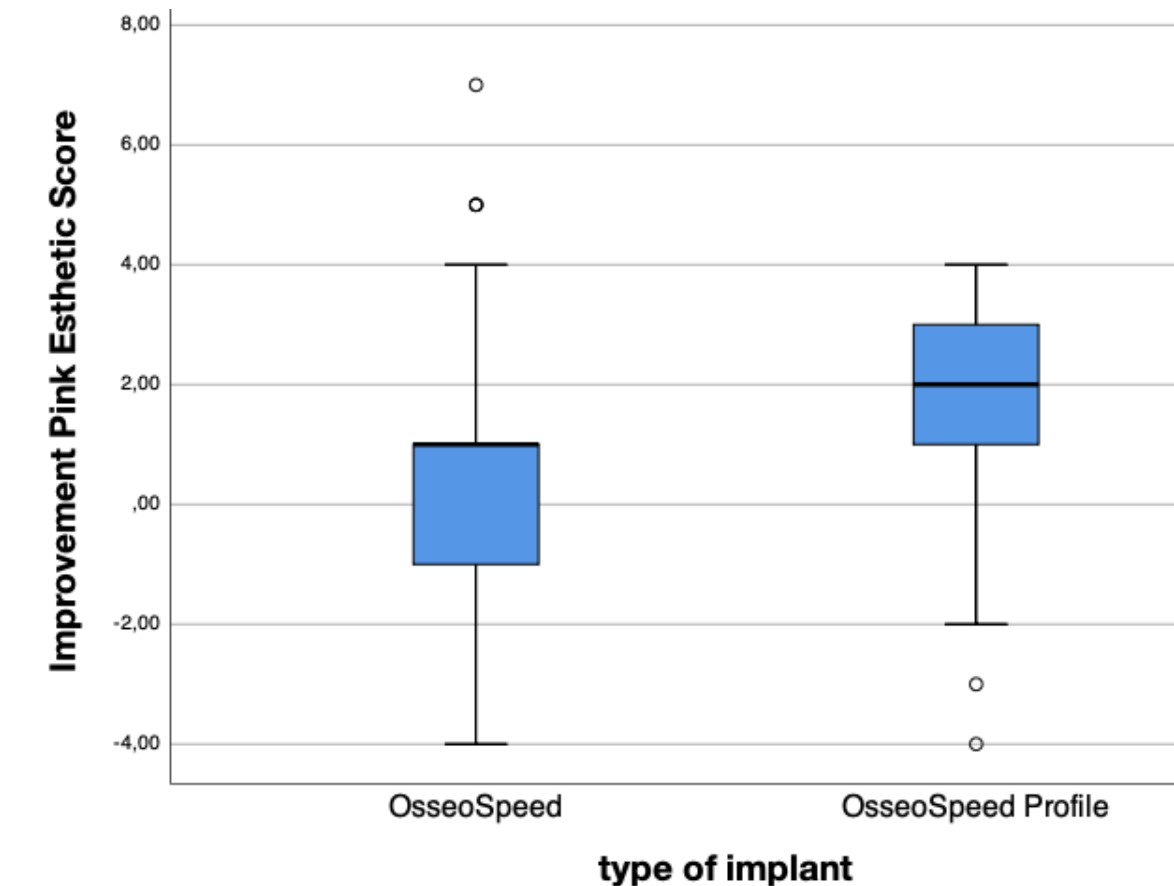


Fig. 5: Improvement of the Pink Esthetic Score from pre-operative to final follow-up ($p = 0.189$).

- Mean **follow-up period 12.5 years (range 10 to 15 years)**
- 4 drop-outs in the OsseoSpeed, 2 in the OsseoSpeed Profile group
- 1 Profile implant was lost early, 2.5 months after placement
- **Cumulative survival rate was 98.1%;**
100% for OsseoSpeed, and 95% for OsseoSpeed Profile
- **Marginal bone levels close to the level of the implant shoulder** (-0.11 ± 0.66 , range -1.86 to 1.67 mm)
- **At OsseoSpeed Profile implants, marginal bone at a more coronal level (OsseoSpeed -0.21 mm, OsseoSpeed Profile 0.07 mm) (Fig. 2)**

- **Implant success**, defined as implant survival, marginal bone loss ≤ 1 mm and PPD ≤ 5 mm was **60.6% (OsseoSpeed group)** and **84.2% (OsseoSpeed Profile group)** (Fig. 3)
- The **PES improved from 10.6 to 11.5 at final follow-up (OsseoSpeed 10.6, OsseoSpeed Profile 11.9)** (Fig. 4)
- **PES improvement was higher in the Profile group, however not reaching the level of statistical significance (OsseoSpeed 0.67, OsseoSpeed Profile 1.28)** (Fig. 5)

OsseoSpeed



Fig. 6a: Initial situation with vestibular fistula due to perforation of root canal post. **Fig. 6b:** Extraction socket after atraumatic tooth extraction. **Fig. 6c:** Immediate provisionalization after immediate implant placement. **Fig. 6d and Fig. 6e:** Preoperative radiograph and CB-CT reveal a hopeless tooth. **Fig. 6f:** 1-year result with stable tissue and improved peri-implant esthetics. **Fig. 6g and Fig. 6h:** Long-term stable and highly esthetic result after follow-up period of 12 years. **Fig. 6i and 6j:** Stable per-implant bone conditions after 12 years.

OsseoSpeed
Profile



Fig. 7a & b: Initial clinical situation showing a slight recession and buccal fistula followed by a crown and root fracture. **Fig. 7c:** Immediate implant insertion and immediate provisionalization. **Fig. 7d-e:** Preoperative CB-CT showing a chronic interradicular lesion and total loss of the buccal bone wall. **Fig. 7f:** Result after 1-year with healthy peri-implant soft tissues. **Fig. 7g-h:** Reduced recession 12 years after IIP and buccal defect grafting with autogenous bone chips. A slight resorption of the buccal alveolar contour was visible. **Fig. 7i-j:** 12y-follow-up shows a complete reconstruction of the buccal bone wall to the level coronal to the implant shoulder.

Conclusion



The results from this study:

- mean follow-up period of 12.5 years
- favorable survival rates
- stable marginal bone levels
- a long-term improvement of the periimplant esthetics for OsseoSpeed and OsseoSpeed Profile implants

References

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