

Tips for success

Use of osmed Tissue Expanders Cylinder Dental and Cupola Dental prior to augmentation of resorbed edentulous ridges

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| Background

Primary wound closure is essential for successful regeneration of bone. Soft tissue dehiscence and subsequent exposure of bone grafts to the oral cavity are complications of ridge augmentation and are a main cause for insufficient outcomes of reconstructive surgery. Main reason for graft exposure are poor quality and quantity of soft tissue and difficulties in achieving primary closure of the flap.

Tissue expansion improves tissue quality and quantity of soft tissue and facilitates primary wound closure. Closure of the flap is more easily achieved in bone graft surgery. Tissue expansion reduces the incidence of wound dehiscence and exposure of bone grafts.

| Indications

Tissue expansion prior to extensive bone augmentation surgery, e.g.

- ⤿ Onlay grafting with bone block grafts
- ⤿ Other bone regeneration procedures

| Contraindications

Contraindications normally associated with elective oral surgery should be observed.

General contraindications:

- ⤿ Systemic disorders such as uncontrolled Diabetes mellitus
- ⤿ Intravenous medication of bisphosphonates
- ⤿ Heavy smoking

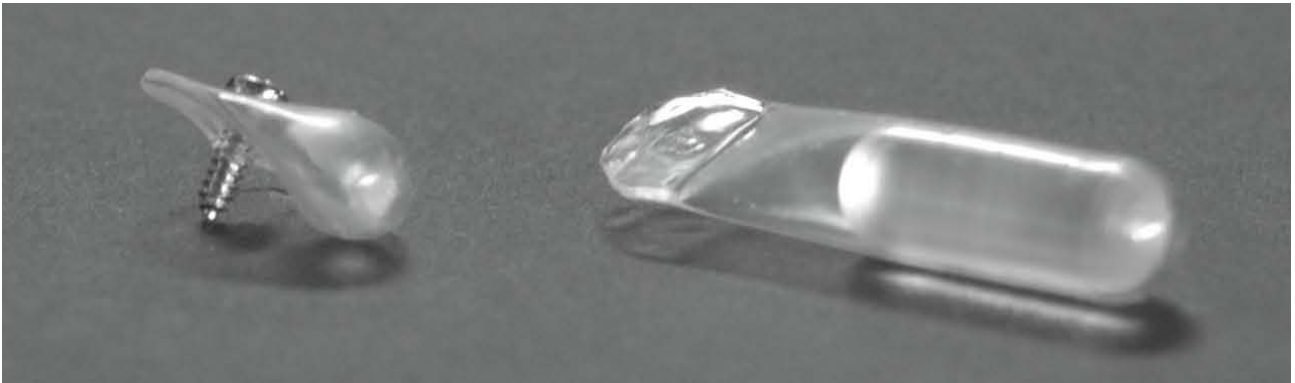
Local contraindications:

- ⤿ Untreated gingivitis, periodontitis
- ⤿ Untreated caries
- ⤿ Insufficient oral hygiene
- ⤿ Previous radiation therapy

| Basics

osmed Tissue Expanders Cylinder Dental are available in 4 sizes (final volume from 0.24 ml to 2.1 ml) and are used for straight edentulous areas.

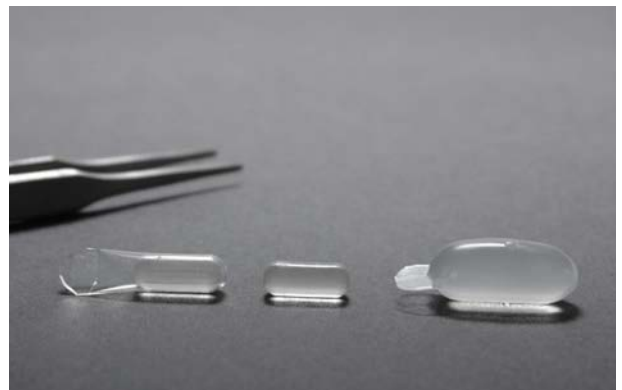
The osmed Tissue Expander Cupola Dental (final volume 0.35 ml) is used for small (1-2 missing teeth) or curved frontal edentulous areas.



osmed Tissue Expander Cupola Dental and Cylinder Dental: Before swelling

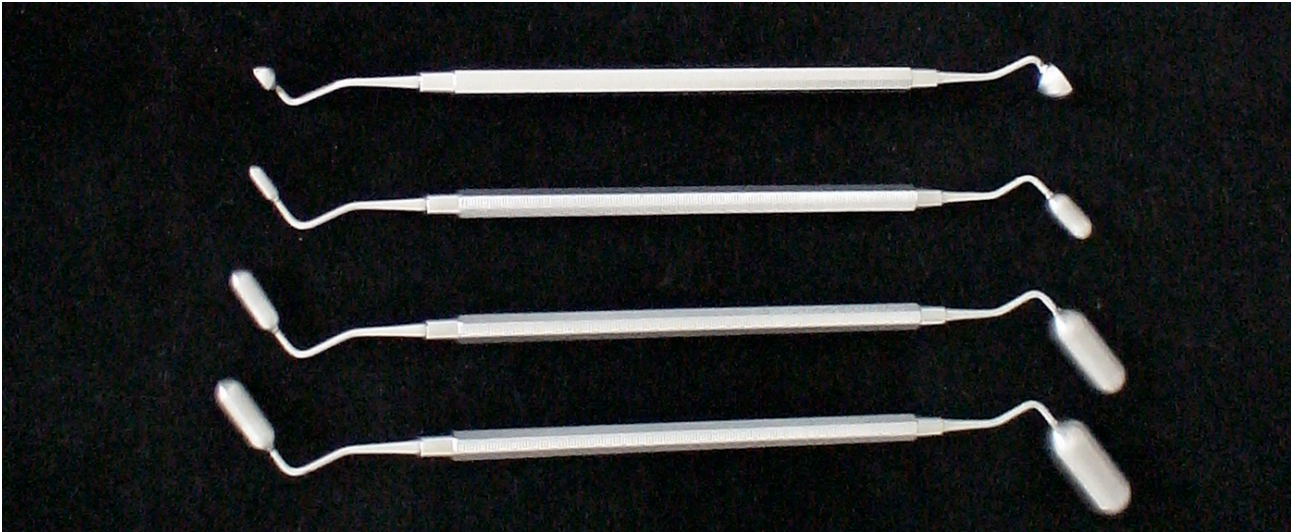


osmed Tissue Expander Cupola Dental: Before swelling, without silicone shell and after swelling



osmed Tissue Expander Cylinder Dental: Before swelling, without silicone shell and after swelling

Templates showing initial and final expander volumes are used for selection of the appropriate tissue expander type. During surgery, the templates facilitate correct preparation of the recipient site. The template's cylindrical part corresponds to the hydrogel core. The distance from the cylinder tip to the bend corresponds to the full length of the expander in its silicone shell.



Templates for Cupola Dental and Cylinder Dental before and after swelling

Perioperative administration of antibiotics is mandatory. Patients should abstain from brushing the treated area. A mouth rinse (e.g. chlorhexidine 0.2%, 2x/d for 1 min) should be used for at least 2 weeks.

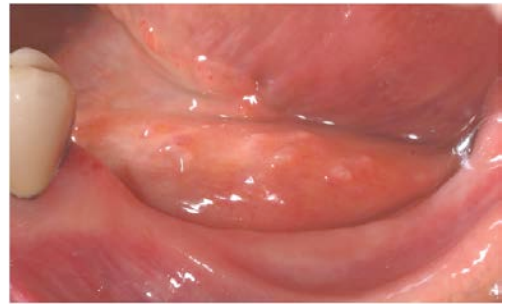
Removable dentures must not be used during tissue expansion. Temporary fixed partial dentures have to be adjusted regularly according to the increasing tissue volume.

| Anesthesia

Local anesthesia

| Surgical procedure

Resorbed edentulous ridge. Vertical augmentation is necessary prior to implant placement.



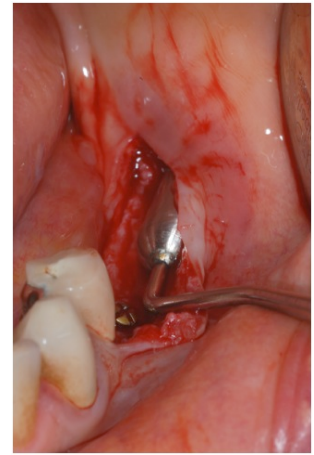
The template is used for selection of the appropriate expander type. The expander's final volume has to fit to the designated surgical area. In case of doubt, use a smaller expander.



Starting from a curved incision (1.5 – 2.5 cm), a suprapariosteal tunneling flap is prepared. The incision should be placed at a safe distance from the later position of the expander. The triangular part of the flap allows access for placement of a fixation screw. The periosteum is not mobilized in order to avoid tension and additional bone resorption.



The preparation of the flap is controlled with the surgical template. The flap should easily cover the template. Do not use the expander for preparation control in order to avoid contamination.



Only now, the tissue expander is taken out of the packaging. It is placed under the tunnel flap and secured with a bone fixation screw through the flap. The expander must easily and without wrinkling fit into the prepared flap. During positioning of the expander and suturing, the surgical assistance should take care for a dry operative field in order to reduce contamination of the tunnel and the expander.



Caution: Sharp instruments may damage the silicone shell. Damaged expanders must be discarded.

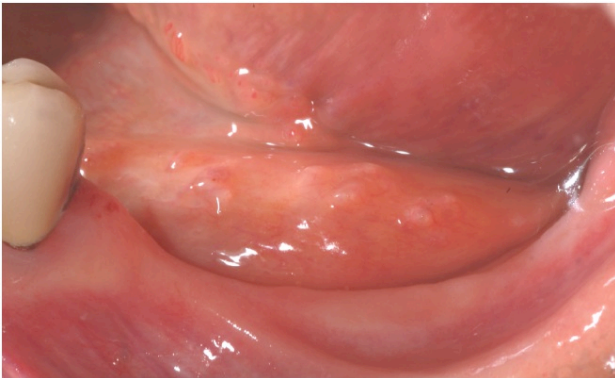
A two-layer wound closure is performed with monofilament sutures (e.g. 2-3 modified vertical mattress sutures, 5.0; and a continuous suture, 6.0).



Removal of sutures after two weeks.



Usually, tissue expansion and maturation are completed after 8-10 weeks. The expander is removed in the course of augmentation surgery. Incision and flap design are chosen as required for the intended method of bone augmentation. It is possible to cut directly into the expander.



Before surgery



After 8 weeks of expansion,
before bone augmentation