

Balloon-Lift-Control (BLC): a minimal-invasive system for the elevation of the sinus floor mucosa

Part 2

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Results: Case report

In Figures 10 to 15 the course of a clinical sinus floor membrane elevation using the BLC System is presented with intraoral photographs and panoramic x-ray scans.

One week before the surgical operation the patient (Z. E., 43 year-old male) was verbally informed about the operation technique and risks, and also by a letter. On the operation day the patient was in good healthy condition, anamnesis and gross clinical examination did not show any signs of cardiovascular or metabolic diseases; also allergic reactions against iodine or thyroid gland dysfunctions were not known.

Figure 10a gives the local preoperative situation in the upper jaw of the patient (mirror view). The teeth in region 25 to 28 are missing. The clinical aspect indicates that a significant resorption has taken place in the edentate area of the alveolar ridge. Figure 10b shows the splint in situ performed with a reference ball that is placed in the area of the surgical operation provided. The respective panoramic x-ray scan in Figure 10c shows that the height of bony sinus floor has been reduced by the resorption processes to a minimum of 0.4 mm.

Figure 11 demonstrates the removal of the attached gingiva (a). The mucosa is drilled up to the compacta of the sinus floor using a trephine drill (b). The mucosa punch is kept in a sterile compress

soaked with physiological saline for the ex-vivo-preservation of its vitality (c). In Figure 11d the distance tube with the guide is positioned to the denuded bone; the appropriate drilling weakens the bony sinus floor to a residual thickness of 1 mm.

Figure 12 shows that the borings coming to hand—bone chips and marrow—are harvested in a sterile chamber (a) to be subsequently mixed with β -tricalciumphosphate (b) and autogenous venous blood (c).

Figure 13 shows the positioning of the osteotome guidance instrument into the osteotomy and its underpin by the apical security screw (a). Upon the handle of the inserted mandrin, two soft beats are directed with a hammer to impress the residual bony floor (after milling) 1.5 mm into Highmore's antrum (b).

Following a positive mobility test of the impressed bone (and attached mucosa), the osteotome guidance instrument is reinserted and the mandrin replaced by the ventilated balloon catheter (Fig. 14a). Then the balloon is blocked-up repeatedly (at least 5 times) with increasing fluid volume.

After removal of the osteotome guidance instrument, the balloon catheter is directly reinserted into the elevated subantral/submucosal space (Fig. 14b) and blocked-up with the radio-opaque fluid. The result of the balloon-assisted mucosa lift is demonstrated in the panoramic x-ray-scan (Fig. 14c). The balloon contains 1.5 cc of Ultravist; the space

Fig. 10 Case report, patient Z. E., 43-year old male: (a) Mirror view of local preoperative situation. (b) With splint using a reference ball. (c) Panoramic x-ray scan with reference ball (diameter 5 mm) in the area of designed augmentation and implantation.

