

# The IntraLift™: A new minimal invasive ultrasonic technique for sinus grafting procedures

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This case report reveals a new technology in sinus grafting with an ultrasonic device and special tips designed for the atraumatic lifting and augmentation of the sinus floor.

**The need of secure implantology** in the maxillary molar region has urged dentists and surgeons to find evidence-based methods for operation protocols of the sinus. The lateral window technique Tatum described is one of the most secure and predictable ways to guarantee a new bone formation in maxillary edentulous areas with increased pneumatized sinus related to atrophic reaction caused by a loss of bone function. This technique requires a full flap for a good visibility of the operation field, mostly created with a crestal or paracrestal incision, and the cut of a window of the lateral sinus wall.

Done with rotative burs or diamonds, the threat of an iatrogenous rupture of the Schneiderian Membrane is one of the challenges the surgeon is facing. Once the window has been cut, the next challenge is to reflect the sinus mucosa from the bone floor and walls without the injury of the sinus mucosa. Even though for the experienced surgeon the lateral sinus lift technique is not that pretentious and the potentially ruptured membrane can easily be covered with a resorbable membrane, the search for a less traumatic way was negotiated by the Summers Technique and its modifications.

This technique is less invasive due to the crestal approach that makes an extended flap unnecessary. Nevertheless, disadvantageous is the threat of an uncontrolled rupture caused by the osteotomes and, in addition to that, the area of submucosal augmentation is restricted. Done with surgical hammers, the operation itself is for most of the patients described as more uncomfortable compared to the lateral technique, but the postoperative complaints are significantly reduced compared to the lateral technique with visible hematoma and edema.

The intention of the inventors of this technique was to combine the benefits of the lateral window technique—regarding to safe augmentation of bigger areas—and the reduced invasive postoperative patient complaints with the Summers Technique. Since ultrasonic surgery has become a secure method in bone surgery, the idea was to develop a technique that reduces the risk of traumatization of the Schneiderian membrane tremendously, and to graft the sinus to any extent desired with a hydrodynamic cavitation effect.

In preliminary studies on lamb skulls, the scientific group of Troedhan, Kurrek, Wainwright (TKW) and the Acteon Group in France developed a technique with the ultrasonic Piezotome® named as the IntraLift™.

**Fig. 1**\_TKW3 in use, preparing the osteotomy site with water irrigation (NaCl) and a high level setting.

**Fig. 2**\_TKW4 (trumpet) with the piezoelectric and microcavitation effect lifting the Schneiderian membrane from its floor.

**Fig. 3**\_TKW4 (trumpet) in use as a plugger with alternating use of water irrigation in low level (4).

**Fig. 4**\_ Implant placement if primary stability is achieved (+20 Ncm)

