The Osteotome Sinus Lift Procedure

The edentulous maxillary posterior area presents unique challenges when considering implant placement. The bone quality is often less dense than other areas of the mouth with Type III and type IV bone in a majority of cases. Another aspect of this area that must often be addressed involves the presence of the maxillary sinus. Once implants became recognized as a viable technique for restoring posterior maxillary segments the above noted obstacles had to be overcome in order to achieve successful surgical and restorative results. Historically, the primary method for gaining access to the maxillary sinus was via the Caldwell-Luc approach which eventually evolved into the creation of a lateral osteotomy with bone graft material being used to elevate and hold the sinus membrane superiorly. Another technique developed by Summers uses a series of osteotomes to expand the osteotomy from a crestal ap-
approach and push the existing bone or bone graft material against the sinus membrane elevating it superiorly.

In order to determine the necessity of using a sinus elevation a pre-operative radiograph should be used to evaluate the amount of bone between the alveolar crest and sinus floor.

With 10mm or more of existing bone height there should be no need to involve the sinus membrane in most cases. Keep in mind that a 10mm height does not preclude engaging the sinus for placement of a longer implant if the individual situation demands it. With less than 10mm it is generally accepted (this number differs depending on the implant design) that a sinus elevation will be necessary in order to place a minimum implant length of 10mm for the posterior maxilla.

In the original technique proposed by Summers he used osteotomes exclusively without the use of drills. The idea behind this technique was to not only elevate the sinus, but also to condense the surrounding bone to provide a more dense bone for the immediate implant environment. This is possible for Type IV quality bone, however in Type III bone some drilling is usually required. If the site for implant placement was grafted after extraction then the quality bone is often denser than Type III and drilling is definitely required.

The rationale for using the Summers technique versus the lateral wall approach is to utilize a more conservative surgical technique and allow placement of the implant simultaneously. There are several possible operative and post-operative complications of sinus elevation surgery. These include infections, oral-antral fistulas, delayed healing due to smoking and sinus perforations. The use of the osteotome technique reduces the number and severity of these complications. There are, however, limitations when considering use of osteotome surgery. The amount of vertical bone height underneath the sinus is a determining factor when considering which type of sinus surgery to use. The lateral wall approach can be used in all situations since there are virtually no limitations as to the remaining bone height. For the osteotome technique various restrictions have been proposed that range from 3-6mm of pre-existing bone height in order to preform the procedure adequately. An added benefit of the osteotome surgery is being able to expand and condense the osteotomy and additionally to expand the ridge if deficient bucco-palatally. I’ve included a number of radiographs showing clinical cases presenting the use of the os-
In conclusion, the use of the Summers Osteotome Technique has enabled surgical placement of implants in the posterior maxilla where there are atrophic ridges and pneumatized sinuses in a more conservative manner versus the traditional lateral wall surgery.

Next Issue: Use of Osteotomes for Ridge Expansion

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