Breathe-Implant in Open Rhinoplasty Surgery: Surgical Steps

This step-by-step documentation should guide the surgeon through a correct Breathe-Implant procedure. This is not a guide to learn Open Rhinoplasty in itself. The surgeon should be able to perform Open Rhinoplasty.

Once these steps are learned they remain the same in all future procedures. The beauty of Breathe-Implant surgery lies in its standardized steps. Over time duration of surgery will be significantly reduced. Aesthetic Rhinoplasty will always remain a challenge for every surgeon. Breathe-Implant surgery however will become standard. The new Gold Standard for Nasal Valve Surgery.

Fig. 1

Open rhinoplasty incision: inverted V incision at the most narrow part of the columella.
Preparation of both lower lateral cartilages (LLC). Gentle removal of soft tissue by using cottonoid swabs on a clamp. Try to achieve a clean surface on LLC and ULC.
Incision of the Pitanguy ligament: release of the soft tissue of the nasal dorsum between the LLC. To identify the cartilaginous nasal dorsum. Stay in between the LLC to expose the entire dorsal edge of the nasal septum and both LLC. It is important to find the cartilaginous nasal dorsum between the LLC before further preparation of the soft tissue.
Pitanguy ligament is cut with the pointed scissors: find the cartilaginous nasal dorsum. The surface appears whitish. Once you find the correct level of cleavage there will be no bleeding because we now are below the vessels as this level is virtually free of vessels.
Spread your pointed scissors directly on the surface of the cartilaginous nasal dorsum. Feel the tips of the scissors gently scratching the surface of the cartilage. This is the level of the Upper Lateral Cartilages (ULC) on which Breathe-Implant will be placed. At this point you can also use cottonoids held in a clamp or cotton tips to push away the soft tissue from the nasal dorsum. This is the most gentle method to expose the cartilaginous and the osseous nasal dorsum.
With the pointed scissors follow the surface of the ULC laterally all the way down to the bony piriform aperture. By spreading the branches the soft tissue of the lateral nasal wall is released. This step is very important: keep the ULC intact but stay in close contact to the surface of the ULC to allow full exposure and to avoid bleeding from the soft tissue. Try to have a clean surface of the ULC. Expect some bleeding towards the piriform aperture. Use monopolar suction coagulation or bipolar coagulation for hemostasis. There must be perfect hemostasis before implanting Breathe-Implant. Use cottonoids in combination with scissors. A suction rasp may also be applied for this preparation.
Full exposure of both ULC: identify the bony nasal dorsum cranially and the bony piriform aperture laterally on both sides before proceeding. Identify the scroll area: the connection zone between the ULC and LLC. There is some variation in the scroll area. The LLC might be pulled down gently to better identify this area. We must clearly see the inferior edge of the ULC in order to correctly place Breathe-Implant: 2 mm higher than the edge.
Use one of the six sizers for Breathe-Implant. They range from XS to XXL with incremental steps of 1 mm at the bridge area. Gently hold the sizer on both ULCs: Correct position is 2 mm cranial of the inferior edge of the ULC.

To judge the correct size: choose the size that touches the ULC with the cranial edges of the sizer. That way the nose will not become wider than it already is. In a patient with Obstructive Sleep Apnea we often choose one or two sizes larger to provide their noses with maximal endonasal dilatation. Generally it is fully sufficient to utilize the sizer that touches the ULCs with its cranial edge.

To better expose the entire ULC surface the LLCs might have to be retracted inferiorly.
Before taking Breathe-Implant out of its box please thoroughly rinse the implant bed with desinfectant solution (Octenisept or other) to provide an aseptic field. Then place Breathe-Implant: 2 mm cranial to the lower edge of the ULC. Appreciate the amount of widening the ULC will achieve once Breathe-Implant is sewn in.
Use only non-resorbable sutures to fix Breathe-Implant to the surface of the ULCs. We prefer Prolene 5-0 with the strong P-3 needle. This needle will bend less than the usual S-needle or other. In suturing we often have to palpate and search for any opening in Breathe-Implant. A stronger needle greatly helps to avoid bending of the needle. Prolene is superior to other non-resorbable sutures as it is inert and it does not cause infections or other long-term problems.
Start the sutures in the middle. The needle may start at the inferior edge of the ULC going through the tissue. You can take a full bite of cartilage. The suture will not show in the nasal cavity.
Keep the suture ends of the Prolene 5-0 short and pull the nod up in the opening of Breathe-Implant to avoid penetration of the suture ends into the nasal cavity.
The second suture starts near the inferior edge of the ULC. With the needle you will have to find any suture hole in Breathe-Implant. First or second row of openings does not matter. At times this might take a bit of time. Just move around the tip of the needle to find a suitable opening. Hold the implant in its correct place.
The openings of Breathe-Implant have been designed in an oval shape to facilitate the insertion of the needle.
One is tempted to continue the sutures on one side. Wait! If you do so the implant might rotate to one side and remain asymmetrically positioned. Therefor change to the contralateral side after one lateral suture and start one lateral suture there. The implant might have to be pulled down into the correct symmetrical position.
Start suturing on the second side in the same manner: the needle can pass directly from the inferior edge of the ULC. Hold Breathe-Implant in its correct place using some forceps. Here we marked blue the scroll area.
We might start medially with the sutures gradually working down as lateral as possible with the following sutures.
We place at least 3 sutures per side. Please note the position of the implant always 2 mm cranial to the inferior edge of the ULC. The implant should not be at the edge of the ULC.

Never suture any parts of the LLC to Breathe-Implant. The LLC must be free to move in smiling or any other facial movement. Also: never place Breathe-Implant on top of the LLC. We do not want Titanium in direct and close contact to the skin. In the correct position of Breathe-Implant on top of the ULC the implant lies deep to the skin.
Third suture: as far lateral as possible.
On the right side three sutures have been placed. Breathe-Implant is now secured in its perfect position. It will remain there lifelong. Prolene is absolutely inert. There will be no tissue reaction around the sutures. Rarely the patient might initially feel a slight poking sensation caused by the suture ends. This will pass within 3 months.
The left side is now secured with a total of three sutures or more. Please note that the needle insertion is right at the scroll area at the inferior border of the ULC. Please also note the security distance of 2 mm to the inferior end of the ULC.
Third suture left side.
In order to further stabilize the lateral nasal wall towards the external nasal valve a bite deep down laterally close to the piriform aperture may be applied. Breathe-Implant will cover about half of the height of the lateral nasal wall. The main goal is the widening of the internal nasal valve by rotating out the inferior edge of the ULC.
For any suture it is irrelevant whether it passes through the first or the second row of openings. We have placed as many openings on the implant as possible to facilitate surgery as well as to decrease the amount of Titanium.
Breathe-Implant is now fixed in a perfectly symmetrical position on the cartilaginous nasal dorsum. The middle vault is now dilated and stable. The thickness of Breathe-Implant is only 0.5 mm. It will not show on the nasal dorsum.
Before closure we move all suture heads upwards to within the metal openings. This will prevent any undue penetration and exposure within the nasal cavity.

Please also note the rim of cartilage of the ULC that extends inferior to Breathe-Implant. This will protect the implant from endonasal erosion and exposure. Every human being picks the nose with their fingers. It would be a permanent danger if the implant would end directly at the inferior end of the ULC or even worse within the scroll area.
Suture end moved into the opening of the implant.
Right side: please note again the protective ridge of cartilage to prevent endonasal exposure. Suture heads are all moved away from the scroll area.
Nose before surgery. Note the typical dimples in the lateral nasal wall. A sign of weakness of the soft tissue. These lateral walls have a tendency to move medially in inspiration: the main indication for Breathe-Implant.
Immediately after surgery the middle vault might be swollen. It will take up to three months for this edema to disappear. The patient needs to be informed about this delay. In case the nose is still too wide after three months and/or the patient complains about a tense feeling in the nose the width of the implant can easily be reduced by strong finger pressure by the surgeon. The patient will not be able to reduce the implant by himself because the metal strength is too high.
The position of Breathe-Implant shown by this blue line is more cranial than would be suspected. Therefore patients often ask us: „Where is this implant: I can’t feel it.“ They usually touch their nasal tip. We explain to the patient: „Feel the nasal bones between your eyes with your thumb and index finger. Now gently slide down on the nose and try to wiggle the tissue left and right. When you can wiggle sideways that is the position of your implant. Also before surgery we teach the patient this position where Breathe-Implant will be placed. Generally patients are surprised that the internal nasal valve is rather high in the nose.
Endoscopic view of the right nasal cavity before surgery. Please note the acute angle between the septum on the right side and the soft lateral nasal wall. The most narrow part is the inferior edge of the ULC: The internal nasal valve.
With Breathe-Implant the acute angle of the internal nasal valve is now widened and rounded: the dilatation effect of Breathe-Implant. Please also note that no prolene sutures are visible even though we inserted the needle right at the inferior edge of the ULC.

This is a static view. The main functional effect this surgery will have for the patient is the stability of the lateral nasal wall in inspiration of air: there will be no Venturi effect anymore. Even in forced nasal inspiration the internal valve will remain at this position.
Before surgery: left internal nasal valve with its acute angle.
After Breathe-Implant: impressive widening of the valve angle and rounding off at the junction of the angle. Every millimeter of distance we gain in this area results in an improvement of airflow by distance exponential 4! This clearly explains the impressive functional improvement we regularly see in our implanted patients.

Nature is never symmetric: patients might still feel that one side of their nose is more open than the other. They often show this effect by closing one nostril and breathing in at full speed through the other side. They forget that before surgery their nose would most probably collapse completely in this aerodynamic test.

We then teach the patient to only breathe through their nose bilaterally. Then they will appreciate the improvement of increased nasal airflow at a significantly lower resistance.