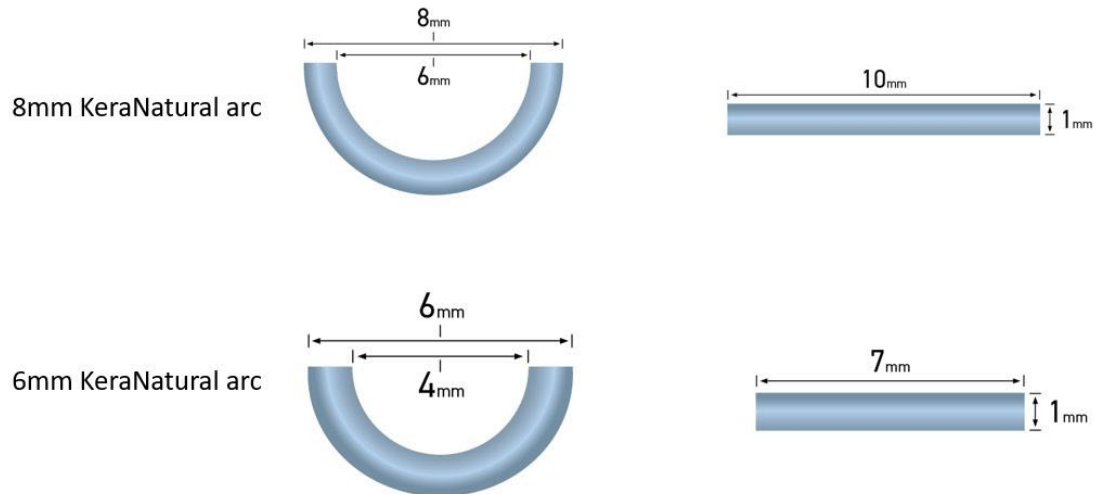


FAQs KeraNatural®

What are the graft dimensions?

The graft has a width of approximately 1mm and is available in either full-thickness or split-thickness corneal tissue. The product comes in two sizes: 6mm and 8mm, referring to the diameter measured from tip to tip along the outer edge. Since the tissue is soft and pliable, it can be conceptualized in terms of volume—equivalent to the amount of tissue obtained if it were straightened into a line (see the image below).



Which size should I use? 6mm or 8mm?

The primary difference between the 6mm and 8mm arc/ring, as shown above, is the length of tissue provided. Surgeons frequently ask which size they should choose, and this decision largely depends on personal preference and the size of the patient's cone. The 6mm option provides less tissue length, while the 8mm option provides more. However, the tissue can always be trimmed as needed during the procedure to achieve the desired length, and we generally see that either size is modified by surgeons to some extent before or after insertion.

What is the nomogram recommended for KeraNatural procedures?

The Istanbul nomogram is recommended when using KeraNatural. This nomogram includes the following:



ISTANBUL NOMOGRAM

SEGMENT

- Length: 180° arc
- Thickness: generally 450-650 µm
- Width: 1mm

CONES

- Asymmetric cone: single segment
- Symmetric cone: double segment

CHANNEL PARAMETERS

- Inner diameter: 4.0mm
- Outer diameter: 7.5mm
- Depth: 250 µm
- Width: 1.75mm

ENERGY & INCISION

- Incision cut energy: 1.3 µJ
- Ring energy: 1.3 µJ
- Incision cut length: 1.5 mm
- Incision axis: according to cone location

What are some scientific publications specific to KeraNatural?

All of our publications can be found at: <https://keranatural.org>

Why are KeraNatural grafts not cut using a laser?

Although some surgeons request precisely shaped grafts, VisionGift has chosen not to process KeraNatural grafts with a laser for the following reasons:

- **Clinical outcomes:** Current clinical data indicate that manually trephined grafts do not negatively impact clinical outcomes.
- **Tissue adaptability:** The key factor is the volume of tissue added to the cornea, not its initial shape. KeraNatural grafts are made from natural human cornea, which is flexible and adapts to the environment in which it is implanted (hence the recommendation for a wider pocket in the Istanbul nomogram). The graft naturally conforms to the tunnel shape, becoming fusiform, meaning a precisely shaped graft will not retain its original form.
- **Impact on corneal biomechanics:** The effect experienced by the patient results from the increase in tissue volume in the targeted area, as any addition of tissue affects the overall biomechanical stress distribution of the cornea.
- **Cost-effectiveness and accessibility:** VisionGift aims to make KeraNatural accessible to as many patients as possible globally by maintaining cost-effective tissue processing. Research comparing manual trephination to laser-cutting methods found that utilizing laser technology would more than double the cost per graft without demonstrating significant improvements in clinical outcomes. Given these additional costs and the lack of significant clinical benefits, VisionGift has opted not to use laser processing.
- **Surgical flexibility:** Surgeons can easily adjust graft dimensions (length and thickness) themselves using sterile scissors or a blade before or during the procedure, ensuring adaptability to individual patient needs.



Are there any special surgical instruments recommended for KeraNatural procedures?

Yes, Dr. Aylin Kılıç has developed instruments specifically designed for KeraNatural procedures. These instruments are available through a distributor of medical instruments. The company is called Optimal (Optimal Sağlık Ürn.San. ve Dış Tic.Ltd.Şti.) They are based in Istanbul and they have CE-mark. Website: <https://www.optimalsaglik.com.tr/>

The instruments are called AK Instruments and include:

- AK Foreseps, titanium
- AK Tunnel Seperator, right, stainless steel
- AK Tunnel Seperator, left, stainless steel
- Set of AK Tunnel Seperator, right & left, stainless steel

To order the instruments you can contact Yakup Yildirim (yakup@optimalsaglik.com.tr). The product codes can be found in their product brochure.

Why does the Istanbul nomogram have a wide channel instead of a narrow one?

Dr. Kılıç initially experimented with a narrower channel and observed that implanting less tissue resulted in a reduced effect. A shallower and wider pocket, however, produced a greater effect. Some surgeons perform CAIRS using a narrower pocket, often drying out the tissue to facilitate insertion due to the increased difficulty caused by the limited space. However, OCT images reveal a larger anterior bulge in these cases, and the implanted tissue conforms to the shape and size of the pocket. As a result, a narrow pocket tends to preserve the tissue in its initial block shape rather than achieving the desirable fusiform shape seen with a wider pocket. While there is some flexibility in adjusting pocket width, we have consistently observed better outcomes with wider channels compared to narrower ones.

How long does it typically take for the patients to appreciate some improvement in the vision and after how many months the topography gets stable?

We often observe an initial "wow" factor on the first day, similar to what is seen with PMMA rings. However, over the following 30 days, the effect stabilizes into what the patient can typically expect long-term. Dr. Kılıç advises preparing patients for a stabilization period of up to six months to account for any potential modifications that may be needed. However, in cases where no modifications are required, stability is generally achieved within 30 to 60 days.

What is the recommendation for combining KeraNatural with corneal cross-linking?

Dr. Kılıç does not recommend performing cross-linking (CXL) at the same time as the initial KeraNatural insertion. If the patient's keratoconus is not progressing rapidly, it is recommended to perform CXL approximately six months after the KeraNatural procedure. By this time, the cornea should have fully stabilized, and the effects of KeraNatural will be more predictable. Additionally, there are documented cases of successful outcomes when CXL is performed before KeraNatural. However, clinical evidence suggests that KeraNatural has a greater effect on eyes that have not undergone prior cross-linking, as the cornea remains more malleable and easier to reshape. Following CXL, the cornea becomes stiffer, making reshaping more challenging and potentially complicating the implantation process. Therefore, we do not recommend performing CXL on the same day as KeraNatural surgery.

How do I order KeraNatural grafts for my patients?

Email KeraNatural@visiongift.org to learn more about distribution in your area!