Perspectives for Retinitis Pigmentosa

The subretinal implant

Information for patients
Fifteen years of research and development have shown us that although your sight may be deteriorating because of degenerative retinal diseases, there is still hope.

Retina Implant was started with the bold vision of developing a camera chip small enough to implant under the retina. Today, after more than sixty implantations, we can say that a window of hope has opened up for those suffering from retinitis pigmentosa (RP) or similar inherited retinal diseases.

Persons affected by RP have the chance to regain some degree of useful vision with the subretinal implant (i.e. implant under the retina). This can lead to beneficial and enriching experiences for users’ daily lives.

This brochure contains all the important information about the implant: insights from a patient’s point of view, technical details about the implant and its components, its benefits and use as well as a step-by-step guide for your journey to your RETINA IMPLANT Alpha AMS.

We look forward to hearing from you. Our experienced team of RI Implant trainers will be happy to assist you with all your questions about the implant.

So that a window of hope may open for you.
The implant is suitable for adults who have lost all eyesight due to inherited retinal disease. The indication, however, must only affect the photoreceptors with the rest of the visual system still functional. This is the situation with retinitis pigmentosa (RP). Implantation in other inherited retinal dystrophies, such as choroideremia, requires an individual assessment by your doctor.

Like a camera in the eye

The RETINA IMPLANT Alpha AMS contains a microchip, similar to that in a camera, which converts incident light into electric impulses that stimulate the retina. This chip is implanted under the retina in the area of sharpest vision (fovea). The chip may help to restore partial functional vision.1
Peter B. from Ketsch, freelance IT consultant and mediator, lost his sight to retinitis pigmentosa at the age of 45. He explains here why two years later he decided to have the chip implanted and describes his experience with the implant.

*This is the experience of one individual. The success of an implantation varies from person to person and depends on a number of different factors.

What was the course of RP in your case?

I was diagnosed with retinitis pigmentosa when I was six years old. I had my first problems with vision while I was still at school. The disease progresses very slowly. I was still able to get my driver’s licence and I was mobile until my early 20s. It started with night blindness, followed by tunnel vision and finally my central vision became weaker and weaker. I was blind by the age of 45 and then two years later I decided to have the chip implanted.
Why did you select the retina implant?

When I first heard of it, I felt for the first time that I could actively do something about the disease and that I could take control of my future again. Previously I had always been told that nothing could be done about retinitis pigmentosa.
In addition to the emotional benefits, the ability to upgrade the chips convinced me. You can't expect any miracles in these early stages. However, I believe that the technology is developing in the right direction. It was a great motivation for me to be part of a scientific advance. I wanted to do something for myself and I wanted to be part of it. And my hopes were actually met.

How did the implant affect you?

After the activation I was shown twelve white letters 8 cm high on a black background as a test. I recognised all twelve at once. No mistakes. I was very proud. I found it also fascinating that I detected lines again. The chip helped me to find my bearings better in the darkness, particularly with bright lights and contrasts.

But all this needed training and practice. You have to learn to use the information provided by the chip. It was also a very emotional thing to be able to use the chip. I was taking control again. It gave me hope and confidence.

How did the implantation and the period afterwards go?

The implantation was very well prepared. Everybody involved appeared very relaxed and they knew what they were doing. This made my wife and I feel relaxed. However, do not underestimate the actual operation. I joked beforehand that all I had to do was sleep while everyone else did the work. But I found the first 24 hours after the operation a great strain. The chip was activated four weeks later.

How would you recommend the retina implant?

The chip is like a partnership. If I remain passive and simply wait for the chip to work a miracle and solve all my problems, it will not work. The main factor is to be prepared to work with it. The result is activity and ultimately the personal benefits. I can recommend the chip to everyone who is thoroughly informed about it and has realistic expectations about themselves and the chip.
Benefits of the subretinal implant

- **Useful visual information**
  Subretinal visual implants can give blind patients suffering from retinitis pigmentosa useful visual information for everyday life.\(^1,2\)

- **Eye movement**
  The eye movements essential for locating objects can still be used with the subretinal implant position.\(^3\)

- **Natural stimulus transmission**
  The intact structures of the retina are used for the physiological generation of visual impressions. No additional signal processing is required.

- **Virtually imperceptible**
  The subretinal implant does not require additional camera-goggles.

- **Largest number of pixels**
  The only CE-certified retina implant with 1600 photodiodes.

Financing

In Germany the procedure is generally covered by health insurance providers under the NUB procedure (new examination and treatment methods).

For those patients with residual vision, we can offer transcorneal electrical stimulation (TES), a clinically tested treatment that can delay the progression of the disease.\(^4,5\)

For more information about the RI OkuStim system, visit our home page at [www.retina-implant.de/en/therapy](http://www.retina-implant.de/en/therapy)
Prerequisites for the implant

You are generally no longer able to perceive any light or you have only light perception without being able to localise the light source. To receive the RETINA IMPLANT Alpha AMS, it is important that you do not suffer from any other eye diseases (e.g. glaucoma) that affect your vision or inner retina.

Moreover, you must also have developed adequate visual capacity in your early life. A cataract is not an obstacle.

All parameters are assessed and recorded in a comprehensive diagnostic procedure and explained by your doctor in a detailed consultation.
The picture shows the parts of the RETINA IMPLANT Alpha AMS implanted in the eye (microchip and ribbon), near the temple (return electrode) and behind the ear (electronic housing)
One implant, three parts

The microchip is only $3 \times 4$ mm in size with 1600 photodiodes that convert the light falling onto the chip into electric signals. The signals are amplified and sent through electrodes to those retinal layers that are still functional. From there, the signal follows the natural path through the optic nerve to the part of the brain that processes the incoming information and creates visual impressions.

The microchip requires an external power supply. The power is absorbed by a coil that is implanted beneath the skin behind the ear. A removable transponder transmits the power generated on the outside inductively through the skin to the implanted coil.

The patient can use the hand-held device to adjust brightness and contrast to the ambient conditions. The hand-held device also contains the batteries and the electronic circuitry that generates an alternating electromagnetic field in the transponder for transmitting power.
Your Journey Towards the Implant

1. Personal consultation

We will answer all your questions about the implant in a personal consultation. Upon request, we will put you in touch with RI Implantation Centres and accompany you along the subsequent steps. Please contact us directly. We look forward to meeting you.

2. First examination

Retina Implant AG does not performe any diagnosis. The first examination takes place in one of the clinical RI Implantation Centres. During the examination, it will be determined if you are suitable for an implant. You will also meet your RI Implant Trainer at this appointment, who will accompany you throughout your journey, if you wish.

3. Clarification of finance

In Germany, treatment with the RETINA IMPLANT Alpha AMS is generally covered by statutory health insurance as part of the NUB procedure. The hospital, where you are treated, will handle the application.
**Operation**

Experienced surgeons with special training conduct the operation at certified centres. The operation is done in two stages: the first stage involves placing the receiver coil (used for the power supply and to control the implant) and the second stage involves implanting the microchip beneath the retina.

**Post-operative care and training**

Four weeks after the surgery we will activate the implant with you. Together with clinical specialists we have developed a concept for aftercare and training that can be individually adapted to your situation and learning progress. Training is mostly conducted in your normal environment at home.
You can find more information here

Visit our website for more information about RETINA IMPLANT Alpha AMS. You will also find an overview of our RI Implantation Centres here: [www.retina-implant.de/en/services/find-a-specialist/](http://www.retina-implant.de/en/services/find-a-specialist/)

We accompany you on your journey

Our team of qualified RI Implant Trainers accomanacie you on your journey. We are happy to answer your questions and will initiate contact with the hospital for you. You can contact us on +49 (0) 7121 - 3640 310. Outside business hours you can reach us via email under: patienteninfo@retina-implant.de.

### Sources


