

# Osseointegrated Implant Retained Bone Conduction Sound Processor (OIBCSP) Systems

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## What is an osseointegrated implant?

The term “osse” means bone, “integrate” means heal. An osseointegrated implant is a specially designed implant about the size and shape of a small screw. It is surgically placed into the skull under general anesthesia (where a child is fully asleep) and takes 3 to 6 months to heal, or osseointegrate, into the bone.

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## What is a BCSP?

Bone conduction sound processors (BCSPs) are devices designed for people with certain types of hearing loss that cannot use a behind-the-ear hearing aid.

The BCSP can be used non-surgically, held in place by a band around the head (band retained), or with a surgically placed implant and connector (implant retained). A BCSP is worn on the outside of the head. A BCSP sends sound to the inner ear through the skull, bypassing the ear canal and middle ear. For children who are deaf in one ear, the sound is carried to the better hearing ear.

The BCSP is worn during the day and removed when sleeping or when the child is in water.

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## What is an osseointegrated implant retained bone conduction sound processor system?

The osseointegrated implant retained bone conduction sound processor system, or OIBCSP, has two parts:

1. A surgically placed retention system with:
  - A small titanium implant placed in the skull bone behind the ear
  - Some type of connector, either an abutment that comes through the scalp or a magnet that is underneath the scalp.
2. A BCSP that attaches to the connector (the abutment or magnet).

**This handout explains the surgically placed systems.**

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## How do I know if a child can use an OIBCSP system?

This system may be an option, if a child:

- Is at least 5 years old. Some OI BCSP systems are only approved for children 12 years and older.
- Has conductive or mixed hearing loss and
  - outer ear malformations or
  - chronic ear drainage
- Has deafness in one ear and normal or near-normal hearing in the other ear
- Has tried the band retained BCSP for at least a short time outside of the audiology clinic
- Has worked with an otolaryngologist and audiologist and was told that an OI BCSP system is an option

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### To Learn More

- Audiology  
206-987-5173
- Otolaryngology  
206-987-2105
- Ask your child’s healthcare provider
- [seattlechildrens.org](http://seattlechildrens.org)

### Free Interpreter Services

- In the hospital, ask your nurse.
- From outside the hospital, call the toll-free Family Interpreting Line, 1-866-583-1527. Tell the interpreter the name or extension you need.



### What are the types of OI BCSP retention systems?

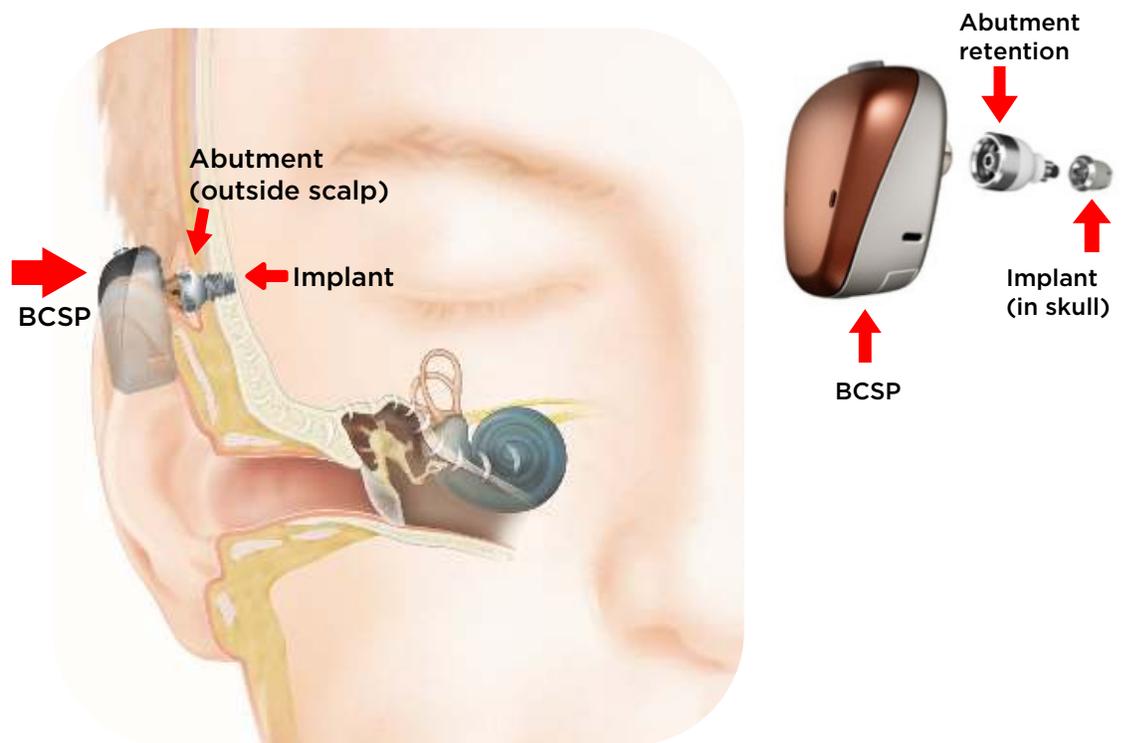
The retention system has two parts: the osseointegrated implant and the connector. The connector is either:

- an abutment that comes through the scalp or
- a magnet that is placed under the scalp

### Abutment (snap) retention system

An abutment is a part of the system that looks like a snap. It comes through the skin of the scalp. The otolaryngologist will look at a child's age and activity level to see if the abutment should be placed at the time of the implant or at a second surgery 3 to 6 months later. The abutment surgery details are described in another section.

Once the implant portion has healed and the abutment has been placed, the otolaryngologist will check the surgical site and the audiologist will fit the BCSP. The BCSP snaps onto the abutment.

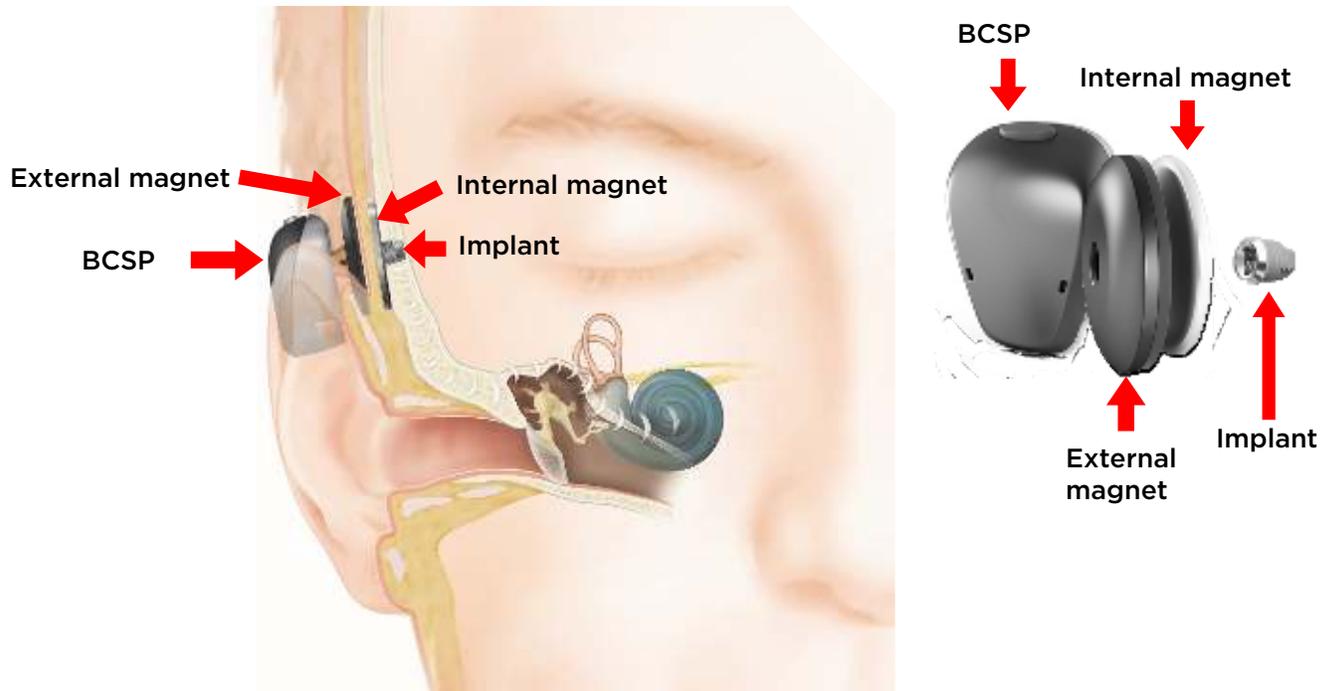


BCSP, abutment and implant

## Magnetic retention system

In the magnetic retention system, an internal magnet is attached to the osseointegrated implant and placed under the scalp in a single surgery. Your child will need to wait for 2 to 3 months before they are able to use the magnetic retention system.

The otolaryngologist will check the surgical site and the audiologist will fit the BCSP. The BCSP snaps onto an external magnet which connects to the internal magnet when it is placed on the head.



Internal, external magnets, BCSP, implant

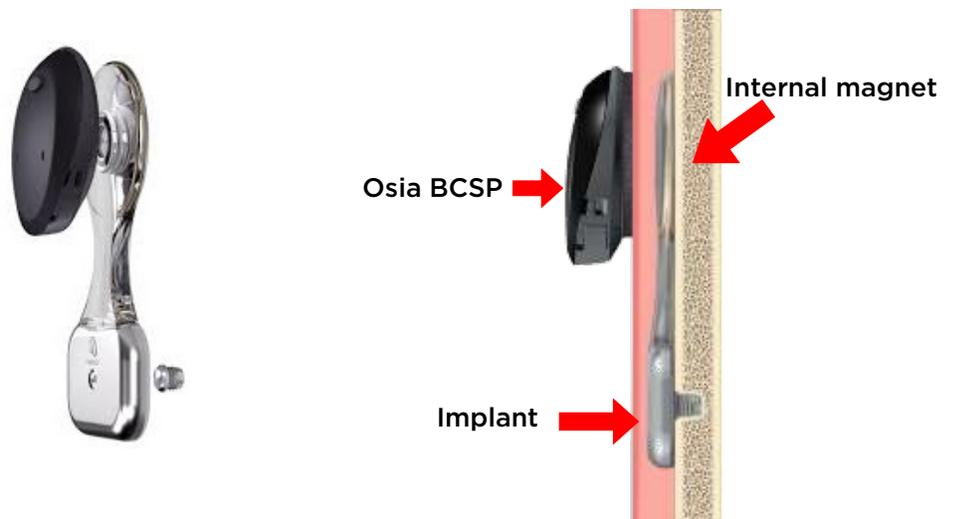
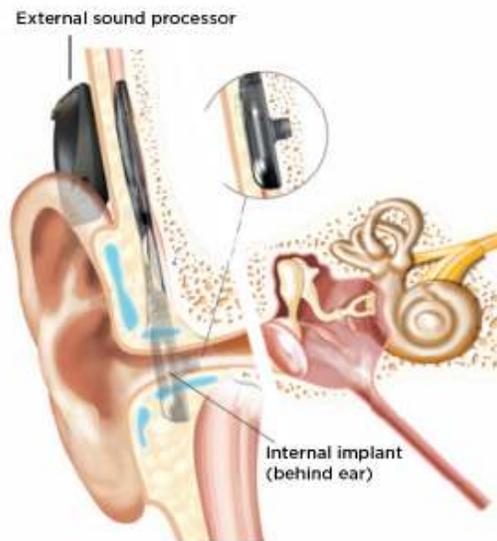
## Is there another type of OIBCSP System?

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### Osia system

The Osia is a different type of OIBCSP system. It has different features than the abutment and magnet retained implants. The Osia implant uses digital stimulation with mechanical pressure to create an electrical charge. In this system a transducer and magnet are attached to the osseointegrated implant and placed under the scalp in a single surgery. A child will need to wait for 1 to 2 months before being fit with the external Osia sound processor.

The otolaryngologist will check the surgical site and then the audiologist will fit the BCSP. The BCSP contains a magnet which connects to the internal magnet.



## Making the decision

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### How do I learn more about an OI BCSP?

Most often, a child will first have a trial with a band-retained BCSP to understand what the system sounds like. If you would like to learn more about the OI BCSP hearing systems, you will meet with an audiologist and an otolaryngologist. The audiologist will show you how the system works and talk about the features of the BCSP. The otolaryngologist will discuss the details of surgery and care for the site.

### During the visit, I have decided that I want an OI BCSP hearing system for a child. What do I do next?

You will choose a BCSP device with the audiologist and discuss surgical plans with the otolaryngologist and request a surgery date. Once a surgery date has been requested, we will start the pre-authorization process. Pre-authorization is needed for this surgery. Once your insurance has authorized the procedure and device, we will contact you to schedule the child's surgery date.

### I am not sure if I want an OI BCSP hearing system. What do I do next?

After the evaluation, some families need time to think about the information before they can decide about having the surgery. If you are not sure, you can schedule another visit with your otolaryngologist and audiologist to answer your questions and to help you decide.

If it has been less than 6 months since discussing OI BCSP with your audiologist, you will not need to see the audiologist again. If it has been longer than 6 months since discussing OI BCSP with your audiologist, you will need to see **both** the audiologist and the otolaryngologist again. These clinic visits are needed to make sure you know the most updated equipment choices and process.

## The Surgery

The surgery is done at the hospital under general anesthesia (fully asleep). Most children are able to go home on the same day of the surgery.

## Abutment-retained BCSP

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### Two-stage surgery

Having two separate surgeries is the best option for active children and teens. The first surgery is to place the implant into the skull bone behind the ear. Nothing comes through the skin after this surgery. The skin is closed with stitches that dissolve over time. Most often children go back to their normal activities 3 to 5 days after this first surgery.

A second surgery is scheduled 3 to 6 months after the first. During the second surgery, the otolaryngologist will re-open the skin and attach the abutment to the implant that has healed into the bone. It will take several weeks for the site to heal. Your child must return for a follow-up visit with the otolaryngologist to check the surgical site.

Once cleared by the otolaryngologist, the audiologist can then fit the BCSP. It is best to schedule this visit 1 to 2 weeks after the follow-up visit in otolaryngology to allow for further healing of the surgical site.

### Single-stage surgery

If the surgery is done as a single stage procedure, both the implant and the abutment will be placed at the same time. It is critical that there is no trauma to the abutment during the 3 to 6 months that it takes for the implant to heal into the bone. This is an option for young adults and less active teens.

If you choose the abutment retention system, a follow-up visit to otolaryngology is scheduled 1 to 2 weeks after surgery to remove the dressing. You will then need to return 3 to 6 months later. You will have 2 separate appointments. The otolaryngologist will check the surgery site and the audiologist will fit the BCSP.

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## Magnet-retained BCSP or Osia

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### Single-stage surgery

If you choose the magnetic retention system or the Osia system, only one surgery is needed. You will need to wait 1 to 2 months after the surgery for this child to start using the BCSP for the magnetic system or Osia. On the day of the surgery, the otolaryngologist will discuss care of the surgical site with you. You will have 2 separate appointments. The otolaryngologist will check the surgery site and the audiologist will fit the BCSP.

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### What happens when we get the BCSP?

The BCSP will be fitted in the Audiology Clinic in a separate visit after the otolaryngologist has checked your child for being fitted with the BCSP. At this fitting the audiologist will:

- Program the sound processor
- Discuss the features and functions of the BCSP
- Teach you how to place and remove the BCSP
- Troubleshoot and care for the BCSP, including what to do if it becomes lost, damaged or needs repair

The BCSP will need to be checked by the audiologist each year.

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### Who do I call with questions after surgery?

If you have any problems with the skin around the abutment or magnet, call the Otolaryngology Clinic at 206-987-2105. If you have concerns about the sound processor call the Audiology Clinic at 206-987-5173.

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