Osseointegrated Bone Conduction Sound Processor (OI BCSP) System

What is an osseointegrated bone conduction sound processor system?
The osseointegrated bone conduction sound processor system or OI BCSP 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 BCSP connector (retention system), 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).

The term “osseo” means bone, “integrate” means heal. It takes 3 to 6 months for the implant to heal, or osseointegrate, into the bone.

This handout explains the surgically placed (implant system).

What is a BCSP?
Bone conduction sound processors (BCSP) are devices designed for people with certain types of hearing loss and for whom a behind the ear hearing aid does not work.

For children who have conductive and mixed hearing loss, 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 routed to the better hearing ear. The BCSP can be used non-surgically (band retained) or with a surgically placed implant and connector (implant retained).

The BCSP is worn during the day and removed at night or when your child is in water.

How do I know if my child can use an OI BCSP system?
This system may be an option, if your child:

• Is at least 5 years old
• Has conductive or mixed hearing loss and
  o outer ear malformations or
  o chronic ear drainage
• Has deafness in one ear and normal or near-normal hearing in the other ear
• Has worked with an audiologist to try the band retained BCSP
• Was told by an otolaryngologist that an OI BCSP system is an option
What kind of Osseointegrated Bone Conduction Sound Processor (BI) retention systems are there?

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 your 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 below.

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.
Magnetic retention system

In the magnetic retention system, a 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 attaches onto an external magnet which connects to the magnet inside.
Making the Decision

How do I learn more about an OIBCSP?

Most often, your child will first have a trial with a band-retain BCSP to understand what the system sounds like. If you would like to learn more about the OI BCSP hearing system, 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.

I have decided that I want an OI BCSP hearing system for my child. What do I do next?

If you have decided on surgery for your child, tell your audiologist at the BCSP evaluation so they can begin the process. You will need another clinic visit with the audiologist and otolaryngologist to review details and request a surgery date. When 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 your 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 or audiologist to answer your questions and to help you decide. Please note that if it has been longer than six months since discussing OI BCSP with your audiologist, your child 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

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 on this visit. The otolaryngologist will check the surgery site and the audiologist will fit the BCSP.

Magnet-retained BCSP

Single-stage surgery

If you choose the magnetic retention system, only one surgery is needed. Your child will need to wait 2 to 3 months after the surgery to start using the magnetic system. Your child’s otolaryngologist will discuss care of the surgical site with you. You will have 2 separate appointments on this visit. The otolaryngologist will check the surgery site and the audiologist will fit the BCSP.
When do 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
- You will learn 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.

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.