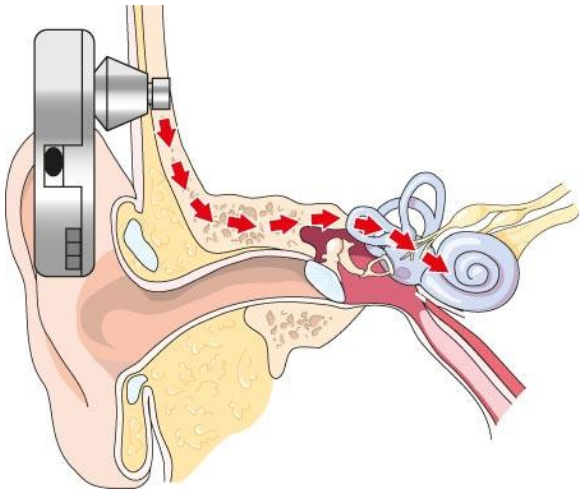


Bone anchored hearing aids: information for families

A bone anchored hearing aid (BAHA) is similar to other hearing aids, but instead of being inserted into the ear canal or held behind the ear, it is attached to a soft band worn on the head or fixed to a metal implant inserted into the skull. This information sheet from Great Ormond Street Hospital (GOSH) describes the type of BAHAs used at GOSH, what is involved in fitting them and what to expect during treatment.

Instead of transmitting sound through the ear canal as conventional hearing aids do, BAHAs transmit sounds through the skull bone to the inner ear.



How a bone anchored hearing aid works

BAHAs are usually suggested for children who cannot use conventional hearing aids because their ear canal or the outside parts of the ear have not developed or children who have a certain type and level of hearing loss.

There are two types of BAHA available:

- An **abutment BAHA** has the implant coming through the skin of the scalp. A connecting abutment is attached to the implant, which attaches it to the sound processor, which looks like a small box.
- A **magnet BAHA** contains an implant magnet in the shape of a flat disc, approximately the diameter of a two pence coin, which sits completely under the skin. The sound processor and sound processor magnet sit on the scalp skin, held in place by magnetic attraction.

Each type of BAHA has its own advantages and disadvantages:

Abutment BAHA

- ✓ Better hearing outcomes
- ✓ Can still have magnetic resonance imaging (MRI) scans
- ✗ Risk of complications at the implant site, such as skin irritation, infection and breakdown

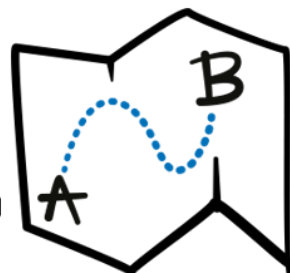




Diagram of abutment BAHA (courtesy of Cochlear Bone Anchored Solutions AB, © 2019)

Magnet BAHA

- ✓ The magnet is under the skin so lower risk of implant site complications
- ✗ May have issues with MRI scans
- ✗ Less favourable hearing outcomes

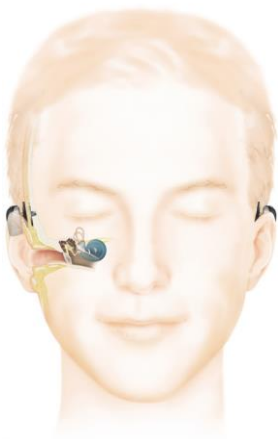
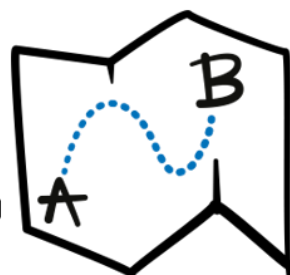


Diagram of magnet BAHA (courtesy of Cochlear Bone Anchored Solutions AB, © 2019)

Your child's Audiologist and Ear Nose and Throat (ENT) Surgeon will discuss the best option for your child with you.

Initial assessment

Hearing tests in the clinic or done in your local hospital and the condition of your child's ears will



guide the Audiologist or ENT Surgeon whether or not a BAHA is suitable for your child.

If this is the case, a soft band BAHA is trialled. Your child will try this until it is clear that a BAHA will be useful so a decision for the operation is made. Depending on your child's age, the soft band may also be a temporary measure until they are old enough for the operation.

- If the trial is successful, the Audiologist will make an appointment for you to see the ENT surgeon to discuss the surgery.
- If the trial is not successful, a BAHA will not be the best option for your child so other treatments may be explored with you.

About the BAHA surgery

Your child's ENT surgeon will discuss this in detail both in a clinic appointment and also on the day of surgery. They will answer any questions and ask you to give permission for the operation by signing a consent form.

The operation will be carried out while your child is under general anaesthetic. An Anaesthetist will talk to you about this on the day of surgery.

What will the operation involve?

The operations to insert the abutment or magnet implants are broadly similar but here are further details of the specific steps during surgery for each type of BAHA.

- Insertion of the abutment BAHA– the surgeon will make an incision (cut) behind the ear and fix the titanium implant to the skull. They will then attach the abutment to the implant. A 'healing cap' or protective cover will be put over the abutment to protect it while it heals. The incision will be closed with dissolvable stitches and covered with dressings.

- Insertion of the magnet BAHA– the surgeon will make a c-shaped incision around the proposed location of the magnet and fix a titanium implant to the skull. They will then screw a magnet onto the implant, close the incision and cover it with a head bandage.

Some children need to have this operation in two stages, particularly if their skull bone is very thin. The initial implant will be fixed in one operation, with the abutment or magnet inserted three to six months later.



Picture of a healing cap (courtesy of Cochlear Bone Anchored Solutions AB, © 2019)

Are there any risks?

All surgery and anaesthesia carries a degree of risk but we will do everything we can to minimise it.

The risk of the anaesthetic will depend on your child's medical condition(s). Risks cannot be removed completely but modern equipment, training and medicines have continued to make anaesthesia safer. An Anaesthetist will be with your child throughout their anaesthetic to monitor their progress and to help them to wake up as comfortably as possible.

There is a risk of bleeding and possible infection with any operation. Blood loss during surgery is usually minimal and we will give your child antibiotics to reduce the risk of infection.

The implants may occasionally work loose from the skull bone – this is often connected to an infection in the area.

Lastly, your child may not find adequate hearing benefit from the BAHA.

Going home after the operation

If your child is recovering well from the surgery and anaesthetic, they will be able to go home later on the day of surgery or the following day.

We will give your child a course of antibiotics to reduce the risk of infection. Please complete the course even if your child is feeling better.

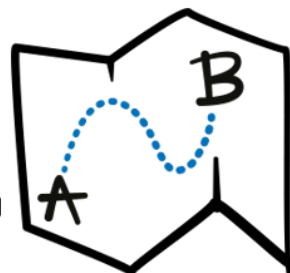
Some children will still be a bit swollen and uncomfortable when they get home. Carry on giving your child paracetamol and/or ibuprofen pain relief according to the instructions on the bottle or packet.

Looking after the operation site

Keep the wound clean and dry for the first week after the operation. After this, take care when hair washing or brushing. The sticky paper stitches will fall off in a few days – the other stitches are dissolvable so will not need to be removed. Your child should not go swimming or take part in sports or PE lessons until they have seen the ENT surgeon at their follow up appointment.

If your child had an abutment BAHA inserted, there will be a dressing under the healing cap. Do not remove this until the dressing clinic appointment on Magpie Ward one week after the operation. The dressings under the healing cap may be replaced. Please be aware that the implants for the abutment BAHA take longer to heal than the magnet BAHA one.

If you see any signs of infection, take your child to your family doctor (GP) or the nearest Accident and Emergency (A&E) department immediately. During office hours, you can also ring the ENT secretaries on 020 7813 8220 to arrange review



or advice from a member of the ENT team. Signs of infection include:

- Your child is in a lot of pain and pain relief does not seem to help
- Your child has a temperature of 38°C or higher
- The operation site is red or inflamed, and feels hotter than the surrounding skin
- There is an unpleasant smell or ooze from the operation site

Follow up appointments

We will make a follow up appointment with the ENT surgeon around one month after the operation. If your child is having the abutment attached during a second procedure, we will confirm the timing for this.

An audiology appointment will be booked for two to three months after the operation.

Fitting the hearing processor

Once the wound has healed, the hearing processor will be fitted and reprogrammed. This is usually the same processor that was fitted on the soft band. In the meantime, your child should

continue using the soft band until they see the audiologist. Do not attempt to put the soft band processor onto the implant as this may damage the integration.

The fitting appointment will involve reprogramming of the BAHA as the settings are different for a softband, abutment and magnet. When fitting a magnet, the audiologist will need to trial different strengths to find out which one is most suitable for your child. The magnet needs to be strong enough so stay on and not slide off with small movements, but not too strong it will cause redness and swelling, as the time for the skin to heal will delay your child's use of the processor on the implant.

Your child will need to slowly build up the usage on the magnet over the next one to two weeks, but this does not apply to the abutment. The fitting process can take slightly longer with a magnet than with the abutment. It is important to keep the processor attached to a safety line following surgery, as it may not be as secure as a soft band.

Once your child has been using the hearing aid for a few weeks, the Audiologist will then continue to assess your child's hearing with the BAHA and arrange appropriate follow ups.

