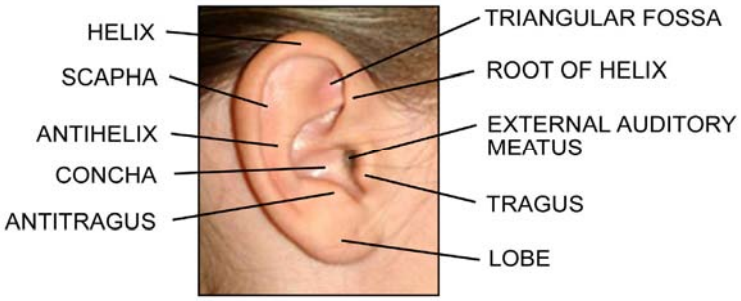
Microtia

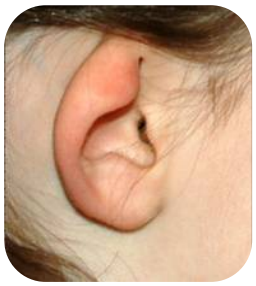
What is microtia?

Microtia (*mī KRŌ sha*) is the incomplete development and growth of the outer ear. This can lead to a small, abnormally-shaped or absent ear. It usually involves one side, though both ears may be affected in some children.

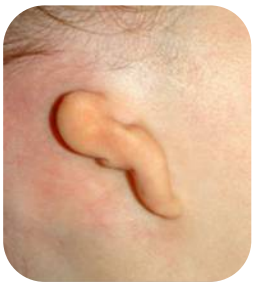
Normal ear anatomy



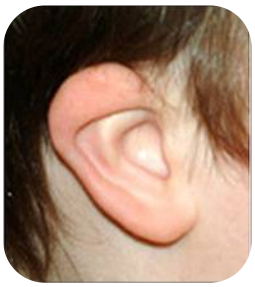
Microtia can be divided into 4 types:



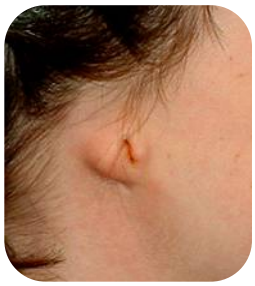
Grade 1: The ear is small but it has most of the features of a normal ear. The ear canal is usually open.



Grade 3: The ear lobe is present but in a different position. There is often a small bud of cartilage. These children usually have aural atresia.



Grade 2: The ear is small and missing some features. The ear canal may or may not be open. When there is no ear canal it is called aural atresia.



Grade 4: When the ear is missing it is called anotia.

Will my child have other problems related to the microtia?

Some children with microtia also have a small jaw on the same side. This is called hemifacial microsomia (HFM).

About 10% of children with microtia have related abnormalities. These may include facial clefts, eye abnormalities, heart defects, abnormal kidneys, and vertebral abnormalities.

Why does my child have microtia?

Exposure to high doses of vitamin A and maternal diabetes during pregnancy are two of the known causes of microtia. There are also some syndromes associated with small ears, including Treacher-Collins syndrome, Oculoauricolovertebral syndrome, and Goldenhar's syndrome.

Microtia may run in your family. A specific gene has not been identified yet. Currently there are no tests available to identify a cause of microtia.

What should we do for our child?

Start by having your child's hearing tested. We expect that your child will have some hearing loss in the small ear. The hearing test will also measure the hearing in the normally shaped ear. Children with normal hearing in one ear usually develop normal speech and language.

There are two main types of hearing tests, BAER (brainstem auditory evoked responses) and behavioral testing (audiogram). BAER testing is performed before your child is old enough to cooperate with behavioral testing. Behavioral testing is done when the child is mature enough to cooperate. Other tests will be recommended, depending on your child's age.

This table provides an outline of our recommendations for your child:

Age	Recommendations	
Infancy (0-12 months)	• Routine well-child care • Hearing evaluation	• Hearing loss intervention if necessary • Renal (kidney) ultrasound
Toddlers (1-3 years old)	• Routine well-child care • Hearing evaluation	• Speech and language evaluation
Preschool (3-5 years old)	• Routine well-child care • Hearing evaluation	• Speech and language evaluation • Dental assessment
Early school (5-7 years old)	• Routine well-child care • Hearing evaluation • Speech and language evaluation • Dental assessment	• CT scan of the temporal bones (for children with hearing loss) • Neck X-rays • Academic accommodations, as needed

What are the treatment options for microtia?

There are three options for treating microtia. A decision regarding which option may be best for your child depends on many things. Some issues to consider when deciding which option is best for your child are: the degree of microtia, the possibility of aural atresia repair, and patient and family preferences. Open discussions between your providers, family members, and most importantly, your child, will guide you in making the best choice.

No treatment

You may decide to leave the ear as it is. If you choose this option, the ear canal can not be opened to improve the hearing in that ear.

Prosthesis

An artificial ear can be made from silicone, using a mold of the opposite ear as a template. This can be done when the child is at least 6 years old. There are 2 ways to secure the ear prosthesis to the head.

- **Adhesive retained** – special glue is used to attach the prosthetic ear over the microtia.
- **Implant retained** – surgically-placed titanium posts are used to support the prosthetic ear using a system of magnets and clips. The microtia is removed. This option requires 2 surgeries.

Surgical reconstruction

There are 2 types of surgical ear reconstruction, depending upon the material used to create a new ear. Your child must be at least 6 years old for this option.

Rib reconstruction

Your child's own cartilage (autogenous) and skin are used to create a larger ear. Three surgeries are required. Your child will need anesthesia for each surgery.

- **1st stage** – cartilage is borrowed from your child's rib cage and carved to create the new ear. This surgery takes about 4 hours. Your child will need to stay in the hospital for 2 nights after surgery. They will need to come back to the clinic the following week to have some of the bandages removed. Your child will not be able to participate in strenuous activity for 2 weeks after this surgery.
- **2nd stage** – the ear lobe will be moved to the lower part of the framework that was created during the first surgery. This procedure takes about 1 ½ hours. Your child will be able to go home on the day of surgery. All the stitches are dissolvable. Your child will not be able to participate in strenuous activity for 2 weeks after this surgery.
- **3rd stage** – a skin graft is used to create the space behind the ear. This procedure takes about 2 hours. You child will be able to go home on the day of surgery. They will need to come back to clinic about 1 week after surgery to have the bandage removed. Your child will not be able to participate in strenuous activity for 4 weeks after this surgery.

Medpore

A premade synthetic ear framework is used to define the new ear. The Medpore framework is covered by tissue, fascia and skin from the surrounding area. This usually requires 2 surgeries.

What are the advantages and disadvantages of the treatment options?

Observe

Details	Advantages	Disadvantages
No treatment	• No risk	• Appearance of ear • Psychosocial issues

Prosthesis

Details	Advantages	Disadvantages
Adhesive-retained	• Appearance of ear • No surgery	• Daily maintenance • Ear may fall off • Ear cannot be worn in chlorinated water • Expensive and often not covered by insurance • Ear does not change color with sun exposure; need to have ears for different seasons
Implant-retained  	• Appearance of ear • Secure retention	• Appearance of implant site • Daily maintenance of implant sites • Expensive and often not covered by insurance • Ear cannot be worn in chlorinated water • Ear does not change color with sun exposure; need to have ears for different seasons. • Requires 2 surgeries, including removal of the microtic ear • Need to ensure lifelong access to prosthetic ears • Unable to pursue other forms of reconstruction in the future • More difficult to incorporate atresia repair

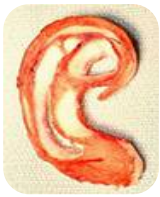
To Learn More

- Otolaryngology 206-987-2105
- Your child's healthcare provider
- www.seattlechildrens.org

Free Interpreter Services

- In the hospital, ask your child's 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.
- For Deaf and hard of hearing callers: 206-987-2280 (TTY).

Reconstruction

Details	Advantages	Disadvantages
Autogenous rib 	• Autogenous tissue • Minimum maintenance • Atresia repair is possible	• Appearance of ear • Requires 3 to 4 surgeries • Possibility of complications • Donor sites – incisions at chest and groin
Medpore 	• Less donor site morbidity • Less variability in carving	• Requires 1 to 2 surgeries • Foreign body • Possibility of complications • More difficult to perform atresia repair

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