MICROTIA

Presented to you by:
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What is microtia?

- Microtia is a congenital abnormality in which the external part of a child’s ear is underdeveloped and usually malformed. The defect can affect one (unilateral) or both (bilateral) ears. In about 90 percent of cases, it occurs unilaterally.

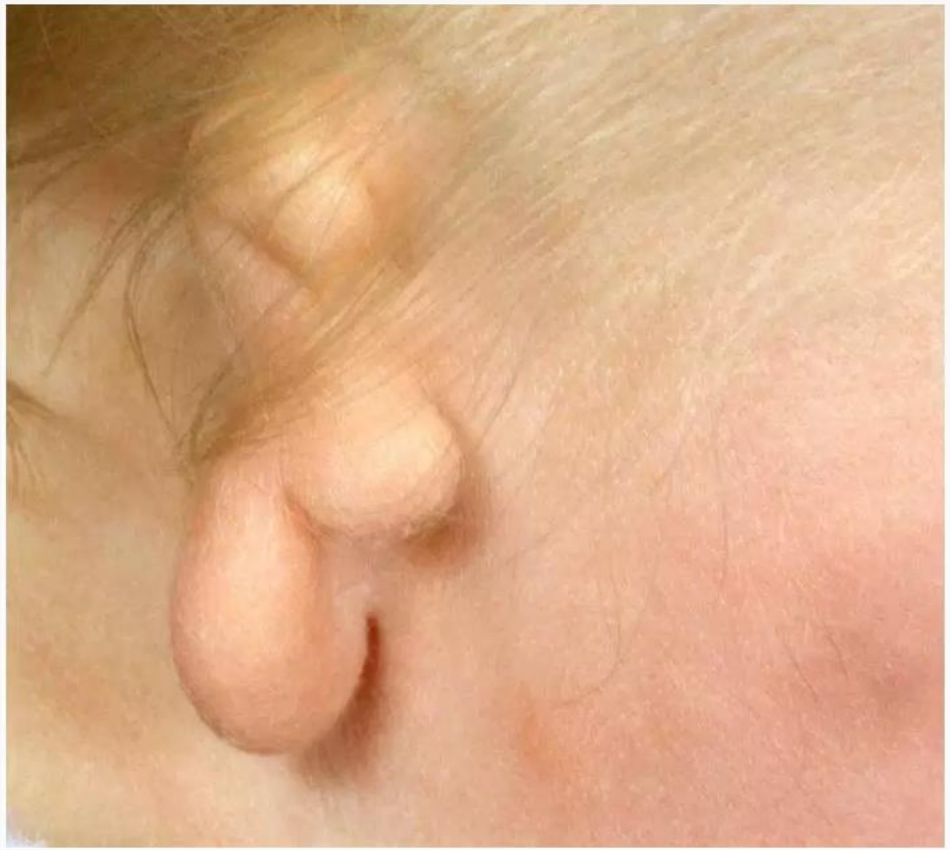
Four grades of microtia

- Microtia occurs in four different levels, or grades, of severity:
- Grade I. Your child may have an external ear that appears small but mostly normal, but the ear canal may be narrowed or missing.
- Grade II. The bottom third of your child’s ear, including the earlobe, may appear to be normally developed, but the top two-thirds are small and malformed. The ear canal may be narrow or missing.

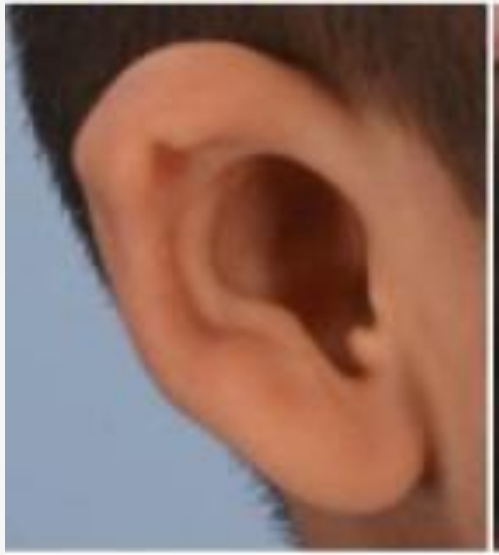
Four grades of microtia

- Grade III. This is the most common type of microtia observed in infants and children. Your child may have underdeveloped, small parts of an external ear present, including the beginnings of a lobe and a small amount of cartilage at the top. With grade III microtia, there is usually no ear canal.
- Grade IV. The most severe form of microtia is also known as anotia. Your child has anotia if there is no ear or ear canal present, either

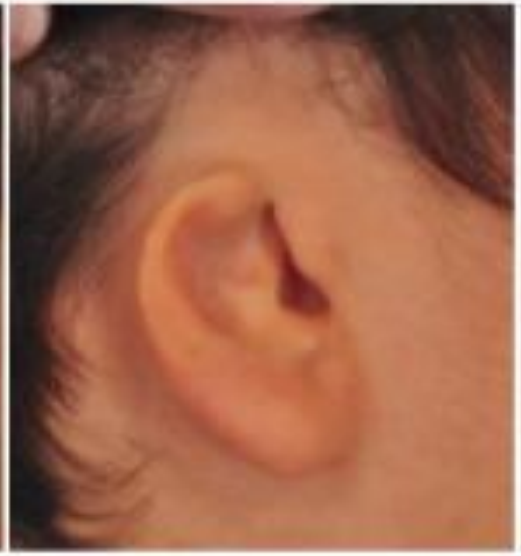
Image: Microtia



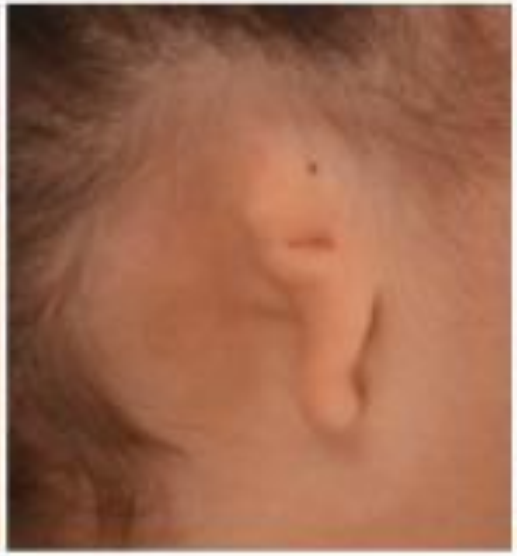
Least Severe → Most Severe



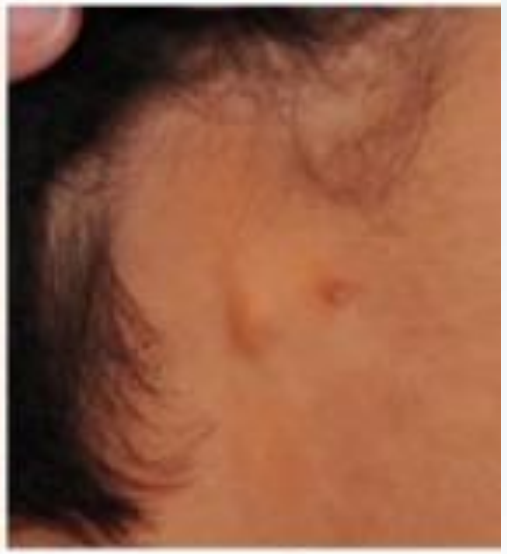
The ear is smaller but still looks like an ear because most normal features are present



Some normal features are present but the upper ear is severely deficient. The canal may be present or absent.



A small piece of cartilage is present just above the ear lobe which is displaced upward and forward. The canal is almost always absent.



Anotia is when there is a complete absence of the ear and canal.

What causes microtia?

- Usually develops during the first trimester of pregnancy, in the early weeks of development.

- Its cause is mostly unknown but has sometimes been linked to drug or alcohol use during pregnancy, genetic conditions or changes, environmental triggers, and a diet low in carbohydrates and folic acid.

What causes microtia?

- The use of the acne medication Accutane (isotretinoin) during pregnancy can also cause microtia.
- Another possible factor that could put a child at risk for microtia is diabetes, if the mother is diabetic prior to pregnancy. Mothers with diabetes appear to be at higher risk for giving birth to a baby with microtia than other pregnant women.

What causes microtia?

- Microtia doesn’t appear to be a genetically inherited condition for the most part.
- In most cases, children with microtia don’t have any other family members with the condition.
- It appears to happen at random and has even been observed in sets of twins that one baby has it but the other doesn’t.

What causes microtia?

- Although most occurrences of microtia aren’t hereditary, in the small percentage of inherited microtia, the condition can skip generations.
- Also, mothers with one child born with microtia have a slightly increased (5 percent) risk of having another child with the condition as well.

How is microtia diagnosed?

- Pediatrician should be able to diagnose microtia through observation. To determine the severity, the doctor will order an exam with an ear, nose, and throat (ENT) specialist and hearing tests with a pediatric audiologist.
- It’s also possible to diagnose the extent of your child’s microtia through a CAT scan, although this is mostly done only when a child is older.

How is microtia diagnosed?

- The audiologist will evaluate your child's level of hearing loss, and the ENT will confirm whether an ear canal is present or absent. Your child's ENT will also be able to advise you regarding options for hearing assistance or reconstructive surgery
- Sometimes microtia appears alongside other craniofacial syndromes, or as part of them. If the pediatrician suspects this, your child may be referred to craniofacial specialists or therapists for further evaluation, treatment, and therapy.

Treatment options

- If your child is an infant, reconstructive surgery of the ear canal can’t be done yet. If you’re uncomfortable with surgical options, you can wait until your child is older. Surgeries for microtia tend to be easier for older children, as there’s more cartilage available to graft.

Treatment options

- It’s possible for some children born with microtia to use nonsurgical hearing devices. Depending on the extent of your child’s microtia, they may be a candidate for this type of device, especially if they’re too young for surgery or if you’re postponing it. Hearing aids may also be used if an ear canal is present.

Treatment options by surgery

- Rib cartilage graft surgery
- Medpor graft surgery
- Prosthetic external ear
- Surgically implanted hearing devices

Rib cartilage graft surgery

- This surgery 2 to 4 procedures over a span of several months to a year.
- Rib cartilage is removed from your child’s chest and used to create the shape of an ear. It’s then implanted under skin at the site where the ear would have been located.
- After the new cartilage has fully incorporated at the site, additional surgeries and skin grafts may be performed to better position the ear

Rib cartilage graft surgery

- Rib graft surgery is recommended for children 8 to 10 years of age.
- Rib cartilage is strong and durable. Tissue from your child’s own body is also less likely to be rejected as implant material.
- Downsides to the surgery involve pain and possible scarring at the graft site. The rib cartilage used for the implant will also feel firmer and stiffer than ear cartilage.

Medpor graft surgery

- This type of reconstruction involves implanting a synthetic material rather than rib cartilage. It can usually be completed in one procedure and uses scalp tissue to cover the implant material.
- Children as young as age 3 can safely undergo this procedure. The results are more consistent than rib graft surgeries
- However, there’s a higher risk for infection and loss of the implant due to trauma or injury because it’s not incorporated into surrounding tissue.

Medpor graft surgery

- It also isn’t yet known how long Medpor implants last, so some pediatric surgeons won’t offer or perform this procedure.

Prosthetic external ear

- Prosthetics can look very real and be worn with either an adhesive or through a surgically implanted anchor system. The procedure to place implant anchors is minor, and recovery time is minimal.
- Good option for children who haven’t been able to undergo reconstruction or for whom reconstruction wasn’t successful.
- Prosthetics do need to be replaced from time to time.

Prosthetic external ear

- However, some individuals have difficulty with the idea of a detachable prosthetic.
- Others may have skin sensitivity to medical-grade adhesives. Surgically implanted anchor systems can also raise your child’s risk for skin infection.

Surgically implanted hearing devices

- Your child may benefit from a cochlear implant if their hearing is affected by microtia. The attachment point is implanted into the bone behind and above the ear.
- After healing is complete, your child will receive a processor that can be attached at the site.
- This processor helps your child hear sound vibrations by stimulating the nerves in the inner ear.

Surgically implanted hearing devices

- Vibration-inducing devices may also be helpful to enhance your child’s hearing.
- These are worn on the scalp and magnetically connected to surgically placed implants.
- The implants connect to the middle ear and send vibrations directly into the inner ear.

Surgically implanted hearing devices side effects:

- These include:

1. Tinnitus (ringing in the ears)
2. Nerve damage or injury
3. Hearing loss
4. Vertigo
5. Leaking of the fluid that surrounds the brain

Impact on everyday life

- Some children born with microtia may experience partial or full hearing loss in the affected ear, which can affect quality of life. Children with partial hearing loss may also develop speech impediments as they learn to talk.

- Interaction may be difficult because of the hearing loss, but there are therapy options that can help. Deafness requires an additional set of lifestyle adaptations and adjustments, but these are very possible and children generally adapt well.

Thank you!

Have a nice day.