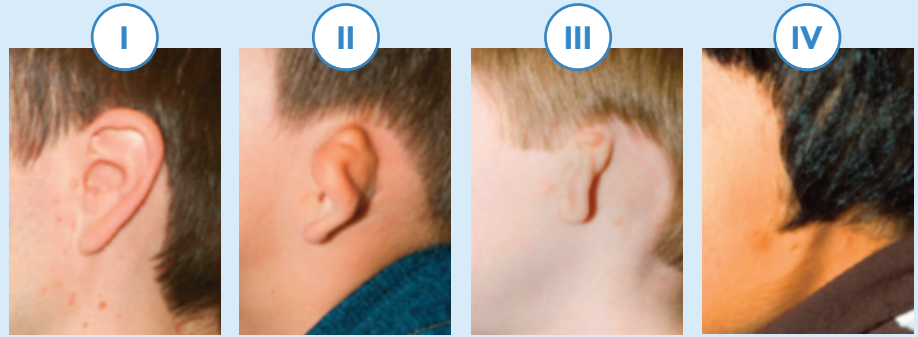




Microtia is a rare congenital birth defect in which the outer ear, or auricle, of a baby's ear is deformed, minimally present or wholly missing. It often affects only one ear and is often accompanied by hearing loss due to abnormalities of the ear canal or middle ear.

## MICROTIA IS CLASSIFIED INTO FOUR GRADES



In the U.S. alone, approximately **1,500** babies are born with microtia per year.<sup>1,2,3</sup>

## PREVALENCE

- Boys are more likely than girls to be affected, by 20-40%<sup>4,5</sup>
- Hispanic, Asian, Pacific Islander and Native American populations are 2-3 times more likely to experience microtia as non-Hispanic whites<sup>4</sup>



## PATIENT IMPACT

Microtia is not life-threatening but children may experience damage to their self-image. Aside from the physical effects, microtia can also impact children in the following ways:



Teasing, bullying and ridicule from other children<sup>6</sup>



Long-term mental health problems, including poor self-esteem, depression, anxiety, hostility, and aggression<sup>7</sup>



Mood disorders that persist into adulthood, with negative self-esteem and body image<sup>7</sup>


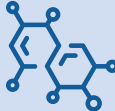
Given this emotional burden on a developing child, the ideal time to perform a surgical intervention is when the child is under 5 years of age and before elementary school where bullying is likely to occur.





## CURRENT STANDARDS OF CARE

There are two primary standards of care for surgical reconstruction of microtia, however these techniques may have limitations. Current methods are difficult to perform and few surgeons have the training and experience to obtain consistently good aesthetic outcomes.

RIB CARTILAGE EAR RECONSTRUCTION	ARTIFICIAL IMPLANTS
<p>A more than 60-year-old procedure that uses costal (rib) cartilage surgically removed from the patient and fashioned into the shape of an ear.<sup>8</sup></p> 	<p>A more than 30-year-old procedure that uses prefabricated alloplastic, synthetic implant constructed from porous polyethylene (PPE)<sup>10</sup></p> 
<p><b>Benefits:</b></p> <ul style="list-style-type: none"> <li>The cartilage used to create the ear-shaped implant comes from the patient and avoids body rejection<sup>9</sup></li> <li>Long-lasting ear implant<sup>9</sup></li> </ul>	<p><b>Benefits:</b></p> <ul style="list-style-type: none"> <li>Long-lasting ear implant<sup>10</sup></li> <li>Single, out-patient surgery<sup>10</sup></li> <li>Patient can be 4-6 years old<sup>10</sup></li> </ul>
<p><b>Potential Challenges:</b></p> <ul style="list-style-type: none"> <li>Obtaining enough rib cartilage to create an artificial ear requires “harvesting” of a substantial amount of cartilage from at least three ribs<sup>10</sup></li> <li>At least two separate hours-long procedures<sup>10</sup></li> <li>May result in chest deformity<sup>10</sup></li> <li>Patient generally must be at least 10 years old<sup>8</sup></li> <li>Current implants are rigid, do not feel like human ears, and can cause discomfort during sleep or underneath a helmet</li> </ul>	<p><b>Potential Challenges:</b></p> <ul style="list-style-type: none"> <li>Most successful procedure requires the use of a large skin flap taken from the scalp which requires significant surgical skill and may produce alopecia<sup>11</sup></li> <li>The stiff, non-biologic implant early on can lead to infection, hematoma, implant exposure, pain and stiffness</li> <li>At later timepoints, implant fracture, pigment changes and implant position changes may be seen<sup>11</sup></li> <li>Current implants are rigid, do not feel like human ears, and can cause discomfort during sleep or underneath a helmet</li> <li>Alloplastic implants can shatter if the child suffers a head impact and can become exposed if the skin covering splits</li> </ul>

## HOPE ON THE HORIZON

Striking innovations in reconstructive surgery may offer a new and better option for those born with microtia. Biotechnology is evolving towards 3D-bioprinting for customized implants grown from living cells.

3DBio Therapeutics is pioneering an end-to-end surgical solution using the patient’s own cells and integrated biotech manufacturing system. Its first-of-a-kind investigational ear implant, AuriNovo™, received orphan drug and rare pediatric disease designations from the US Food and Drug Administration (FDA) for treatment of microtia. The FDA has accepted the Company’s investigational new drug (IND) application and allowed a Phase 1/2a clinical trial to evaluate the safety and preliminary efficacy of using AuriNovo™. AuriNovo™ has not received FDA approval. The implant is made of the patient’s own ear cells and is designed to look and feel like the natural ear. It is expected that this reconstructive procedure will be able to be completed in one operation through an out-patient procedure, a major benefit to patients.

For further information on 3DBio Therapeutics and AuriNovo™, please visit [3DBioCorp.com](https://www.3DBioCorp.com).

- Luquetti, D.V., et al., Microtia: epidemiology and genetics. *American Journal of Medical Genetics Part A*, 2012. 158(1): p. 124-139.
- Luquetti, D.V., E. Leoncini, and P. Mastroiaco, Microtia-ano-tia: a global review of prevalence rates. *Birth Defects Res A Clin Mol Teratol*, 2011. 91(9): p. 813-22.
- Internal 3DBio Therapeutics Market Research Report
- Shaw, G.M., et al., Epidemiologic characteristics of anotia and microtia in California, 1989-1997. *Birth Defects Res A Clin Mol Teratol*, 2004. 70(7): p. 472-5.
- Canfield, M.A., et al. Epidemiologic features and clinical subgroups of anotia/microtia in Texas. *Birth Defects Research Part A: Clinical and Molecular Teratology*, 2009. 85 (11): p. 905-913.
- Johns, A.L., S.L. Lewin, and D.D. Im, Teasing in younger and older children with microtia before and after ear reconstruction. *Journal of plastic surgery and hand surgery*, 2017. 51(3): p. 205-209.
- Li, D., et al., Psychosocial outcomes among microtia patients of different ages and genders before ear reconstruction. *Aesthetic plastic surgery*, 2010. 34(5): p. 570-576
- Baluch, N., et al., Auricular reconstruction for microtia: A review of available methods. *Plastic Surgery*, 2014. 22(1): p. 39-43.
- Cugno, S. and N. Bulstrode, Autologous Ear Reconstruction, in *Modern Microtia Reconstruction: Art, Science, and New Clinical Techniques*, J.F. Reinisch and Y. Tahiri, Editors. 2019, Springer International Publishing: Cham. p. 63-90.
- Cabin, J.A., M. Bassiri-Tehrani, and A.P. Sclafani, Microtia reconstruction: autologous rib and alloplast techniques. *Facial plastic surgery clinics of North America*, 2014. 22(4): p. 623-638.
- Reinisch, J.F. and Y. Tahiri, Polyethylene Ear Reconstruction: A State-of-the-Art Surgical Technique, in *Modern Microtia Reconstruction: Art, Science, and New Clinical Techniques*, J.F. Reinisch and Y. Tahiri, Editors. 2019, Springer International Publishing: Cham. p. 91-110.

Certain information set forth in this document may constitute “forward-looking statements” under applicable securities laws. There are a number of factors that could cause actual results or outcomes to differ materially from those addressed in such forward-looking statements. Thus forward-looking statements are provided only as an opportunity to understand management’s beliefs and opinions in respect of the company’s future prospects.