TREACHER COLLINS SYNDROME

1. What is Treacher Collins Syndrome?

Treacher Collins Syndrome (or Mandibulofacial Dysostosis) is a rare genetic condition that affects the development of bones and tissues in the face. It generally occurs in one out of every 50,000 live births. This syndrome arises as a result of the incomplete formation of cheekbones, jaw, and ear structures during development in the mother's womb.

The most common misconception among the public is that Treacher Collins Syndrome is a state of intellectual disability. The intelligence of individuals with TCS is generally completely normal. Like everyone else, they go to school, have professions, and take part in social life.

2. What are the Symptoms of Treacher Collins Syndrome?

The most prominent feature of TCS is that the symptoms are symmetrical (bilateral) on both sides of the face. The severity of symptoms can vary greatly from person to person; while it follows a very mild course in some individuals, it may be more pronounced in others. The primary symptoms are:

- **Eye Structure:** Downward slanting of the eyelids, notching in the lower eyelid (coloboma), and a lack or scarcity of lower eyelashes.
- **Facial Bones:** Underdevelopment or lack of development of the cheekbones (malar hypoplasia), and consequent hollowness in the cheek area.
- **Jaw Structure:** The lower jaw being very small (micrognathia) and recessed (retrognathia).
- **Ears:** The auricle (outer ear) being small, malformed, or completely absent (microtia). Additionally, closure or narrowing of the external auditory canal is frequently seen.
- **Hearing:** Conductive hearing loss occurs in approximately 40-50% of individuals with TCS due to differences in middle ear structures.

3. How is Treacher Collins Diagnosed?

Diagnosis is usually made at birth or immediately after birth through a clinical examination. Doctors look for the presence of the characteristic facial features

mentioned above (downward-slanted eyes, small jaw, ear structure) and whether these are symmetrical.

- **Imaging:** X-rays or Computed Tomography (CT) can be used to support the diagnosis and examine the bone structure.
- **Genetic Testing:** A definitive diagnosis is made by detecting changes in the **TCOF1**, **POLR1B**, **POLR1C**, or **POLR1D** genes through molecular genetic tests.
- **Prenatal:** Significant differences in the facial structure of the fetus or an excessive increase in amniotic fluid (polyhydramnios) during ultrasound examinations may raise suspicion, and a prenatal diagnosis can be made.

4. Genetic Inheritance: Is My Family at Risk?

- **New Mutations (De Novo):** Treacher Collins Syndrome is a genetic condition, but it is not always inherited from the family. Approximately 60% of cases occur through what is called a "de novo" mutation. This means the syndrome is not present in the mother or father; the change occurs completely randomly during the formation of the pregnancy. In this case, it is important for parents not to blame themselves; this does not result from something they did or did not do.
- **Autosomal Dominant Inheritance:** In the majority of cases (more than 90%), inheritance is in an "autosomal dominant" manner. It is usually associated with changes in the **TCOF1**, **POLR1B**, or **POLR1D** genes. If one of the parents has the disease-causing genetic change, the risk of the syndrome appearing in each new birth is 50%. If no clinical symptoms or genetic changes are detected in the parents, the risk for siblings is quite low; however, the risk may be considered slightly higher than the general population due to possible germline mosaicism in the parents (the mutation being present only in reproductive cells).
- **Autosomal Recessive Inheritance:** In this type, changes occur in the **POLR1C** or **POLR1D** genes. In very rare cases (1-2%), the syndrome can be transmitted through an "autosomal recessive" pathway where both parents are carriers. If both the mother and father are carriers (heterozygous), the risk of the child being affected in each pregnancy is 25%, and the risk of being a carrier is 50%. Individuals who are carriers in this type generally do not show any symptoms.
- **General Risk:** If an affected individual decides to have children, the risk of passing this condition to their children can be up to 50%, depending on the type of inheritance. Therefore, it is important for families to receive genetic counseling in light of molecular genetic tests and clinical evaluations.

5. Genetic Counseling and Family Planning

Genetic counseling is of vital importance for individuals diagnosed with TCS or their families. The risk of the syndrome recurring varies according to the type of genetic inheritance in the family. Since both dominant and recessive genetic types exist, it is recommended that the mother, father, and child be tested together for the purpose of definitive and accurate genetic counseling:

- **Risk Assessment:** Genetic specialists determine risk rates for other family members or future children by examining the family tree and performing molecular tests.
- **Prenatal Options:** If the genetic change (mutation) in the family is known, a diagnosis can be made during pregnancy through chorionic villus sampling (CVS) or amniocentesis.
- **Preimplantation Genetic Diagnosis (PGD):** Using IVF (In Vitro Fertilization) methods, embryos can be genetically tested before being placed in the mother's womb, and embryos that do not carry the syndrome can be selected.

6. Risks and Monitoring (Why is it Important?)

Treacher Collins Syndrome is not just an aesthetic difference; it requires regular monitoring of certain medical needs. A multidisciplinary approach (ENT specialist, plastic surgeon, orthodontist, genetic specialist, etc.) is essential.

1. **Airway Safety:** In infants, a small jaw and a tongue that falls backward can block the airway. This situation can lead to sleep apnea or serious respiratory distress. Monitoring respiration from birth is of vital importance.
2. **Nutrition:** The jaw structure and sometimes an accompanying cleft palate can make it difficult for babies to suck and swallow. Special bottles or nutritional support may be required for adequate nutrition and weight gain.
3. **Hearing and Speech:** External and middle ear anomalies can cause hearing loss. The use of hearing aids in the early period is critical for the child's language and speech development. Speech therapy is also frequently necessary.
4. **Eye Health:** Problems with eyelid closure can cause the cornea (the transparent layer of the eye) to dry out. To prevent vision loss, the eyes must be kept moist, and regular eye examinations are required.
5. **Psychosocial Support:** Although the intelligence of individuals with TCS is normal, visible differences in the face can lead to social isolation or peer

bullying. Psychological support for the family and child, along with public awareness, is very important for them to have a healthy social life.

This booklet is a general information resource prepared for the purpose of increasing the awareness of Treacher Collins Syndrome (TCS) and creating awareness. However, it should not be forgotten that the information here does not replace professional medical advice, diagnosis, or treatment. TCS management and monitoring should be personalized according to your individual health status, the severity of symptoms (which varies greatly from person to person), your family history, and your genetic profile. The treatment approaches, surgical timings (for example, ages for ear or jaw reconstruction), and follow-up intervals in the booklet reflect general standards; your doctor or craniofacial team may change these periods according to your or your child's clinical needs. For any decision and monitoring process regarding your health, strictly consult your specialist physician or multidisciplinary treatment team.

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