THE CRANIOFACIAL DEFORMITY

Diagnosis: Craniofacial deformities, or alterations in the natural form of the face or skull, can be congenital or acquired. For those patients born with craniofacial anomalies, the obstetrician or pediatrician is the initial point of contact for appropriate medical treatment. Referrals should be made to a craniofacial center as soon as it is acceptable for the child to be evaluated. Accurate diagnosis at an early age not only avoids unnecessary emotional distress for the parents and family, but it also minimizes potential future problems associated with the deformities by early correction. For those patients with acquired deformities as the result of trauma or tumor resection, referral to a craniofacial center may be desirable to help restore facial function and appearance.

Etiology: While the pattern of embryonic craniofacial development has been well defined through extensive research, very little is known about the etiology of many craniofacial anomalies. Some are known to be primarily genetic in nature, while others are thought to be caused by environmental factors. A combination of both environment and genetics may play a role in the etiology; however, most of the time the cause is unknown.

Craniofacial Team: The care of craniofacial patients requires the expertise of super-specialized professionals from many health care fields.

New advanced computer systems enable the surgeon to perform complex photographic and radiographic analysis that aid in treatment planning.

Computer images of patient with orbital hypertelorism.
Multidisciplinary teams have been established at regional centers to provide the comprehensive care necessary to adequately evaluate and treat craniofacial patients and their families. No single physician can possess the expertise to evaluate and treat all the abnormalities of these patients.

The benefits of the team approach are numerous. Members of the craniofacial team work together to ensure that the patient is evaluated and treated in a coordinated manner and that all of his needs, both physical and psychosocial, are met. The team combines the expertise of each specialist to provide a level of comprehensive care that cannot be provided by a single physician, no matter how reputable.

These multidisciplinary craniofacial teams are found at a few major medical centers across the U.S. where the resources are available to provide the safest and most advanced treatment for patients suffering from facial anomalies. Regionalization also ensures that each team has a large enough patient load to maintain the necessary expertise for proper treatment. The more procedures they perform together, the better the team becomes. Consequently, operative time is decreased, complications are minimized, and results are improved. Craniofacial procedures performed on an irregular or occasional basis invite disaster and are not in the best interest of the patient.

The craniofacial team is directed by the craniofacial surgeon, a plastic surgeon who has received additional training extensively in craniofacial techniques and whose practice is predominantly dedicated to the treatment of facial anomalies.

At the Tennessee Craniofacial Center, we adhere to Dr. Tessier’s principles that, “Craniofacial surgery should be performed only if it is the main interest of that surgeon, and he has the support facilities of a major medical center.”

Dr. Sargent is the medical director of the center and the leader of the team. Other disciplines represented on the team include:

- Neurosurgery
- Ophthalmology
- Pedodontics/Orthodontics
- Otolaryngology
- Anesthesiology
- Speech Pathology
- Pediatrics
- Audiology
- Psychology
- Social Service
- Genetics
- Nursing
- Prosthodontics
- Clinical Coordinator
Each patient referred to the Tennessee Craniofacial Center undergoes an evaluation by the principle members of the team, with additional team members called in depending upon the individual needs of that patient. A group conference is held following these evaluations to discuss each patient. The goal of the team is to diagnose the physical and psychosocial problems and formulate a coordinated, comprehensive treatment plan. This is followed by execution of the treatment plan at the appropriate time, longitudinal follow-up, and collection of data on the team’s activities and results.

**Surgical Plan Established:** When Craniofacial Surgery is recommended as treatment for a specific anomaly, there are two distinct goals of this surgery. First, is the attempt to restore the patient to as near normal function as possible and to prevent future dysfunction. Secondly, surgery may be necessary to correct structural disfigurement in order to achieve optimal appearance. A patient suffering from a facial deformity may experience problems in dealing with his disfigurement emotionally or socially. Often, improvements in appearance following craniofacial surgery can lead to increases in self-esteem, self-confidence and social acceptance. The psychological benefit of craniofacial surgery is an extremely important goal of the surgery.

**Recent Advancements:** A number of advances have been made in surgical technique and technology as applied to craniofacial surgery. Calvarial bone grafts for the most part have replaced rib and hip grafts. These outer table split grafts are available in an assortment of sizes and shapes with less painful donor sites and less resorption compared to rib or hip bone.

Tremendous radiological advances have been made in the past ten years that have improved preoperative analysis of craniofacial deformities. The use of two- and three-dimensional CT scans has drastically enhanced our ability to analyze these complex deformities. Computer analysis of photographs and radiographs is also available and can provide further information for preoperative planning.

Another major advancement has been the application of rigid skeletal fixation to craniofacial surgery. The new techniques of rigid skeletal fixation combined with wide exposure have allowed the craniofacial surgeon to obtain much better stability and eliminate intermaxillary fixation in most cases. This technique offers significant advantages, particularly in children. It has improved our overall quality of results as well as decreasing morbidity.

**Follow-Up Care:** Treatment of craniofacial problems does not end with surgical restoration, but continues for many years. This follow-up should be conducted by the craniofacial team in order to maintain a continuity of care that assures the patient the best long term outcome. As a child grows and develops, asymmetries may result if areas of the face fail to develop equally; therefore, a child’s growth and development must be routinely followed. Sometimes it may be necessary to repair these asymmetries surgically. Often, major craniofacial deformities require multiple, staged procedures performed at different ages. Once treatment is initiated, it is important that follow-up care continues.