



The Oral and Maxillofacial Surgery Unit: Expansion and Purchase of New Equipment



Background

What is Oral and Maxillofacial Surgery?

Oral and maxillofacial surgery (OMS) is a specialization of dental medicine that focuses on surgical treatment of the oral cavity and its various components as well as on the facial skeleton. Treatments are usually classified as either minor surgery, which is conducted in the outpatient clinic, or major surgery, which is usually performed under general anesthesia in the hospital's operating rooms.

Minor surgery involves intra-oral operations, the excision of lesions and small tumors in the mucous membranes, and diagnostic biopsies of suspected tumors or malignant disease. Dentoalveolar surgery includes complex extractions of impacted teeth, the insertion of dental implants, and bone augmentation. OMS surgeons also perform standard surgical procedures in patients who require monitoring and supervision due to special medical conditions.

Major surgery includes several areas:

- Treatment of fractures of the facial skeleton
- Excision of benign and malignant tumors of the face and mouth, and reconstruction of surgical damage
- Repair of congenital and developmental defects of the facial bones, such as cleft palate, and correction of dentofacial anomalies (orthognatic surgery)
- Treatment of diseases and tumors of the salivary glands
- Treatment of limited motion of the lower jaw, surgery of the temporomandibular joint, arthroscopy of the temporomandibular joint, treatment of muscular problems that restrict jaw movement



Oral and Maxillofacial Surgery at Soroka

Soroka Medical Center is a major medical center that provides medical care to patients from the entire southern region of Israel. Soroka is unique in that it is the only medical center that serves the Negev, an area that covers 60% of Israel's landmass. OMS surgery is a crucially important specialty at Soroka for a number of reasons.

- Soroka is the tertiary medical center closest to the conflict zone with Gaza. In the 50 days of warfare in the summer of 2014, for example, 1,263 casualties received treatment — among them 777 soldiers and 486 civilians—of whom 53 were severely injured. There were more than 60 helicopter landings on the hospital's helipad, evacuating the wounded from Gaza.
- Most of the casualties from the motor vehicle accidents that unfortunately occur on the long Negev roads are referred to Soroka.
- Because prenatal diagnostic services are under-utilized in our region, we are faced with a considerable number of congenital and developmental facial defects that require repair.
- Since we are the sole tertiary medical center in the region, we have undertaken to provide support and guidance to community dentists and physicians who are coping with complex cases and complications.

The existing facilities of the Oral and Maxillofacial Surgery Unit are small, crowded, and insufficient for the needs of our patients. Therefore, we plan to expand the unit from two treatment rooms to five treatment rooms and add rooms for administration and staff.

Two Moving Examples of How Oral and Maxillofacial Surgery Works to Save Lives at Soroka.

A New Face for Hadas Paz

Following is the English translation of an article by southern correspondent Gadi Golan published in the daily newspaper *Israel Hayom* (Israel Today) on August 13, 2015:

"I'm so excited to be a normal girl!"

Hadas Paz, was born with Crouzon Syndrome, resulting in a disparity between her facial and cranial development. The complex surgery she underwent at Soroka Medical Center will change her life.

Hadas Paz from Dimona, is only 10 years old, but having been born with Crouzon Syndrome, she has experienced much more than her share of suffering. Now, following recent complex surgery at Soroka Medical Center in Beer Sheva, everything is about to change.

Hadas' mother, Nurit Paz, explained: *"Many years of her short life have been filled with much suffering. But more than the physical suffering, she experienced emotional pain, due in great part to children's cruelty. When they saw Hadas, a child with an appearance that is "not normal," they took it as a cue to tease her, laugh at her, hassle and hurt her, which caused Hadas to become very withdrawn. Today, after the surgery, I am allowing myself to smile and be happy and my daughter is no less happy and content. In another two months, as promised us by the doctors, she will look entirely different."*

Yesterday, they both met with the three physicians who operated on Hadas: Dr. Eldad Silberstein, plastic surgeon, Dr. Miki Gidon, neurosurgeon, and Dr. Navot Givol, Director of the Oral and Maxillofacial Surgery Unit at Soroka Medical Center. All noted that Hadas is recovering according to expectations.

Hadas has an older brother, Tomer (22), who also has Crouzon Syndrome, but according to Nurit, "Fortunately, Tomer underwent surgery and has only a mild, unnoticeable imperfection in his face, but Hadas required extensive treatment of the distorted cranium which did not develop properly, along with cosmetic surgery, in order to achieve a pleasant, agreeable appearance."

According to Dr. Silberstein and Dr. Eitan Bar-Droma, an oral and maxillofacial specialist, the Crouzon Syndrome created heightened intracranial pressure that caused blood flow distortions. "There is a disparity between the face and the skull and the lower jaw since they do not develop at the same rate," they explained. They described how, during the complex surgery, they cut the frontal bone of the cranium and the facial and jaw area, detached it, and separated the center of the face, including the eye sockets, the nose, and the cheeks, and then reconnected everything to a bone-expanding instrument.

"I am very happy I had the operation," Hadas related excitedly, "but more than anything else I am thrilled to see the doctors who performed a miracle on me and I hope that in a few weeks I will take off the apparatus and be a normal girl!"



Ran Abitbul: Putting a Smile on a New Face

Golani soldier Corporal Ran Abitbul (19) sustained a severe injury to one side of his face on the first day of the ground operation in Gaza during Operation Protective Edge. A bullet entered the right side of his face and exited through his throat, severely injuring his eye socket, chin, and ear, and damaging nerves. Ran was evacuated to Soroka in critical condition, and rushed to the operating room. The initial operation, led by Dr. Dani Kaplan and Dr. Navot Givol, took ten hours.

Ran underwent a series of subsequent surgeries aimed at restoring normal functionality. Using the undamaged side of his face as a "mirror," Soroka's skilled surgeons reconstructed the damaged side of his face using flexible titanium plates. Ran regained optimal functionality of his face within six months. He and his parents are extremely grateful to Soroka for saving his face and allowing him to live a normal life.



The Vision

The Oral and Maxillofacial Surgery Unit at Soroka Medical Center provides state-of-the-art medical care to casualties of conflict, war, and road traffic accidents in the Negev, as well as to patients who suffer from congenital or developmental problems of the facial skeleton. Since Soroka is the sole tertiary medical center in the Negev, the Oral and Maxillofacial Surgery Unit serves as an advisory center for dentists throughout the community, for both soldiers and civilians, while providing solutions to complex problems in the field of oral and maxillofacial surgery.

The Need

In order to provide comprehensive medical care, the Oral and Maxillofacial Surgery Unit at Soroka Medical Center needs to operate both independently and as part of a multidisciplinary team in complex cases, such as those multi-trauma patients or complex oncologic patients who suffer from cancer in the head and neck region.

Soroka has allocated considerable resources in terms of personnel and the acquisition of equipment to meet the goal of providing the best possible treatment in the field of OMS.

However, our needs exceed our available resources. We have the skills, knowledge, and desire to give residents of the Negev the state-of-the-art treatment that they deserve. In order to do this in the best way possible, we require additional space to expand the Oral and Maxillofacial Surgery Unit from two treatment rooms to five treatment rooms and to add rooms for administration and staff.

In addition, we are currently in need of several items of additional equipment. We need your generous assistance to acquire the items described below..

Donations and Donor Recognition

Expansion of the clinic \$500,000



The current clinic consists of only two treatment rooms. Our plans call for the construction of five treatment rooms with the suitable equipment and rooms for administration and staff, as pictured here:



Your generous donation will benefit our patients by allowing us to expand the unit so that we can provide treatment in a modern, spacious, well equipped clinic with sufficient room to meet all patient needs.

A plaque acknowledging your generosity will be placed in a prominent location at the entrance to the Oral and Maxillofacial Surgery Unit.

New Equipment

- **Cone Beam CT Device \$120,000**

This device makes it possible to perform panoramic and cephalometric imaging (imaging of the head). The Cone Beam CT makes possible rapid (7 to 10 seconds) tomographic scanning with 20 times less radiation than a regular CAT scan and provides 3D imaging used for both diagnosis and treatment planning.

Your generous donation is needed for the purchase of the critically important Cone Beam CT. A plaque acknowledging your generosity will be displayed in a prominent location in the unit.



- **Piezosurgery Ultrasonic Device \$35,000**

This device allows surgeons to cut through bone in a precise and delicate manner in surgeries to repair congenital malformations of the jaw and in jaw alignment surgeries.

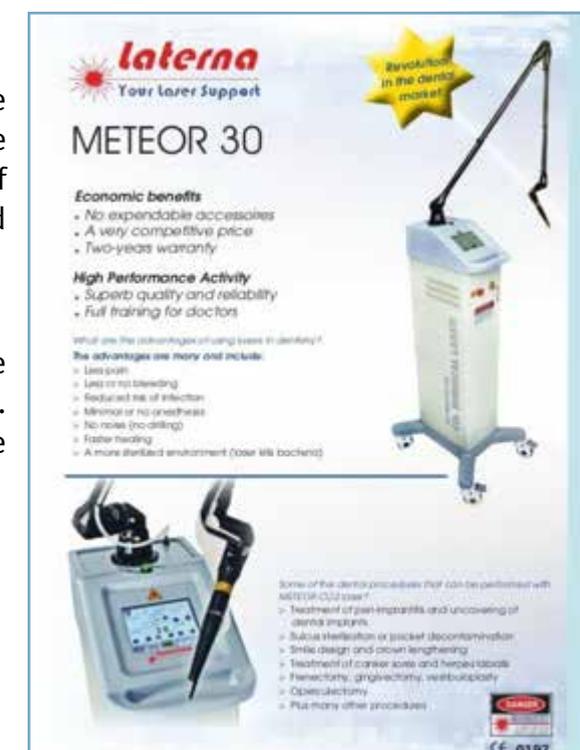
Your generous donation is needed for the purchase of this surgical device. A plaque acknowledging your generosity will be displayed in a prominent location in the unit.



- **CO2 Surgical Laser Device \$24,000**

This device is used in treating soft tissues in the mouth and on the face, including, for example, the uncovering of dental implants, the treatment of canker sores and herpes labialis, smile design, and crown lengthening.

Your generous donation is needed for the purchase of the Laterna Meteor 30 CO2 surgical laser device. A plaque acknowledging your generosity will be displayed in a prominent location in the unit.



- **Arthroscopy Pump \$17,000**

Soroka has invested in the optical and surgical systems in the developing field of arthroscopy of the jaw joint. We require a water pressure adjustable pump system to clear debris, control bleeding, and improve visualization in the joint during arthroscopic treatments.

Your generous donation is needed for the purchase of an arthroscopy pump. A plaque acknowledging your generosity will be displayed in a prominent location in the unit.

- **Arthroscopy Documentation System \$12,000**

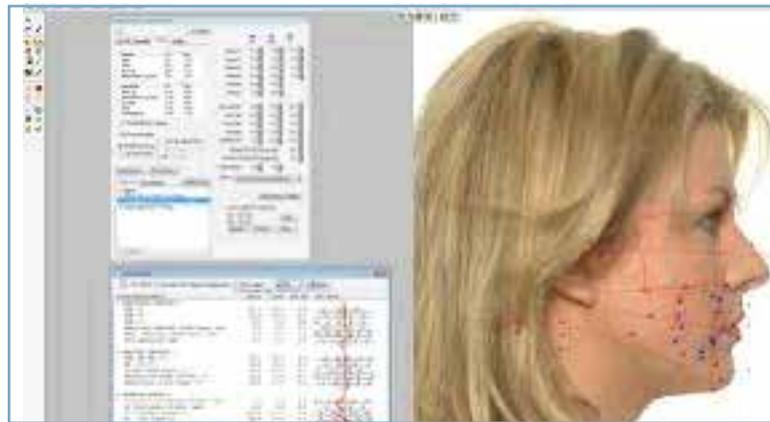
Arthroscopy of the jaw joint is a developing field. Arthroscopy is a minimally invasive surgical procedure on a joint in which an examination and sometimes treatment of damage is performed using an arthroscope, an endoscope that is inserted into the joint through a small incision. As mentioned above, Soroka has invested in optical and surgical systems for this treatment. We require a documentation system for follow-up, study, and research.

Your generous donation is needed for the purchase of this system. A plaque acknowledging your generosity will be displayed in a prominent location in the unit.

- **Dolphin Imaging Software for Planning Jaw Alignment Surgeries \$8,000**

This software allows physicians to plan jaw alignment surgeries by taking the patient's data and computing the desired outcome. It is also possible to use the data to build a three-dimensional model.

Your generous donation is needed for the purchase of this software. A plaque acknowledging your generosity will be displayed in a prominent location in the unit.



- **Portable Intraoral X-ray Device \$7,000**

The Nomad Pro hand-held portable x-ray device obviates the need for anti-radiation protection in the walls, making it possible to take intraoral x-rays anywhere. The image is sent directly to the computer.



- **Articulator for Planning Surgeries \$4,000**

Incorrect jaw alignment, or malocclusion, can have an enormous impact on overall health and may result, for example, in facial and jaw pain, speech issues, head and shoulder pain, dizziness, and ringing in the ears. The articulator assists us in planning dental surgeries performed to correct jaw alignment. We require two of these devices, each of which costs \$2,000.



- **Fiziodispenser for Dental Implant Insertion \$4,000**

The fiziodispenser is a special bone drill that allows for control of speed, torque, and water cooling of speed and water cooling. This device is used for insertion of dental implants. Dental implantation is the preferred treatment option in cases of missing teeth and jaw rehabilitation. In the first stage, we require two of these devices, at \$2,000 each.

Your generous donation is needed for the purchase of this important device. A plaque acknowledging your generosity will be displayed in a prominent location in the unit.



- **Camera for Surgeries \$4,000**

This digital camera is used for documenting surgeries, and includes a system of lenses and lighting suitable for intra-oral photography. Documenting surgeries is important for follow up, teaching, and research.

Your generous donation is needed for the purchase of this camera. A plaque acknowledging your generosity will be displayed in a prominent location in the unit.



- **Smartboard and Projector \$2,500**

A smartboard, an interactive whiteboard that uses touch detection for user input (for example, scrolling and right mouse-click) in the same way as normal PC input devices, is needed for teaching, staff meetings, and for training residents and medical students.

Your generous donation is needed for the purchase of a smartboard. A plaque acknowledging your generosity will be displayed in a prominent location in the unit.

- **Laptop Computer \$2,000**

A laptop computer is needed for visual data processing and three-dimensional imaging, especially for use in planning surgeries.



We hope that you will partner with us on this project so that we can provide our patients with the best medical care possible in this important and often life-changing field.

Research in Oral and Maxillofacial Surgery

Research comprises an important part of the activities of the physicians at the Oral and Maxillofacial Surgery Unit at Soroka. The topics below are among those we aim to study.

Cone Beam Computed Tomography (CBCT)

Cone Beam Computed Tomography (CBCT) is a very low-radiation medical imaging technique that consists of X-ray computed tomography where the X-rays are divergent, forming a cone. In addition to the advantage of low radiation, this modality is characterized by rapid scanning time. Currently, CBCT is not used enough in oral and maxillofacial surgery. We aim to research the comprehensive usage of this important technique in oral and maxillofacial surgery both in diagnosis and in 3-D treatment planning. CBCT will be particularly valuable in cases of facial deformities, obstructive sleep apnea, and severe facial trauma.

Determining Antibiotic Protocol for Craniofacial Surgeries

During surgical treatment of patients with deformities of the face and skull, connections between the brain and the nose and the paranasal sinuses and skin are sometimes established. This is in addition to chronic fistulas between the oral cavity and the nasal cavity. This situation calls for an appropriate evidenced-based anti-microbial regimen. We aim to conduct research in this area.

The Use of Bone Substitutes in Cleft Palate Surgery

The use of bone graft for cleft palate is standard procedure. Bone is harvested from the iliac bone in order to fill the cleft. The use of bone substitutes will make the procedure simpler because there will be no need to surgically open a donor site and therefore donor site morbidity

will be avoided and surgical time and hospital stay shortened. The main issue to investigate is the ability of permanent teeth to erupt through bone substitutes.

The Use of Distraction Osteogenesis

Distraction osteogenesis is a procedure that moves two segments of bone slowly apart in such a way that new bone fills in the gap. It is an alternative to classic osteotomies, in which a bone is cut to shorten or lengthen it or to change its alignment. The advantages of distraction osteogenesis are better long-term stability and the ability not to use bone grafts in cases in which bone graft treatment is usually mandatory. The role of distraction osteogenesis in the treatment of cleft palate has not yet been established. We aim to conduct research in this area.

Donations and Donor Recognition

In order to conduct research in these areas, we need to establish appropriate research facilities and add two full-time research assistants to our staff. This requires a budget of US \$1,000,000. Your generous support can assist us in reaching our research goals in this field. A plaque acknowledging your generosity will be placed in a prominent location in the facility. We hope that you will partner with us to support research that has the potential to facilitate great advances in oral and maxillofacial surgery.



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