

Healer

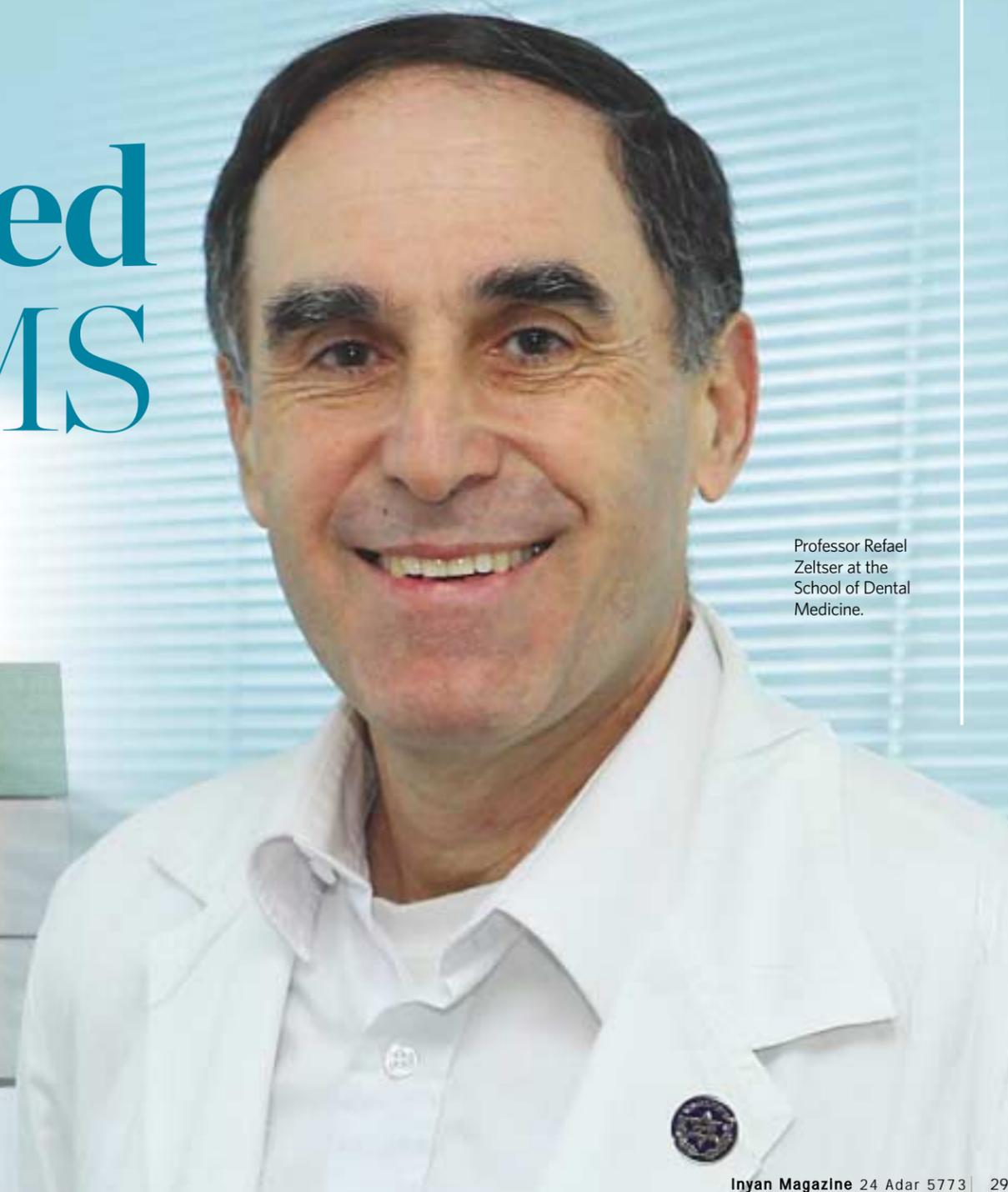
of Shattered Dreams

BY RHONA LEWIS

This is the place where shattered dreams are mended. At Hadassah-Hebrew University Ein Kerem Medical Center in Jerusalem, students attending the prestigious dental school relax under white umbrellas during a break, surrounded by flowers that wave in a gentle breeze. In the operating theaters of the surrounding buildings, in his department, Professor Refael Zeltser, head of oral and maxillofacial surgery at this world renowned medical center, together with a multi-disciplinary team of surgeons, reconstructs facial features so that patients can rebuild their lives.



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Professor Refael Zeltser at the School of Dental Medicine.

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“YOUR FACE is an enormous part of your self-image,” begins Professor Zeltser in his spacious, tidy office on the second floor of the School of Dental Medicine. “If a person’s leg is injured or lost, the adjustment to a different level of function and aesthetics is difficult but possible. However, when a person’s face is different due to congenital defects or trauma, the adjustment is more difficult because the person’s entire self-image and place in society is put in question.”

As a case in point, Professor Zeltser describes the time that “winter turned into summer.” A young teenage girl in shapeless clothing sat in his office huddled over in an attempt to hide her face. “She wasn’t only hiding her face; she was hiding herself from society. But I saw that apart from her malformed jaw, she had good facial structure, and I had high hopes for successful surgery.”

Immediately after the surgery Professor Zeltser was away from the hospital for three months, and postoperative care was administered by other doctors in the department. When Professor Zeltser eventually saw the girl again, he hardly recognized her. Not only were her facial features even, she now took pride in dressing well and grooming herself. She was thrilled with the results and said she would never have believed that her appearance would change so much.

“Truthfully, the more extreme the disfigurement, the more favorable the results,” says Professor Zeltser. “When the problem is minor, dramatic changes are rare.”

Professor Zeltser mentions a patient who came in for surgery to enlarge a very small, recessive chin. “Surgery took place after we had discussed the patient’s options. As a surgeon, I was satisfied with the results,” he says. “The patient, however, wasn’t. He complained that his chin was



asymmetrical; he wanted an additional millimeter on one side of his chin. I told him that everyone’s body is asymmetrical.”

The Science Behind the Stories

In a unique interpretation of a well-known verse from *Mishlei*, Professor Zeltser shows how science today upholds what Shlomo Hamelech wrote: “Death and life are in the power of the tongue” (18:21).

“The areas of the brain can be organized into topographic maps, where different parts of the cortex correspond to different parts of the body. As could be expected, the size of any zone correlates to the precision of motor control and sensory discrimination possible in the corresponding limb. The area in the cortex that is allocated for the tongue is the largest. A poppy seed under your foot will not cause you much discomfort, but



Professor Zeltser during surgery.

Proudly Jewish in Pretoria

Professor Zeltser received his degree in dentistry in 1978. In December 1990, he traveled to Pretoria, South Africa, for a two-year postgraduate fellowship under Professor Kurt Butow, where he specialized in correcting facial malformations. When anti-Semitism reared its ugly head, the young doctor refused to keep quiet. When he noticed Sister Bernadi holding her finger in the shape of a hook over her nose after another nurse asked her about the identity of the new doctor, Dr. Zeltser curtly informed the sister that any further discrimination would result in her dismissal.

Similarly, once a patient refused to be treated by Dr. Zeltser because he was a Jew. When the attending nurse told the patient that Dr. Zeltser was Israeli, he capitulated. "Israelis are good doctors," he said in explaining his change of heart to the nurse. But he had lost his chance because Dr. Zeltser refused to treat him.

At the end of Dr. Zeltser's contract, Professor Butow offered him the position of a lifetime — head surgeon at the hospital and a partnership in his prestigious private clinic. Dr. Zeltser, however, went home ... to Israel.

the same tiny seed in your mouth will bother you to no end," Professor Zeltser points out.

"Just as the facial area is physically sensitive, it also plays an enormously important role psychologically and emotionally. When facial features are in their proper place, a person can live a full life. The challenge represented by distorted facial features is a matter of life and death."

This is where oral and maxillofacial surgery steps in. Maxillofacial surgeons treat diseases and remove tumors in the face and neck. They help with injuries from trauma, congenital defects in the head, neck, face, jaws (maxillofacial), and mouth (oral), and work with dental implants. In some countries, including the United States, this is a recognized specialty of dentistry; in others, including England, it is recognized as a

medical specialty.

After obtaining a degree in dentistry, maxillofacial surgeons undergo further training in a subspecialty such as head and neck cancer, cosmetic facial surgery, pediatric maxillofacial surgery, or cranio-maxillofacial trauma reconstruction. With this specialized training, surgeons are equipped to reconstruct a face, giving the patient a new lease on life.



A 1913 dentist's office, displayed in a corridor of the School of Dentistry.

"I always tell my students, 'Whatever you have altered through medical procedures, you must reconstruct,'" says Professor Zeltser. "As much of this rebuilding as possible is done inside the mouth so that scarring is kept to a minimum."

Building Bones

"Trauma touches every area of a person's life. Therefore, successful treatment must be multidisciplinary," explains Professor Zeltser. "The maxillofacial surgery, neurosurgery, pediatric surgery, ophthalmology, plastic surgery, and social services departments all work together."

For almost three decades Professor Zeltser has been treating congenital defects, injuries resulting from trauma, benign and malignant tumors, and complications resulting from infections and unsuccessful treatments. The oral reconstruction, dental implants, and sinus-lift procedures that are included in corrective surgery begin with bone augmentation — building bones. Bone that was never there, lost through injury or removed with tumors, must be replaced. Teeth must have a foundation to rest on.

"A successful surgeon needs to be an artist. He needs to see the problem in three dimensions and evaluate the results before he starts to work," says Professor Zeltser.

Bone augmentation is achieved through grafting or through stretching bone. There are two main types of bone grafting — autografts and allografts. With an autograft, the bone used to build the jaw is obtained from the patient. Often, the jaw is reconstructed by replacing the missing bone with the slender fibula, one of two bones that form the lower part of the leg. All bone requires a blood supply in the transplanted site; therefore, some of the blood vessels are transplanted along with the bone to ensure that it lives.

One drawback to autografts is that an additional surgical site is needed. This in effect adds another potential location for postoperative pain and complications.

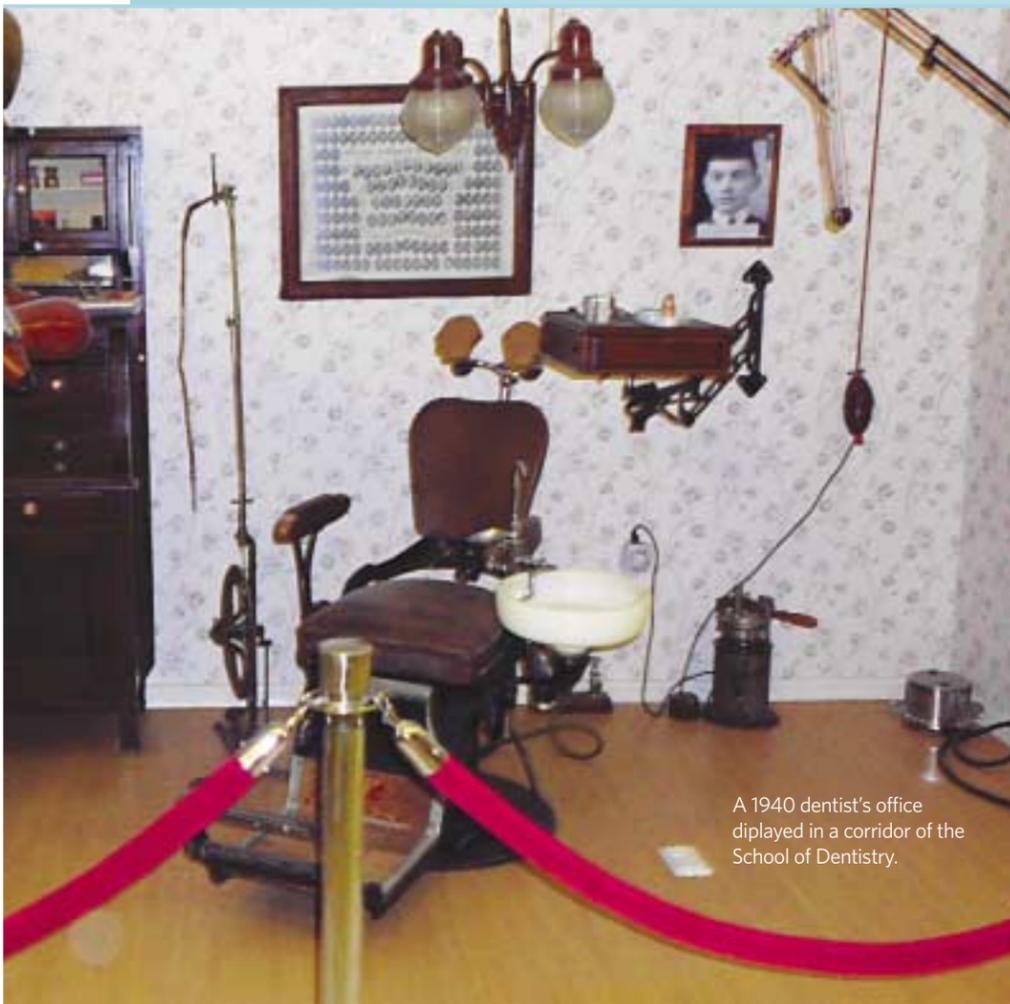
With an allograft, bone that has been harvested from someone other than the patient is used to replace the missing bone. This bone can be taken from a hospital bone bank. Alternatively, it is available in blocks or as a powder that looks like sugar crystals and can be crafted into the shape of the missing



bone. Artificial bone can also be created from ceramics such as calcium phosphates.

Bone augmentation doesn't always mean grafting. Bones can also be stretched. This is the science of distraction osteogenesis, a technique first implemented by Russian orthopedic surgeon Gavril Ilizarov. Basically, the bone is fractured into two segments and a small metal rod is inserted. The two bones are gradually moved apart by turning screws attached to the bones half a millimeter twice a day. The gap formed is gradually filled by new bone tissue that grows.

One millimeter is the optimal bone distraction rate. Lengthening too fast overstretches the soft tissues, resulting not only in pain but in the bone's inability to fill the gap. On the other



A 1940 dentist's office displayed in a corridor of the School of Dentistry.

A Lesson in Apartheid

Doctor Zeltser didn't learn only about congenital deformities in Pretoria. Earlier that year, in February 1990, President Frederik Willem de Klerk had announced Nelson Mandela's release from prison and begun the slow dismantling of the apartheid system. But it was only four years later, in the multiracial democratic elections in 1994, won by the African National Congress under Nelson Mandela, that apartheid actually ended.

While the intervening years saw a weakening of apartheid laws, many of them were still in place; segregation was very much a part of hospital protocol. Shortly after his arrival, when Doctor Zeltser instructed a nurse to transfer a black man to a whites-only ward at two o'clock in the morning after having stitched his cheek back together, he didn't realize that he was going against the accepted practice.

The next morning, Doctor Zeltser could find no reason to explain why the man was alone in the ward while the other twenty white patients had been transferred to other wards — until the head nurse called him in to teach him about apartheid.

hand, if the distraction is too slow, the bone will harden before the full lengthening process is complete. When the desired length is reached after ten to twenty days, a consolidation phase of about a month follows in which the bone is allowed to heal.

The benefit of distraction osteogenesis is that both bone length and the volume of the surrounding soft tissues are simultaneously increased.

"Just as a balloon that is filled with air adapts to the pressure, soft tissues elongate to adapt to the new structure," explains Professor Zeltser.

Fixing Futures

As Professor Zeltser searches through the files on his computer, he describes a

tiny fraction of the technological advances that make intricate surgery possible.

"Before surgery begins, we take a CT scan of the patient's features. This is entered into a computer so we can prepare for surgery by actually navigating through the patient's mouth — without even seeing him! During surgery, special infrared cameras in the drill communicate with cameras in the operating theatre and convey the drill's movements to the computer. The slightest deviation from the optimal path automatically stops the drill."

Professor Zeltser's department treats a wide variety of congenital defects such as cleft palate, dentoalveolar cleft, hemifacial microsomia, and facial

syndromes — defects that are a source of great suffering for children functionally, aesthetically, and psychologically.

Often, Professor Zeltser's work spans years of surgery and treatment. This is particularly true for cleft palate surgery. Repair of the cleft lip and preliminary repairs to the nose are carried out at the age of two months. The cleft palate is repaired when the baby is about ten months.

"Many years ago, I operated on a baby with a cleft palate whose parents are Belzer chassidim. While preliminary

repairs are carried out when the child is under one year old, in some cases follow-up operations may take place years later. In this case, when the boy was about nine years old, I took a bone from his hip and used this to build his jaw. This bone became the scaffold into which dental implants were inserted in follow-up operations that took place between the ages of fifteen and eighteen.”

I am reminded of one of the displays that I viewed in the corridors surrounding Professor Zeltser’s office: a window showing sets of teeth that can be matched to the patient’s shape of face. Like all cleft palate patients, this boy was monitored by the team until he reached adulthood. “The boy came to visit me just after he turned twenty. He had gotten married four months earlier,” Professor Zeltser says matter-of-factly, with a smile.

Then he shows me a photo of a young girl. With her even features and blond hair pulled back into a tight pony tail like any girl her age, I would never have imagined the long hours she and her parents spent in the halls of the medical center.

“This girl was born with a severely deformed jaw. X-rays showed that she had no teeth in the front of her mouth and only one or two teeth in the back,” Professor Zeltser says. The treatment combined the services of an orthodontist, who is a specialist in dental alignment, a speech therapist, and a maxillofacial surgeon.

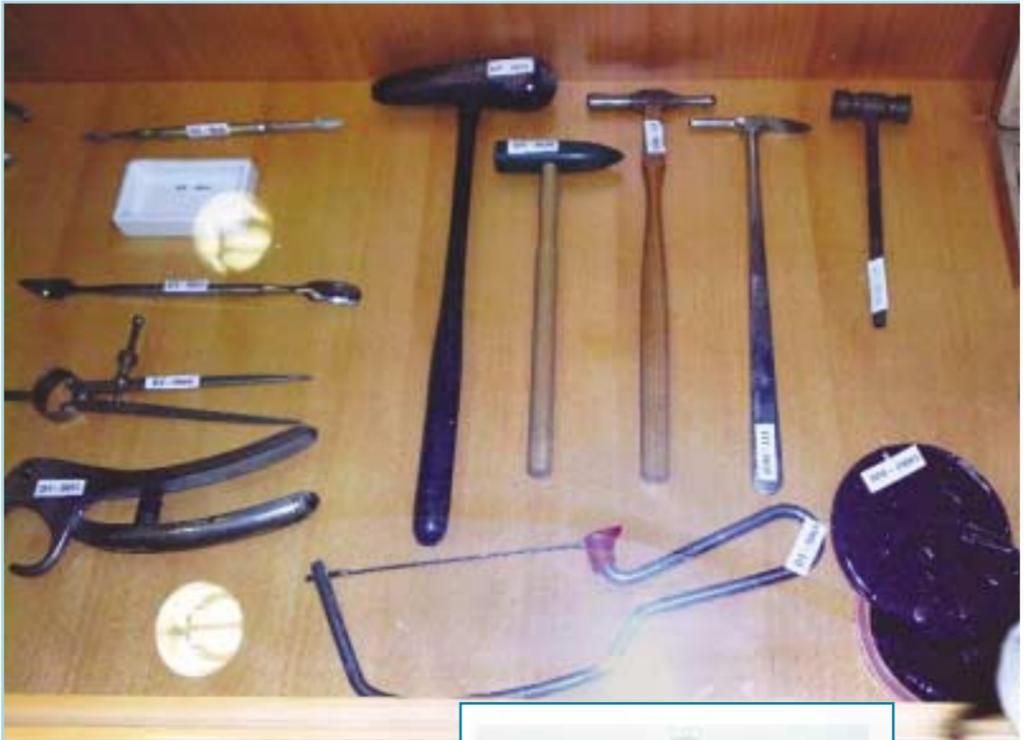
“When the girl was in her late teens and she had stopped growing, we began a series of operations. The first problem we tackled was moving forward her bottom jaw, which was way too far back. Then we began distraction osteogenesis to increase the amount of bone so that we could insert dental implants.”

After glancing at me quickly to check whether I am brave enough to look, Professor Zeltser shows me a photo of the operation. “It’s very much like a sandwich,” he explains. “The bone is sliced open. Powdered allograft bone, calcium and growth peptides that will increase the amount of bone formed, are

inserted, and then the area is closed up.”

Since the floor of the sinus region was too close to the area where dental implants would be placed, this young patient also underwent a sinus lift to increase the amount of bone in her upper

Then he shows me a photo of an injury that would probably be classified by the Israeli military as a “light” injury. When a bullet struck the face of this young, dark-haired soldier, it exited cleanly, blasting away part of the



(Above) Dentistry tools on display at the School of Dentistry.

(Right) Illustrations in Prof. Zeltser’s office.

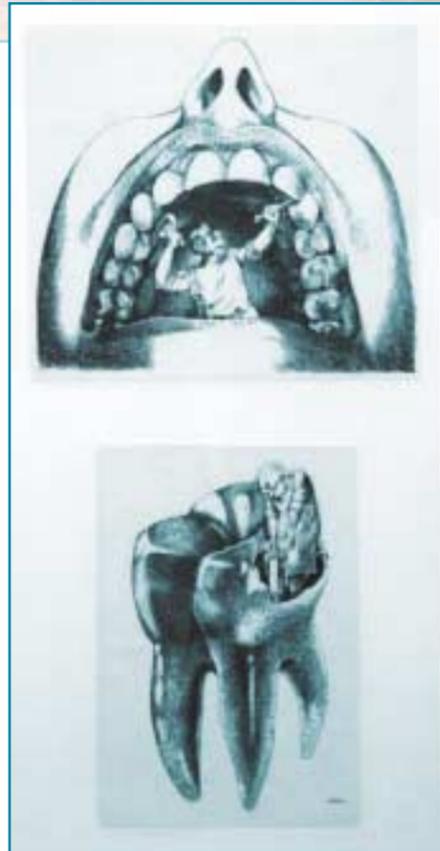
jaw. Professor Zeltser shows me scans contrasting the amount of bone in the girl’s jaw before and after the operations.

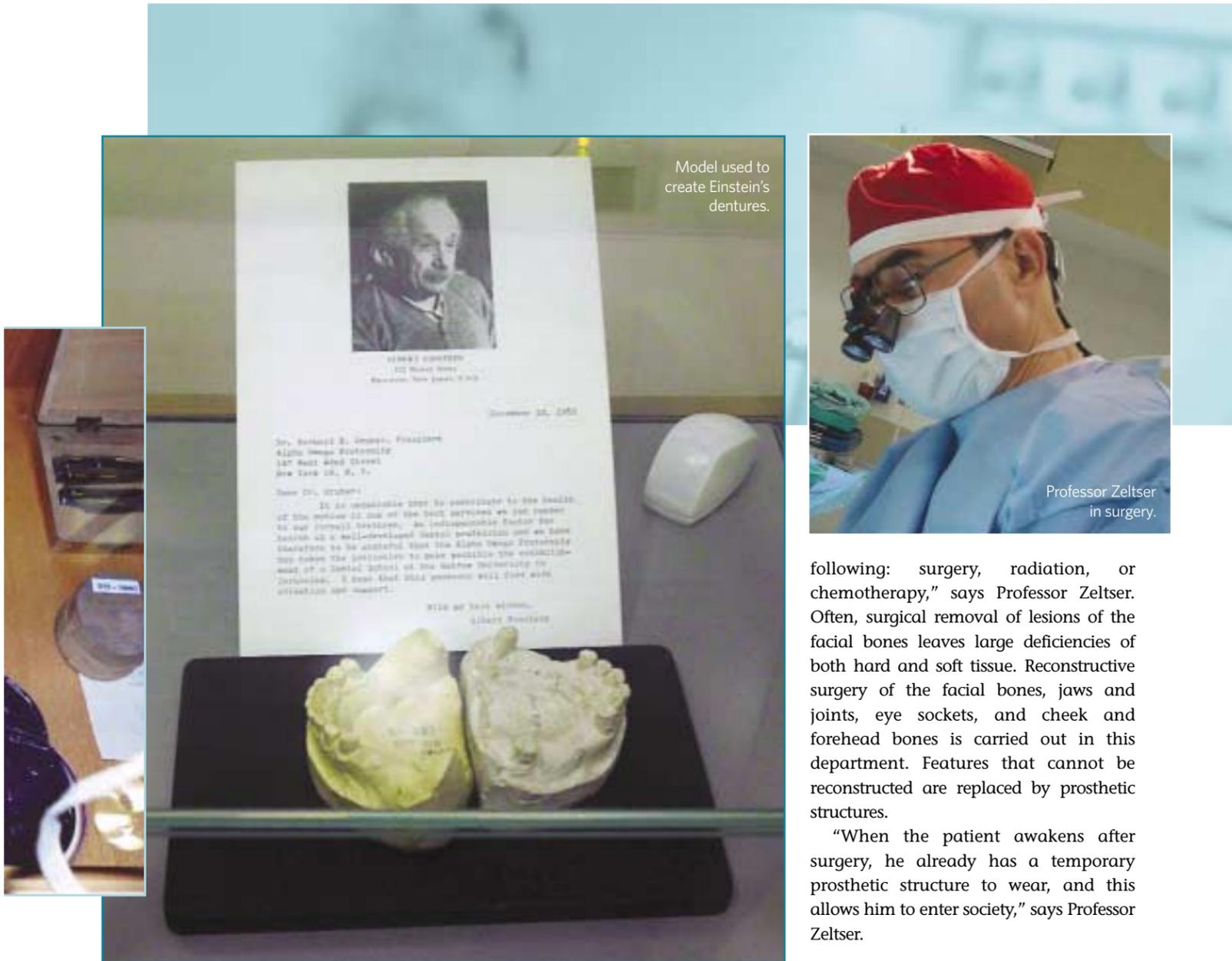
“We added a full ten millimeters to her jaw,” he says.

Three months after the last operation, she was married. “Her parents told me that thanks to her changed appearance, they were able to find her a *shidduch*,” says Professor Zeltser.

Soldiering On

Unfortunately, war and terror victims have given the department a great deal of experience treating oral and maxillofacial trauma. “I am still monitoring one soldier who was injured twenty years ago,” Professor Zeltser says.





Model used to create Einstein's dentures.

Professor Zeltser in surgery.

following: surgery, radiation, or chemotherapy,” says Professor Zeltser. Often, surgical removal of lesions of the facial bones leaves large deficiencies of both hard and soft tissue. Reconstructive surgery of the facial bones, jaws and joints, eye sockets, and cheek and forehead bones is carried out in this department. Features that cannot be reconstructed are replaced by prosthetic structures.

“When the patient awakens after surgery, he already has a temporary prosthetic structure to wear, and this allows him to enter society,” says Professor Zeltser.



As I prepare to leave, I point out to the professor a verse from *Tehillim* that I read as I traveled by bus to the interview. Dovid Hamelech cries out to Hashem, “Heal me, Hashem, for my bones shudder with terror” (6:3). The *ruach hakodesh* that parents are granted when they name a child is clearly evident here; Professor Refael Zeltser is certainly a healer of bones.

Moved, he jots down the reference on a pad next to the sketches of distraction osteogenesis that he made during the interview. Professor Zeltser was genuinely touched to learn that his given name so clearly defines his role in life, not only as a healer, but as a healer of bones. ■

soldier’s cheek and jawbone — and his dreams for his future.

“Once the soldier was stabilized, we got to work,” Professor Zeltser says. It took many surgeries over the course of three years, but eventually this soldier was able to face life once again. During the first year, his jaw was reconstructed using bone grafts from other parts of his body. These bones were then elongated through distraction osteogenesis. Implants were inserted in the second year, and in the third year the final restorative steps were carried out.

“Now married, the soldier comes in once a year for follow-up exam and to check on his oral hygiene,” Professor Zeltser concludes.

On to Oncology

During the past few years, 50 percent of the patients treated in the department have been those suffering from cancer of the head and neck, who have undergone extensive surgery. The oral cavity is comprised of many diverse tissues, including those that make up the teeth, gums, and alveolar bones, and soft tissue such as those in the tongue and salivary glands. Any of these can develop cysts or tumors, benign or malignant, which must be removed. After all, even benign tumors can eventually destroy anatomical structures.

“Typical oncological treatment in the neck and head region includes two of the