Dimpling is a small visible indentation on the surface of the skin; they may appear on various parts of the body, such as the abdomen, back, shoulder, or limbs. When dimples occur on the face, they are highly prized because the face is highly visible, and it is an important outlet for expressing thoughts and emotions beyond words. Dimples tend to accentuate a smile, thus increasing the perception of attractiveness, sociability, and facial beauty. However, some people see dimples as unattractive and would prefer to have the dimples removed; this aversion is more common for cases of chin dimples.

The presence of dimples on the face has been appreciated by many people and in different cultures. This is a characteristic inherited in an autosomal dominant fashion; the cleft chin dimple is on chromosome 5 and cheek dimples are on chromosome 16, with variable penetrance. The inheritance of facial dimples follows the basic principles of the law of segregation and the law of independent assortment. Facial dimples are inherited as autosomal dominant traits, and in people having the homozygous recessive genotype, the ability to express the facial dimple trait is lacking.

The chin dimple is an example of variable penetrance, because other factors, such as the environment and other modifier genes, operate to affect the phenotypic expression of the actual genotype. When 1 of the 2 parents expresses the trait, there is a 25% to 50% likelihood of passing it to their children; however, if both parents express the trait, the probability doubles (50% to 100%). Other traits inherited in an autosomal dominant pattern include free earlobe, early-onset myopia, bent little finger, ACHOO (autosomal Dominant Compelling Helio Ophthalmic Syndrome) syndrome, tongue rolling, eye color, middigital hair, and hand clapping.

Dimples can be transient or permanent, depending on the cause or factor responsible for their occurrence. The process of growth and development could contribute to this. Excessive fat deposition, which disappears with the aging process, causes transient dimples, whereas the stretching or lengthening of muscles during growth can lead to gradual obliteration of the facial feature. This explains why some dimples are more common and conspicuous in younger age groups. Dimples on the face are commonly situated on the cheeks and chin, although the latter occurs less frequently. Structurally, cheek dimples occur because of a defect created by muscles on the face, whereas the chin dimple is a result of an underlying bony defect. Cheek dimples occur lateral to the angle of the mouth, and in a study published in 1998 by Pessa et al., cheek dimples were shown to be caused by the presence of dermocutaneous insertion of the fibers on the inferior bundle of the double or bifid zygomaticus major muscle. Smiling makes the overlying skin draw inward and the dimple becomes larger, thereby making it more visible. Either or both of the cheeks can present with 1 or more dimples, but it is more common to have dimples occurring on both cheeks than only 1 cheek. Incomplete fusion of the 2 halves of the mandibular bone in utero is responsible for a cleft chin, resulting in a Y-shaped fissure at the center of the lower jaw bone.

Regardless of cultural background, there is increased demand for the creation of facial dimples, and many people seek the expertise of cosmetic surgeons to achieve facial dimple creation. Although this is a minor procedure, it has been gaining some recent popularity and press coverage; it is not new, and its history dates back several decades. Dimple surgery can be performed by a skilled surgeon with the patient under local anesthesia. Most of the techniques, if not all, involve adherence of the buccinator muscles...
of the face to the dermis of the skin; this can be achieved with transcutaneous sutures or by an open technique that is performed through the mouth, which would show no scarring. Like natural dimples, dimples created surgically typically appear with smiling, although surgically created dimples may be visible most of the time depending on the surgical technique used. The dimple may be present even without smiling for the first several days, or even weeks, after surgery; eventually, the surgically created dimple will most likely be present with smiling as scar develops between the inner skin and the buccinator muscle.\(^1\,4-7\) When one surgically creates a dimple, the ideal location would be the area where a less obvious faint dimple is present with smiling; thus the pre-existing dimple is made more prominent. If 1 cheek has a dimple, the ideal location for the other dimple would be marked at the corresponding site that would create symmetry of the face. If a pre-existing dimple is not present, the ideal location would be the intersection between a horizontal line from the corner of the mouth and a vertical line from the lateral canthus of the eye.\(^5\)

Potential complications of dimple surgery consist of sudden disappearance of the dimple, asymmetry, foreign body reaction, bleeding, and injury to a nerve (buccal branch of the facial nerve) or salivary gland duct (Stensen duct), which are rare.\(^1\,5\,6\) Many techniques have been introduced to create dimples.\(^4-7\) They can be categorized into 2 major categories, namely blind coring and open approaches. The goals of this article consist of introducing a novel technique for dimple creation surgery and reviewing the literature that has been published in this field.

### Surgical Technique

The patient’s face and mouth were prepared, and either local or general anesthesia was administered, depending on patient preference. Hypodermic needles were then passed through the marked line into the buccal mucosa. A soft tissue trephine bur connected to a latch-type handpiece (10 to 20 rpm) was used to punch the buccal mucosa while the opposite hand pushed the buccal mucosa inward and supported this area externally (Fig 1). The soft tissue cylindrical fragment (consisting of the mucosa, a small portion of the buccinator muscle, and a part of the Bichat fat pad) was removed with scissors, and the skin was kept intact.

Next, the most important part of procedure was performed, namely defect closure. Defect closure was performed by placing a nonabsorbable suture (No. 3-0 silk) through the cheek mucosa, muscle, and Bichat fat pad on 1 side of the defect; then through the dermis layer of the skin; and finally, through the Bichat fat pad, the buccinator muscle, and the mucosa on the other side of the defect. In some cases a submucosal absorbable suture (No. 3-0 Vicryl; Ethicon, Somerville, NJ) is placed through the muscle on 1 side of defect, then through the dermis layer of the skin, and finally, through the muscle on the other side of the defect (some non absorbable materials such as; nylon and prolene, can be used, also). The knot is then tied, and the dimple is thereby created (Fig 2).

Patients were instructed to maintain good oral hygiene in the immediate postoperative period and advised not to smile fully during the first 2 weeks. The dimple became prominent in the initial few weeks after surgery and resembled a natural dimple (appearing only on smiling) within 4 to 6 weeks (Fig 3). Suture removal was performed 10 to 14 days after surgery (in nonabsorbable suture cases).

### Results

The postoperative results for 3 patients are shown in Figures 3-5. In total 20 patients have
undergone the dimple creation procedure using our technique; a total of 40 dimples were placed in those patients. Of the patients, 18 have been followed up for 1 year.

All patients had an overcorrected appearance of their dimples during the initial postoperative period for a duration of approximately 3 to 4 weeks. The dimples persisted in all patients after 1 year. Revision surgery was required in 1 case because the patient reported feeling that the dimples were asymmetric. Foreign body reaction was seen in 1 case in which suturing was performed with nonabsorbable material (No. 3-0 silk), so incision and drainage with routine antibiotic therapy were performed.

Reported complications with other techniques, such as hemorrhage and sudden disappearance of the dimple, were not noted with our technique, probably because of improved visibility and control during the surgical procedure (Figures 3-5).

**Discussion**

Dimples are genetically inherited, and thus this naturally given gift is not for everyone. Research has shown that parents with dimples will pass this attractive trait to their children. Studies of human facial anatomy have shown that dimples occur because of an abnormal insertion of the muscles of the face (dermocutaneous insertion of the fibers on the inferior bundle of the bifid zygomaticus major muscle) rather than a soft tissue defect.\(^1\) With the popularity of cosmetic surgery and celebrities with dimples, such as Cheryl Cole, Miranda Kerr, and Hilary Duff, there has been a recent increase in demand for dimple surgery, or “dimpleplasty.”

In Asia, women think that a dimple is an important part of a beautiful smiling face and can make them more confident. Unfortunately, not all women have dimples; furthermore, there is an increasing demand among Ira-
Many techniques have been introduced to create dimples. They can be categorized into 2 major categories, blind coring and open approaches. Bao et al in 2007 described a simple technique in which they used a syringe needle to guide a monofilament nylon suture through the dermis and the active facial muscles (usually the buccinator), a sling was formed between the skin and the buccinator muscle, the knot was tied, and the dimple was created. The shape of dimples was satisfactory, and hematoma or infection was not seen. Other advantages of their technique include the following: 1) mild postoperative swelling occurs and, consequently, patients can return to work or other activities 2 days after the operation; 2) it is easy to adjust the bulk of dimples by adjusting the tension of the knot and the amount of dermis tissue; and 3) no tissue was resected. On the other hand, blind coring of the soft tissue from the buccal mucosa to the dermis carries the risk of injury to the buccal branch of the facial nerves; furthermore, transcutaneous sutures can cause puncture scars and have been reported to cause foreign body granulomas.
Given the aforementioned disadvantages, Thomas et al.\(^7\) in 2010 introduced a new technique for improved surgical access as an alternative to blind coring methods. According to this technique, after patient preparation and induction of either local or general anesthesia, hypodermic needles were passed through the marked line into the buccal mucosa; a vertical incision was made on the mucosa at this site, with care taken to avoid any injury to the Stensen duct; an L or T limb was then added to the vertical cut; and the mucosal flaps were elevated. A few fascicles of the buccinator muscle were bluntly dissected over an artery forceps, a No. 3-0 Prolene suture (Ethicon) was passed through the proximal portion of the muscle fibers, the dermis was exposed, the muscle fibers were cut immediately distal to the stitch, and the muscle was sutured to the dermis. An additional suture was placed between the muscle and dermis to secure the myodermal attachment, and an absorbable suture was then passed between the submucosa and the dermis. Finally, the mucosal incision was closed with No. 4-0 chromic catgut sutures.\(^7\)

According to the opinion of Thomas et al, the anomalous anatomy responsible for dimples is surgically mimicked with this technique, without requiring any soft tissue removal and by allowing adequate exposure. As the mucosal flaps were raised, sutures between the muscle and the dermis were placed with improved control.

In our opinion, the key to correct tissue grasping in dimple creation surgery is creation of a faint dimple in the planned area without any stretching of the suture or knot tying. In other words, knot tying is just used for adjusting the depth and size of created dimples; the tighter the knot, the smaller and narrower the dimple. So, for better suturing technique, the enhanced exposure is useful particularly in patients with “chubby” cheeks, where the depth of the field and fat tissue can make precise suturing difficult. The simple and open procedure described in this article for placing a facial dimple provides a predictable outcome with minimal morbidity, which makes it an excellent alternative to existing techniques. On the basis of our experience in 20 cases and after at least 1 year of follow-up in most cases, we conclude that this technique is simple and easy to duplicate.

References