

A New Umblicoplasty Technique for Forming an Umbilical Chalice with Key and Hole Pattern Flaps

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ABSTRACT:

A new umblicoplasty technique for forming an umbilical chalice with key and hole pattern flaps

Objective: The umbilicus is a significant component of the abdomen. The size, position, depth, and shape of the umbilicus, as well as the location of the scar, are very important. While various techniques have been described in order to obtain an aesthetically appealing umbilicus, surgeons still frequently encounter complications such as visible scars and scar contractures. We present a technique that can avoid these complications while also fulfilling the aesthetic umbilicus criteria.

Materials and Methods: Between 2011 and 2014, 18 female patients underwent both abdominoplasty and umblicoplasty, which was performed using our technique. During abdominoplasty, the umbilicus was separated from the abdominal skin as a three-armed star and inserted in a Y-shaped incision. The patients were asked to evaluate and rate their new umbilicus in terms of shape, depth, location, and scarring.

Results: The mean follow up period was 20 months. No umbilical complications, such as hypertrophic scarring, were observed. In general, 80% of the patients gave the procedure an 8-point rating out of a possible high of 10-point rating, indicating their satisfaction with the results.

Conclusion: In this described technique, the umbilicus is small, shallow, and oval, and the scar is less visible. The incidence of the most frequent complications, such as scar contracture and umbilical stenosis, occurs less often in our safe and versatile technique.

Keywords: Abdominoplasty, natural umbilicus, umblicoplasty

ÖZET:

Anahtar-kilit paternli fleplerle yeni bir umblikoplasti tekniđi

Amaç: Göbek deliđi karın ön duvarının önemli bir parçasıdır. Abdominoplasti ameliyatlarında göbek deliđinin boyutu, pozisyonu, derinliđi, ve řekli en az nedbenin yeri kadar önemlidir. Estetik olarak güzel göbek deliđi elde etmek için birçok teknik tarif edilmiř olsa da, cerrahlar sıklıkla nedbenin görünmesi ve çekilme yapması gibi birçok problemle karřılařmaktadır. Biz bu çalıřmada bu tarz sorunları engellerken estetik göbek deliđi kriterlerini karřılayan yeni bir umblicoplasti tekniđini sunduk.

Gereç ve Yöntem: 2011 ve 2014 yılları arasında, 18 kadın hastanın sonuçları incelendi. Hastalara abdominoplasti ve aynı seansta umblikoplasti yapıldı. Abdominoplasti sırasında, göbek deliđi karın ön duvarından üç kollu yıldız řeklinde ayrıldı. Göbek deliđi karın ön duvarında yeni yerine çıkartılırken ise Y řekilli bir insizyon kullanıldı. Hastalar yeni göbek deliklerinin řeklini, derinliđini, yerini ve izlerini deđerlendirmek açısından sorgulandılar.

Bulgular: Ortalama takip süresi 20 aydır. Hipertrofik nedbe gibi herhangi bir göbek deliđine bađlı bir komplikasyon gözlenmedi. Hastaların %80'i sonuçlardan memnuniyet durumuna 10 üzerinden 8 puan verdiler.

Sonuç: Tanımlanan teknikte, göbek deliđi küçük, sıđ ve ovaldi. Nedbe daha az görünürdü. Nedbe çekilmesi, göbek deliđinin daralması gibi sık görünen problemler bizim güvenli tekniđimizde daha az görünmekteydi.

Anahtar kelimeler: Abdominoplasti, dođal göbek, umblikoplasti

ř.E.E.A.H. Tıp Bülteni 2017;51(1):76-81



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Date of receipt / Geliř tarihi:
December 29, 2016 / 29 Aralık 2016

Date of acceptance / Kabul tarihi:
December 29, 2016 / 29 Aralık 2016

INTRODUCTION

The umbilicus is a significant aesthetic component of both abdominoplasty and transverse rectus abdominis muscle (TRAM) or deep inferior epigastric artery perforator (DIEP) flap operations. Although the perception of beauty differs among individuals, there are several objective aesthetic criteria for the umbilicus. The size, position, depth, and shape of the umbilicus, as well as the location of the scar, are very important. Although, the criteria such as small, vertically oriented umbilicus with a superior hooding described by Craig (1), are still accepted by many authors, it can be said that these criteria have been partially changed in recent studies (2,3).

In order to obtain an aesthetically appealing umbilicus, various incision techniques, such as horizontal and vertical incisions, and various flap techniques have been defined (2,5-7). However, surgeons still frequently encounter complications, such as visible scars and scar contractures at the continuous circular incision lines. We present a technique that can avoid these complications while also fulfilling the aesthetic umbilicus criteria.

MATERIALS AND METHODS

Between February 2011 and December 2014, 18 female patients underwent both abdominoplasty and umbilicoplasty, which was performed using our technique. This study has been performed with the approval of Bezmialem University Ethics Committee (2011/310). The patients ranged in age from 26 to 57 years; the mean age was 38 years. The weight range of the patients was 56 kg to 72 kg; the mean weight was 63 kg. A questionnaire was sent to the patients six months after the operation asking them to rate their satisfaction with the outcome of the procedure. The patients were asked to evaluate and rate their new umbilici in terms of shape, depth, location, and scarring. The rate ranged from 1 (unsatisfactory result) to 10 (ideal result).

Operative Technique

During abdominoplasty, the abdominal flap is dissected in the cephalic direction and the umbilicus is separated from the abdominal skin as a three-armed star (arms dimensioned approximately 7-8 mm) with 60 degree angles (Figure-1, upper left). The



Figure-1: Per-operative photos of the technique described in this article (upper left). Separation of the umbilicus from the abdominal skin as a three-armed star that is similar in appearance to a reversed form of the logo found on Mercedes automobiles (upper middle). Detection of the new umbilicus position. In accordance with the prepared umbilicus, a Y-shaped incision is planned. This incision forms the bed of the new umbilicus (upper right), making the Y-incision (left and lower right). The umbilicus is fixated to its new position by sutures through both the abdominal flap and the rectus fascia. Finally, the procedure is terminated by inserting simple sutures with 6/0 polypropylene.

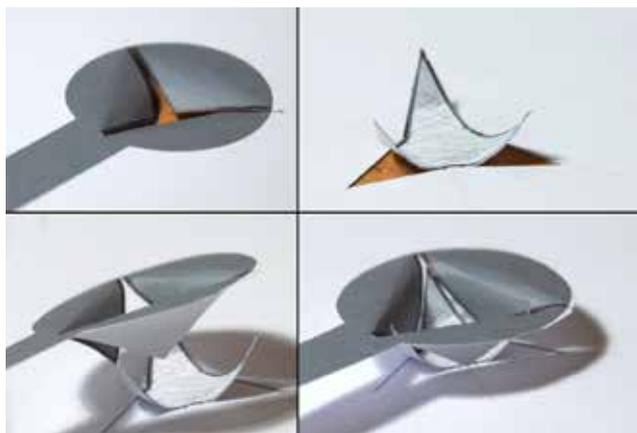


Figure-2: Schematic illustration of the aforementioned umbilicoplasty technique (upper left). The Y-incision in the abdomen skin (upper right); the three-armed star umbilicus incision. The umbilicus is sutured to the fascia of the rectus muscle with 4/0 PDS sutures from three corner points that are close to the center of the reverse Mercedes logo-shaped umbilical flap shown in the illustration (lower left). Afterwards, the farthest points of the umbilical flaps are sutured to the farthest corners of the Y-flap on the abdominal skin (lower right). The corners of the abdominal flaps that are closest to the center are adapted to the indented central corners of the umbilical flaps. The umbilical chalice is reconstructed using these key and hold pattern flaps.

umbilicus is dissected until the umbilical stalk is reached. After the abdominal flap is dissected away from the umbilicus, the dissection proceeds towards the xiphoid. The patient is positioned in a semi-flexion position, and the abdominal flap is sutured to its new place, temporarily, in order to detect the new position of the umbilicus. In accordance with the prepared umbilicus, a Y-shaped incision is planned with equal angles and with legs that are approximately 7-8 mm (Figure-1, middle and upper right). This incision forms the bed of the new umbilicus. Then the abdominal flap is thinned by defatting until the dermis. In this technique, the skin is not resected. The umbilicus is sutured to the fascia of the rectus muscle with 4/0 polydioxanone (PDS) sutures from three corner points that are close to the center of the three-pointed star shaped umbilicus flap (Figure-2, upper left and right). Afterwards, the farthest points of the umbilical flaps are sutured to the farthest corners of the Y-flap on the abdominal skin (Figure-2, lower left). The corners of the abdominal flaps that are



Figure-3: Pre-operative and post-operative (9th month) photos of a 38-year-old patient; the secondary healing scar can be seen at the bottom of the abdominal incision.

closest to the center are adapted to the indented central corners of the umbilical flaps (Figure-2, lower right). Thus, the incisions in the umbilicus are oriented inwards. The umbilical chalice is reconstructed using these key and hole pattern flaps.

Finally, the procedure is terminated by inserting simple sutures with 6/0 polypropylene. Loose and wet tie-over dressing is applied to the umbilicus. Sutures were removed 7-10 days after the surgery.

RESULTS

The follow up period ranged from 6 to 36 months; the mean follow up period was 20 months. A problem with marginal wound healing at the abdominal skin flap was only seen in one patient, and that problem was resolved with secondary healing (Figure-3). Moreover, no umbilical complications, such as hypertrophic scarring, were observed. The satisfaction rating scale of the questionnaire ranged from 1 to 10; a rating of 1 denoted an unsatisfactory result, a rating of 5 denoted a satisfactory result, and a rating of 10 denoted an ideal umbilicus. Of the 18 patients that participated in the study, 17 responded to the questionnaires (one of the patients was lost to follow up after 6 months). The mean satisfaction rate for the



Figure-4: Pre-operative and post-operative photos of a 41-year-old patient (post-op 11th month).



Figure-5: Pre-op and post-op (12th month) photos of a 36-year-old patient.

shape of the umbilicus was 8.16. The mean was calculated as follows: 8.83 for the position, 9.2 for the size, and 8.55 for the scar appearance. In general, 80% of the patients gave the procedure at least an 8-point rating; thus, the majority stated that they were satisfied with the results (Figure-4,5).

DISCUSSION

In the literature, various techniques have been described in order to achieve an ideal umbilicus during abdominoplasty and TRAM/DIEP flap operations. In addition to techniques, such as the round incision (5), and the vertical incision (2), techniques such as the superiorly based triangular flap (8), the V-Y flap (9), the inverted V flap (6), and the inverted U flap (10) have been defined. The



Figure-6: Close view of another 32-year-old patient in the first year; as seen, the scar is less visible.

availability of multiple techniques demonstrates that no ideal umbilicoplasty procedure has been identified.

Craig et al. defined the properties of the ideal umbilicus (1). A small and vertical or T-shaped umbilicus with a superior hooding and a shadow is aesthetically acceptable (1). At the same time, a smooth and slightly inclined periumbilical contour is a preferred property (7). The Craig criteria are still accepted as valid by many authors; however, recent studies have proposed several changes. For example, in 2014, Lee et al. published a study in which they used a computer program to evaluate the photographs of individuals with aesthetically appealing umbilici (11). Measurements were made and many of the individuals had an oval umbilicus. Superior hooding was absent in more than 50% of the patients (11). In the study conducted by Pallua et al., approximately 50% of the individuals regarded oval-shaped umbilici as being more aesthetically pleasing (3).

Many umbilicoplasty techniques have complications, such as circular scar lines with continuity, a scar ring, umbilical stenosis, and scar contracture (7,12). In our technique, the natural structure of the umbilicus is respected, and its natural curve is taken into consideration. The three-armed star incision is made and then the skin flaps are sutured inwards. Thus, the scar lines are hidden. At the same time, the skin flaps are thinned with defatting, and, with their inclination, the preferred periumbilical slope is maintained.

The scar ring, or a constricted scar, is caused by the skin tension of the umbilicoplasty (7). However, the skin is not resected in some cases, and, sometimes, problems can occur with a small and narrow umbilicus. Although the skin is not resected in our technique, the three-armed star umbilicus is adapted to the Y-shaped abdominal skin incision in a key and hole pattern. With the aid of these flaps, the umbilicus is not contracted; thus, sufficient width is maintained.

Umbilical stenosis is a complication of several umbilicoplasty techniques, especially those that use circular incisions (5,13,14). We did not use a circular incision in our technique, and we interrupted the continuity of the scar with a three-armed star incision. By using this method, it is possible to avoid umbilical stenosis.

In the natural structure of the umbilicus, there is a slight transition from the abdomen to the umbilicus, and there is a continuous contour. However, such a transition cannot be achieved with many umbilicoplasty techniques during abdominoplasty or TRAM/DIEP operations, and, generally, a steep transition is achieved. In our technique, the interdigitating skin flaps enable a natural transition from the abdominal skin to the umbilicus. Craig et al. stated that a small, shallow, and retrusive umbilicus is regarded as being more attractive (1). In our technique, by fixating the umbilical stalk to the abdominal fascia, the umbilicus becomes shorter and

protrusion is avoided. In addition, a small and shallow appearance is obtained because the skin is not resected. The umbilical stalk is fixated to the fascia of the rectus muscle at the levels of 2, 6, and 10 o'clock, and an oval shape is maintained (2).

Many scarless umbilicoplasty techniques have been presented in the literature (2,15,16). However, in many of those techniques, the scar is intended to be placed inside the umbilicus. In our technique, the natural creases of the umbilicus are taken into consideration. The skin flaps and the scar lines are aligned parallel to these natural creases, so the scar is hidden.

According to Craig et al., superior hooding is regarded as a natural property of the umbilicus (1). However, this is not present in a young individual; according to other studies, superior hooding is formed gradually by factors such as weight gain and gravity (2).

A double opposing Y-incision umbilicoplasty technique that is similar to our technique is described in another study (17). The authors stated that the attempt to form a superior hooding precluded the achievement of a thin and young appearing abdomen (17). In our technique, rather than forming a superior hooding, we aim to make an oval, small, and shallow umbilicus with a younger appearing abdomen.

As in all fields of aesthetic surgery, the aesthetic criteria of abdominoplasty and umbilicoplasty continually change over time. In conclusion, this paper describes an innovative technique that can adhere to these new aesthetic criteria. In our technique, the resulting umbilicus is small, shallow, and oval, and the scar is less visible. In our safe and versatile technique, the most frequent complications, such as scar contracture and umbilical stenosis, occur less often.

Conflict of Interest: The authors declare no conflict of interest.

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