




UMBILICAL RECONSTRUCTION WITH DOUBLE OPPOSING SEMILUNAR FLAP, AN APPEALING RESULTS: A CASE SERIES

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ABSTRACT

Introduction: Umbilical loss is not a common problem encountered in plastic surgery routine cases. The absence of umbilicus will cause significant effect in total aesthetic appearance of the abdomen, thus making it an essential part of anatomy landmark. Congenital defect, oncologic and abdominoplasty complication are the most often causes, and tremendous psychological trauma will cause patient to seek help.

Case Illustration: There are many proposed technique for such reconstruction, based on original scar or wound and final expected shape, of course with their advantages and disadvantages. We used a double opposing semilunar flap for our cases. Along with its technical detail, we will present three cases comprises of the defect after omphalocele scar removal, umbilical endometriosis excision and postcentral abdominal tumor excision. Reports will be presented with preoperative and postoperative result.

Discussion: This technique avoids the appearance of scarring and secondary stenosis by hiding the circular scar incision and maintaining its position in the middle of the new form.

Conclusion: The reconstruction technique of the umbilicus presented for the anatomical units, provides a very natural look, and generates slight excess of skin on the upper part over time and giving a more graceful appearance.

Highlights:

1. A double opposing semilunar flap has good result for umbilicus reconstruction.
2. A double opposing semilunar ensures a natural appearance and avoids visible scarring while maintaining appropriate depth and size.

INTRODUCTION

Although the umbilicus is depressed and adheres to deep planes, it is the only scar in the human body that is acceptable to individuals. Its absence Although the umbilicus is depressed and adheres to significantly affects the aesthetics of the

abdomen, making it an essential part of the anatomy.

The aesthetic appeal of the abdomen is directly related to good umbilical conformation. Reconstruction of the umbilicus either after its loss or for aesthetic reasons must follow the anatomical features to provide a natural appearance after

treatment. The new umbilicus should have a good shape and appropriate position; should not have an unaesthetic appearance, stenosis, or enlargement; and should have a natural appearance.

The umbilicus is a depressed scar surrounded by a natural fold of skin approximately 1.5 to 2.5 cm in diameter.^{1,2} Its natural position is at the height of the line joining the highest point of the 2 anterior superior iliac crests; this point is located between the third and fourth lumbar discs.³⁻⁵ The position in the vertical plane is known to vary, and in cases where it is located more anteriorly, the umbilicus provides a more graceful-looking abdomen.³ Regarding the sagittal plane, the umbilicus exhibits laterality up to 8% of the width of the abdomen in 98.3% of subjects.⁴ It is formed by a base, which corresponds to the corrugated part surrounded by a groove or ring. Its upper portion, which surrounds the depressed portion, is called the impeller. The umbilicus should be small, have a T-shaped depression, be round or oval, and have a slight fold of skin on its upper portion.^{1,5}

This article reports a technique for the reconstruction of the umbilicus employed in the surgical treatment of two patients.

CASE ILLUSTRATION

This study carried out 3 patients that comprise of the defect after umbilical endometriosis excision postcentral abdominal tumor excision, and post congenital defect scar removal. The patients were female, 55, 36, and 8 years old has referred to plastic surgery department to close the defect with umbilical reconstruction.

To reconstruct the umbilicus either because of its absence or for aesthetic reasons, we used 2 parallel rectangular flaps with double opposing semilunar design as previously described by Franco et al.⁶, the flaps were sutured together and fixed to the

aponeurosis of the rectus abdominis muscles. These flaps were 1.5 × 2.0 cm wide but somewhat larger flaps may be used in certain cases. The flaps exhibited a curvilinear-shaped skin transition rather than right angles, with the double opposing semilunar design. (Figure 1).

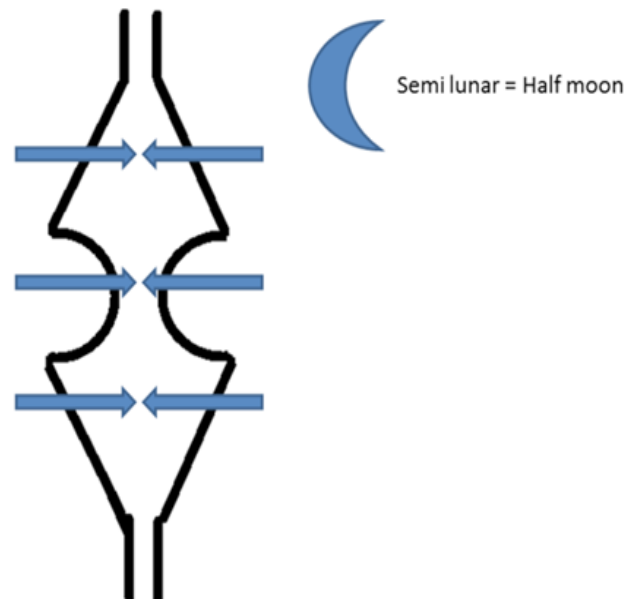


Figure 1. Marking of The Flaps, with a Double Opposing Semilunar Design

The flaps were attached at 2 parallel points that reached the dermis of the flap on both sides and the aponeurosis in its median line. Thus, we obtained the union of 2 flaps, which were slightly compressed in the distal portion.

Next, the fat tissue around the umbilicus was approximated with new points using 1 Vicryl (polyglactin) and a 4 cm needle. The needle must be sufficiently large to include the maximum possible amount of fat tissue. Care must be taken when crossing points to avoid making the sutures too tight, which can cause liponecrosis. The procedure was completed with skin suturing.

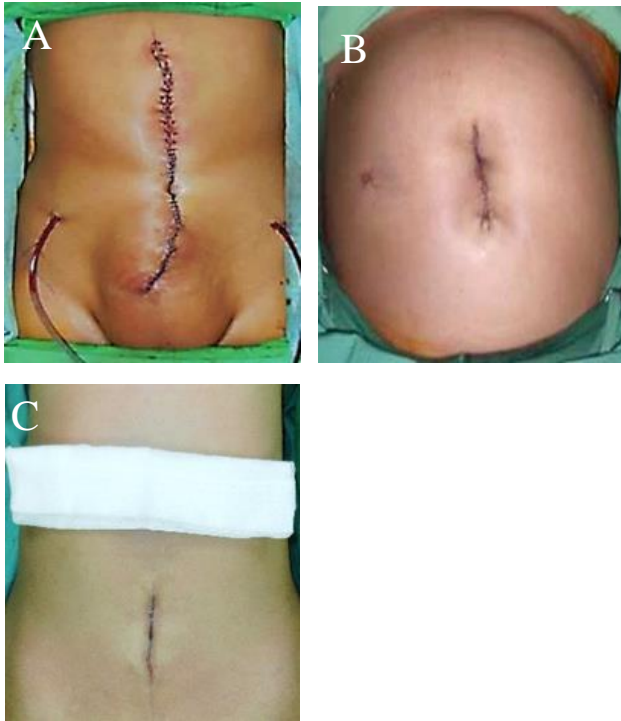


Figure 2. Immediate Postoperative Appearance, (A) Female 57 Years Old (Upper Left), (B) Female 36 Years Old (Upper Right), (C) Female 8 Years Old (Bottom)

Two patients underwent reconstruction of the umbilicus while considering the anatomical units. The formation of all anatomical units was noted, including the base, groove, and impeller, and adequate depth was achieved in all reconstructed umbilical scars.

There were no cases of umbilical stenosis. Similarly, no hypertrophic or keloid scars were observed on the new umbilical, although pathological scarring occurred in the vertical scar above or below the umbilicus.

The reconstructed umbilical scars had good size and excellent shape, as is observed in Figures 3 to 5.



Figure 3. Female, 57 Years Old Patient, H-19 Post Operative.



Figure 4. Female, 57 years old patient, H-26 post Operative

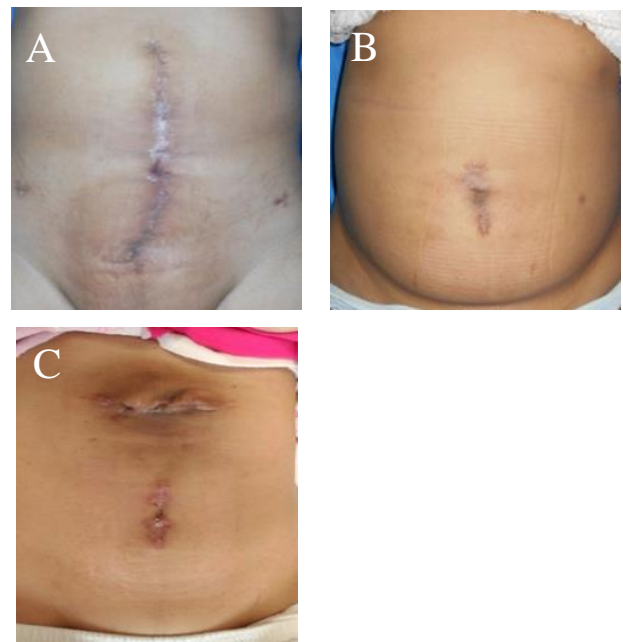


Figure 5. Late Postoperative Appearance. (A) Female 57 Years Old (Upper Left), (B) Female 36 Years Old (Upper Right), (C) Female 8 Years Old (Bottom)

DISCUSSION

The reconstruction of the umbilicus remains challenging for plastic surgeons. Various techniques are described in the literature, including the use of local flaps.^{4,5} Although these techniques provide some reasonably aesthetic results, they remain unable to yield a natural-looking new umbilicus. In order for the reconstruction to be as close to ideal as possible, the anatomical units of the element to be treated must be suitably reconstructed. This technique offers a novel approach by addressing the specific anatomical elements and providing a stepwise method for their reconstruction. It combines both aesthetic and functional considerations in a unique way. This technique emphasizes the importance of reconstructing the anatomical units of the umbilicus, including the base, groove, and impeller. By systematically addressing each of these components, the technique aims to create a more natural and aesthetically pleasing result.

This paper presents a double opposing semilunar flap technique proposed by Franco et al. that involves rebuilding the anatomical units (i.e., base, groove, and impeller) in a stepwise manner.⁶ The base is formed at the aponeurosis by 2 fixing flaps, compressed at the distal edge. Because the dermal layer is included in the suture of the flap, the flaps fold, which gives the appearance of a groove. The use of double opposing semilunar flaps is unique and innovative. These flaps are designed to recreate the base and groove of the umbilicus, and their inclusion of the dermal layer in the suture helps mimic the appearance of a natural groove. This approach differs from traditional methods.

The proximity of the adjacent fat tissue to the new umbilicus raises the edges around it, thus providing the required depth. The sutures should not be too tight at those points in order to avoid necrosis of the adjacent tissue and liponecrosis. Because the flaps are short, there is a bend in the skin around the

new umbilicus, which forms the impeller. This consideration is particularly valuable for patients with limited adipose tissue. The technique emphasizes the importance of not making sutures too tight to prevent necrosis of adjacent tissue and liponecrosis. This focus on minimizing complications contributes to the safety and success of the procedure. Therefore, all anatomical structures are rebuilt, giving a natural final appearance. Some ptosis is expected to occur on the skin located in the upper portion of the umbilicus over time, forming a discreet fold that gives a more natural look to the final reconstruction. Using flap sizes of 1.5 to 2.0 cm ensures that a small and smooth umbilicus is obtained.

The major difficulty of the reconstruction of the umbilicus is making the new umbilicus sufficiently deep, particularly when the patient presents a scarce adipose panniculus. By ensuring the adjacent fatty tissue is included, the present technique resolves this issue. Maintaining a curve in the base of the flap rather than a right angle to the approach avoids the formation of edges, thereby achieving a more rounded umbilicus and avoiding one that is elongated and closed.

This technique may be relatively complex and requires a high level of surgical skill and expertise. Surgeons need to be trained in the specific steps involved in rebuilding the anatomical units of the umbilicus, which may limit its accessibility for all plastic surgeons. The technique may not be suitable for all patients, especially those with underlying medical conditions or specific anatomical variations that make it challenging to apply. Patient selection is crucial for the success of this technique. While the technique aims to provide an aesthetically pleasing result, scarring can still be a limitation. Patients should be informed that there may be some scarring around the reconstructed umbilicus, although efforts are made to minimize its visibility. The paper mentions that ptosis (drooping) of the skin in the upper

portion of the umbilicus may occur over time, forming a discreet fold. While this is intended to contribute to a natural look, some patients may not be satisfied with these changes. Additionally, further research and clinical experience may help to refine and address some of these limitations over time.

CONCLUSION

The technique for reconstruction of the umbilicus presented here accounts for the anatomical units, provides a very natural look, and generates slight excess of skin on the upper part over time, giving a more graceful appearance. The resultant umbilicus exhibits appropriate features of depth and size. This technique avoids the appearance of scarring and secondary stenosis by hiding the circular scar incision and maintaining its position in the middle of the new form.

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CONFLICT OF INTEREST

None.

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None.

AUTHOR CONTRIBUTION

All authors conceived the study, conducted patient assessments, a performed the surgical procedures, collected and analyzed clinical data, manuscript revision, and also approved the final manuscript.

REFERENCES

1. Craig SB, et al. In search of the ideal female umbilicus. *Plast Reconstr Surg.* 2000. 105(1):389-92.
2. Marconi F. Reconstruction of the umbilicus: a simple technique. *Plast Reconstr Surg.* 1995.95(6):1115-7.
3. Coetzee T. Clinical anatomy of the umbilicus. *S Afr Med J.* 1980.57(12):463-6.
4. Rohrich RJ, et al. Is the umbilicus truly midline? Clinical and medicolegal implications. *Plast Reconstr Surg.* 2003. 112(1):259-63.
5. Southwell-Keely JP, Berry MG. Umbilical reconstruction: a review of techniques. *J Plast Reconstr Aesthet Surg.* 2011.64(6): 803-8.
6. Franco D, et al. Umbilical reconstruction for patients with a midline scar. *Aesthetic Plast Surg.* 2006.30(5):595-8.