

# Reconstruction of the Umbilicus Using a Single Triangular Flap

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Many techniques for reconstruction of an absent umbilicus have been described; however, none has achieved a perfect result. We report a new alternative for constructing an umbilicus using a conical flap and present two representative clinical cases. Our technique creates an umbilicus with sufficient depth with good results, including maintenance of depth after more than 1 year.

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Reconstruction of an absent umbilicus is a seemingly minor procedure, but no satisfactory methods have been developed to date. A reconstructed umbilicus frequently loses depth over time. We have developed a new technique of creating an umbilicus and have achieved good results in 5 patients.

## Operative Procedure

A rounded, triangular skin flap, 2 cm wide and 3 cm high, is fashioned at the site of a new umbilicus. The base of the flap should be directed toward the umbilical fossa (Fig 1A). The flap is elevated in the subdermal plane with as little subcutaneous tissue as possible to preserve flap vascularity. The edges of the flap then are sutured to each other with an absorbable suture to form a cone lined with inverted skin (Fig 1B). The soft tissue over the linea alba or rectus fascia is trimmed to create a fossa for the new umbilicus. If this is not deep enough, part of the rectus abdominis muscle can be dissected to create the required depth. The tip of the conical flap then is turned down into the fossa and anchored tightly to the bottom (Fig 1C). After transposition of the

flap, the skin defect is primarily closed, leaving dog-ears at the margin of the umbilicus (Fig 1D). A sponge is packed in the umbilicus and left for at least 1 week until all sutures are removed. Suitable stent should be inserted in reconstructed umbilical fossa for at least 3 months.

## Discussion

Making an umbilicus is a relatively minor reconstructive procedure but is frequently difficult. Many techniques have been reported to date using skin flaps [1-6], free skin grafts [7], and conchal cartilage [8], among others, but none has achieved a perfect result.

Because the umbilicus is a three-dimensional shape located in soft tissue, it seems best that its surface is lined with a skin flap to retain its required depth permanently. The procedure described here is simple and provides a satisfactory contour of the umbilicus with sufficient depth. The residual scar is minimal (Figs 2-4).

## References

- 1 Apfelberg DB. Two unusual umbilicoplasties. *Plast Reconstr Surg* 1979;64:268-270
- 2 Borges AF. Reconstruction of the umbilicus. *Br J Plast Surg* 1975;28:75-76
- 3 Hanna MK. Reconstruction of umbilicus in bladder exstrophy. *Urology* 1984;24:324-326
- 4 Itoh Y, Arai K. Umbilical reconstruction using a cone-shaped flap. *Ann Plast Surg* 1992;28:335-338
- 5 Jamra FA. Reconstruction of the umbilicus by a double V-Y procedure. *Plast Reconstr Surg* 1979;64:106-107
- 6 Kirianoff TG. Making a new umbilicus when none exists. *Plast Reconstr Surg* 1978;61:603-604
- 7 Hatoko M, Harashina T. Reconstruction of the umbilicus using a full-thickness skin graft. *Jpn J Plast Reconstr Surg* 1989;32:1279-1282
- 8 Matsuo K. A simple technique for reconstruction of the umbilicus, using a conchal cartilage composite graft. *Plast Reconstr Surg* 1990;86:149-151

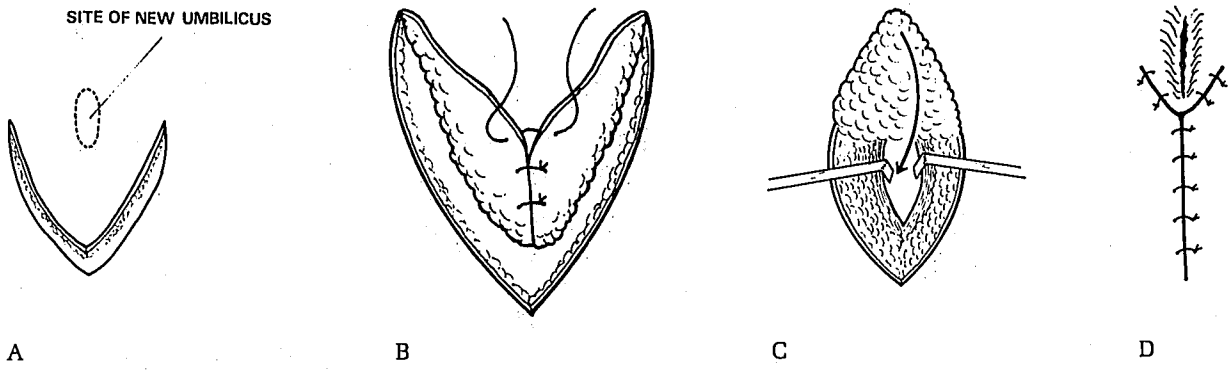


Fig 1. (A) Design of triangular flap. (B) Forming a cone lined with inverted skin. (C) The tip of the conical flap is turned down into the fossa and anchored tightly to the bottom. (D) The skin defect is primarily closed.

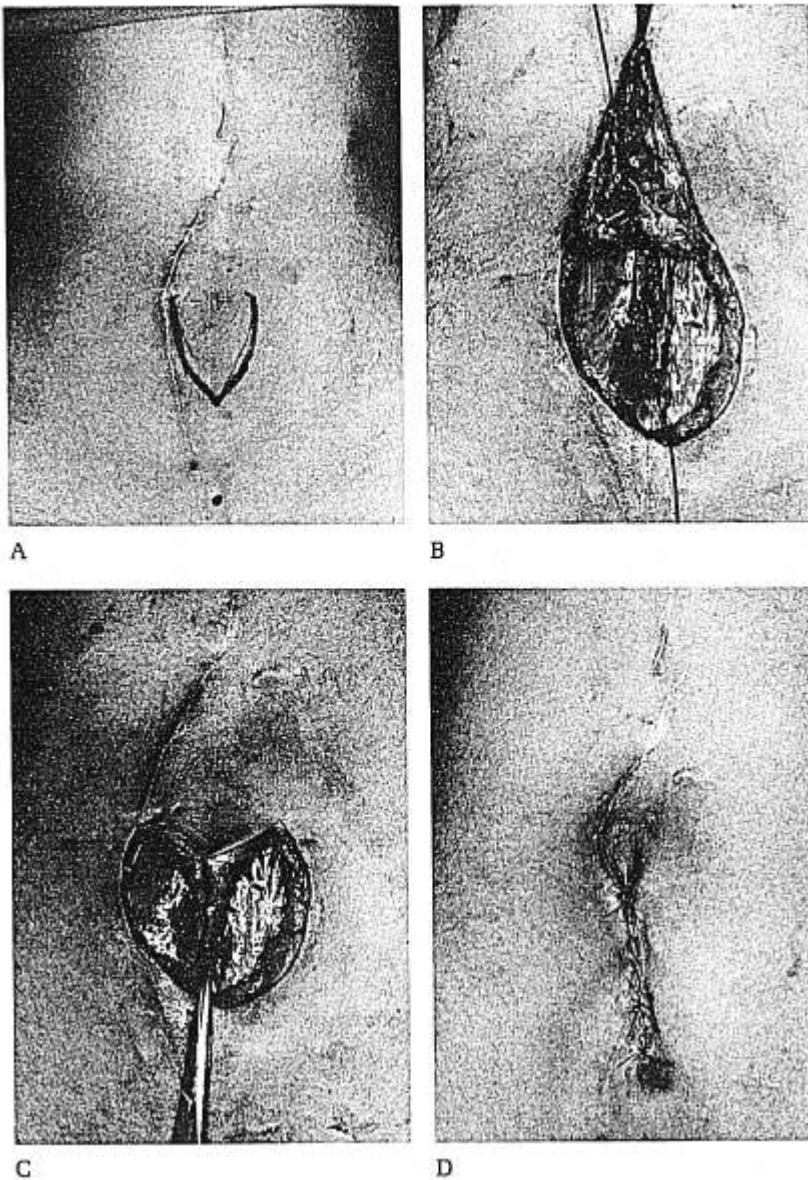
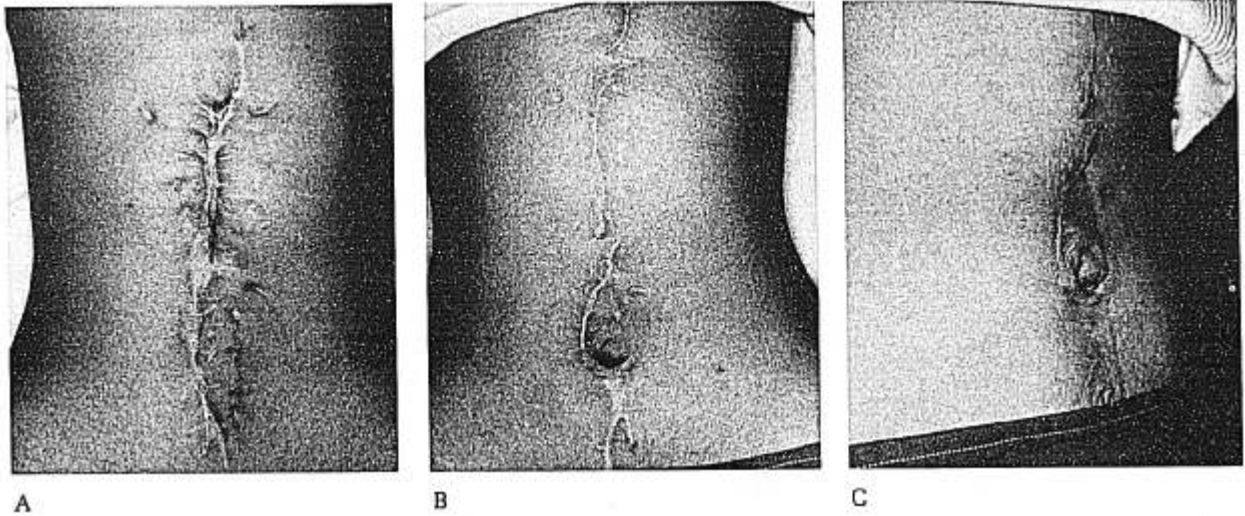
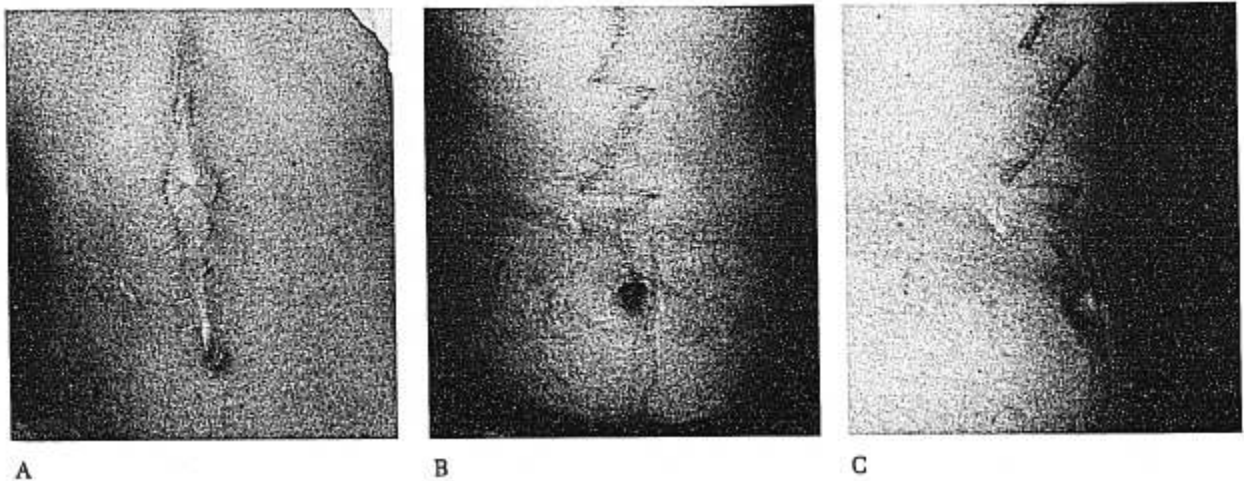


Fig 2. (A) Design of the triangular flap. (B) Elevated flap. Arrow indicates the separated rectus abdominis muscle to create sufficient depth of the umbilical fossa. (C) Inverted skin flap to make a cone. (D) Created umbilicus.



**Fig 3.** Missing umbilicus of a 17-year-old girl after treatment of exomphalos at birth. (A) Preoperative view. (B) Frontal and (C) lateral views 20 months postoperatively.



**Fig 4.** Missing umbilicus of a 16-year-old girl as a result of treatment of exomphalos. (A) Preoperative view. (B) Frontal and (C) lateral views 1 year postoperatively.