Transpositional & Reciprocal Flaps

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- Fellow, American College of Foot & Ankle Surgeons;
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- Fellow, American College of Foot & Ankle Orthopedics and Medicine;
- Board Certified, American Board of Foot & Ankle Surgery;
- Board Certified, American Board of Podiatric Medicine;
- Author of:
- - *Color Atlas & Text of Forefoot Surgery* (Mosby 1992);
- - *Cutaneous Disorders of the Lower Extremity* (WB Saunders 1997);
- - *Color Atlas of Foot & Ankle Dermatology* (Lippincott 1999);
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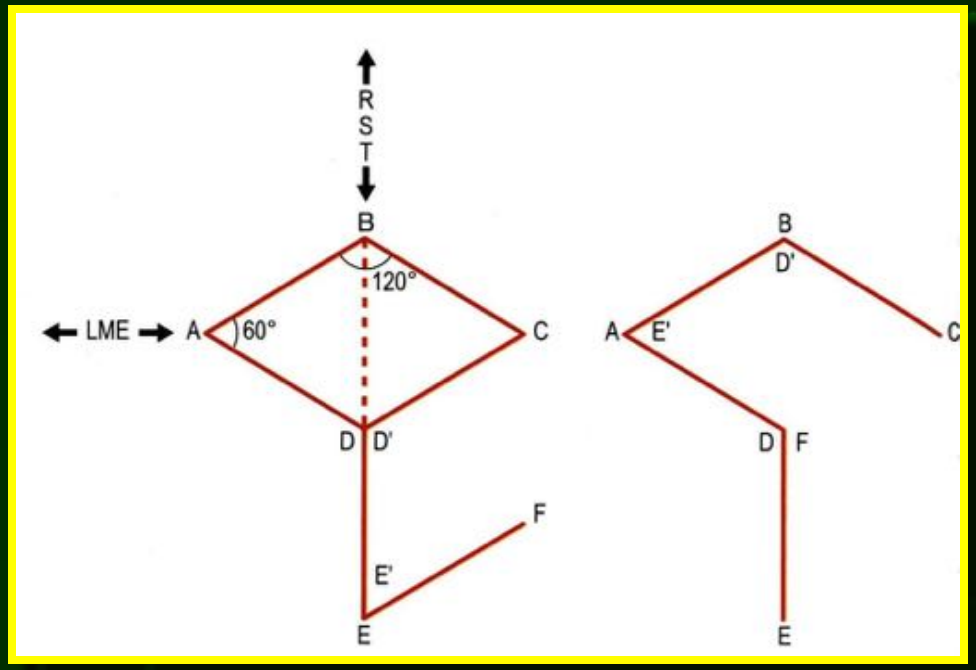
Transpositional & Reciprocal Flaps

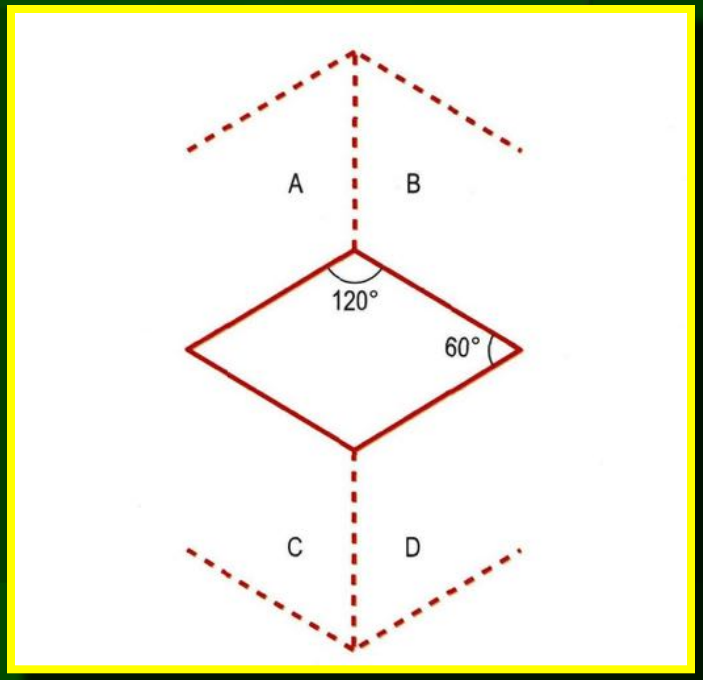
From: Dockery GL, Crawford ME: *Lower Extremity Soft Tissue & Cutaneous Plastic Surgery*, Elsevier Sciences (Saunders) 2012.

Plastic Techniques

The Transposition Flaps

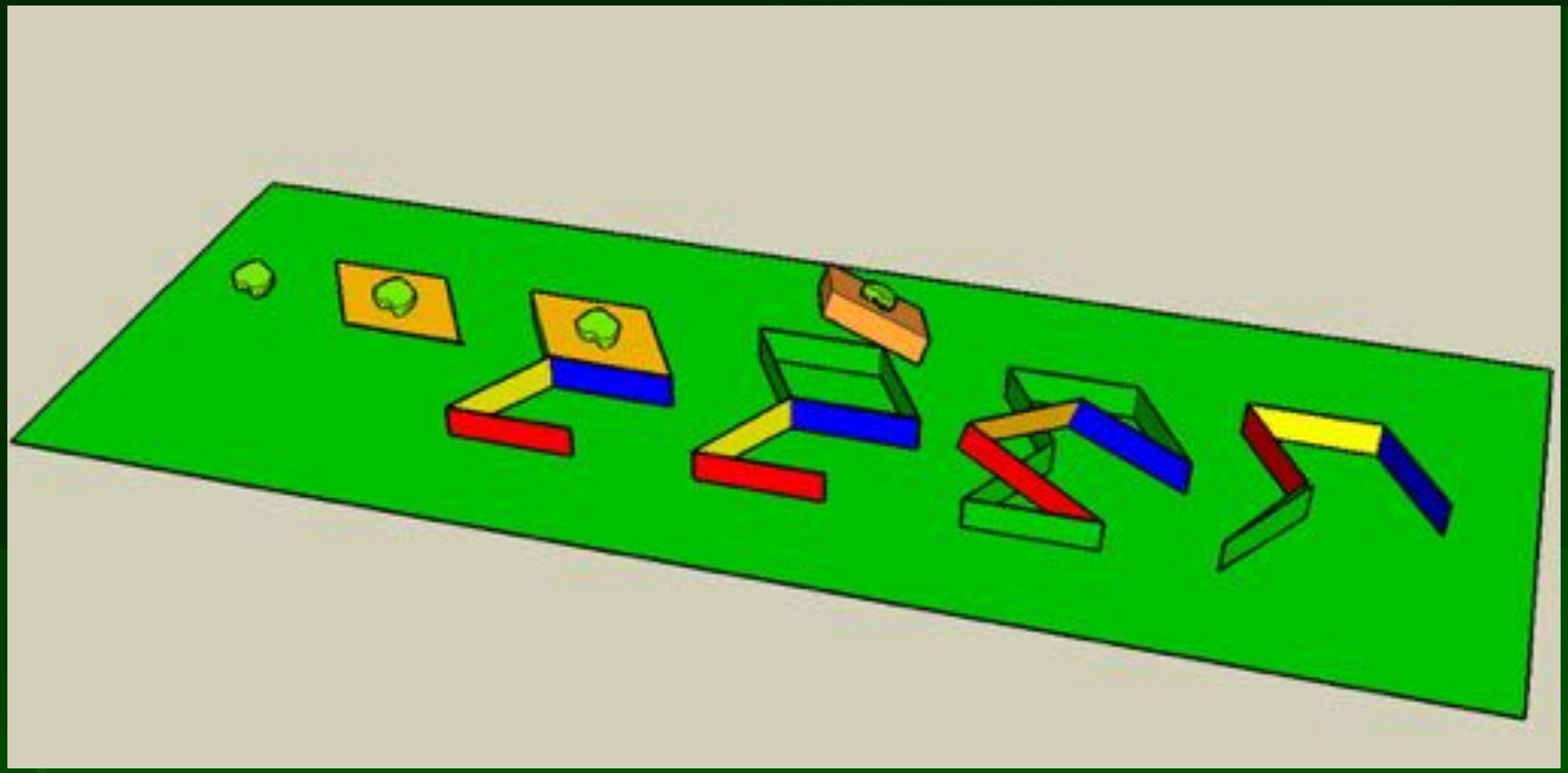


Limberg rhomboid. The rhomboid defect is converted to one that has 60° and 120° angles.



The rhomboid flap has four potential closure flaps.

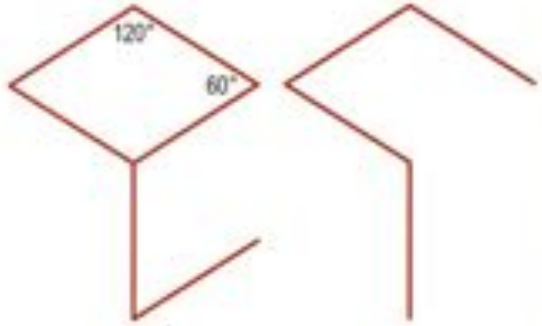
Transpositional Flaps Closure of Circular or Oval Defects



Plastic Techniques

The Transposition Flaps

The Limberg Rhomboid



A

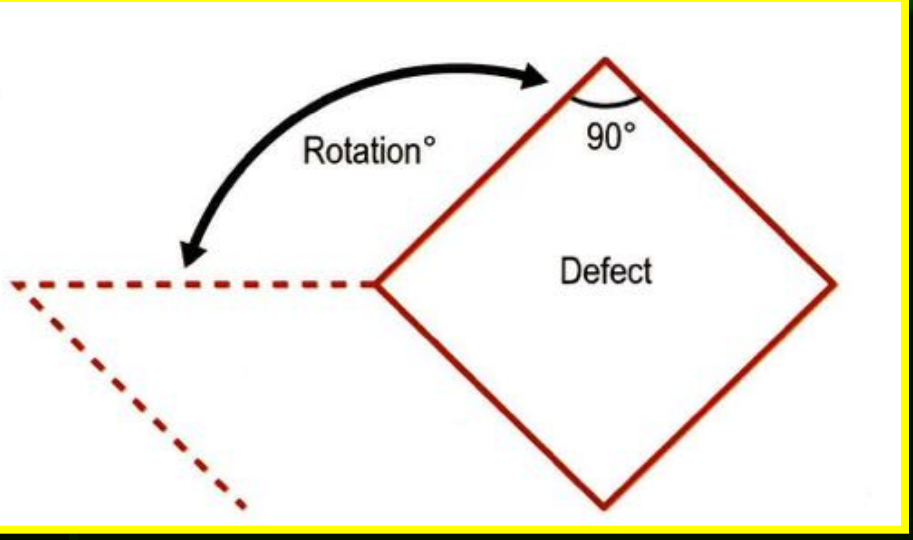
B

C

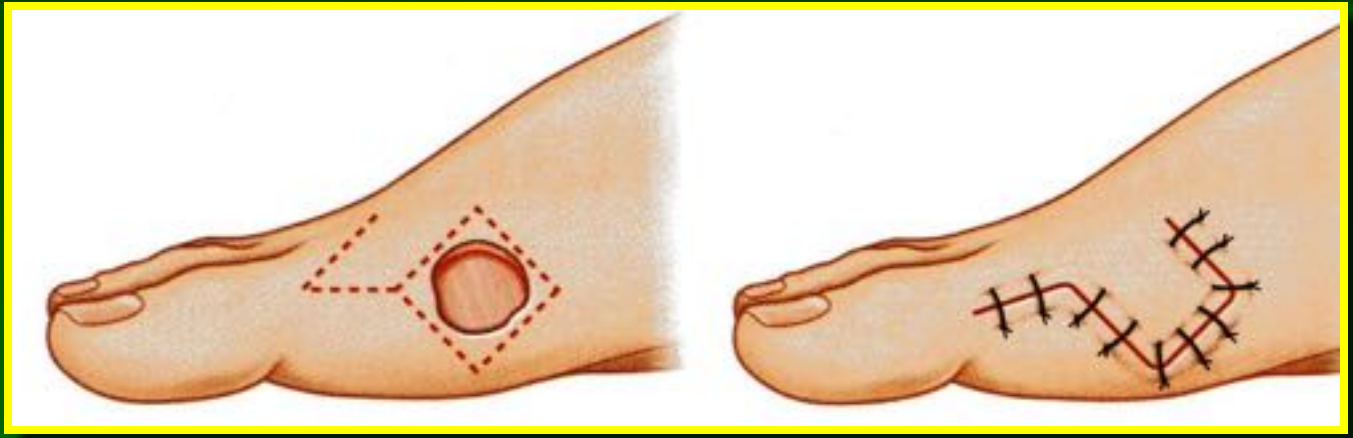
D

Plastic Techniques

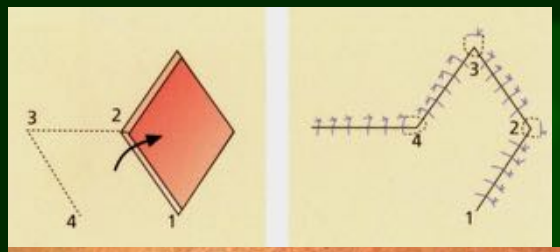
The Transposition Flaps

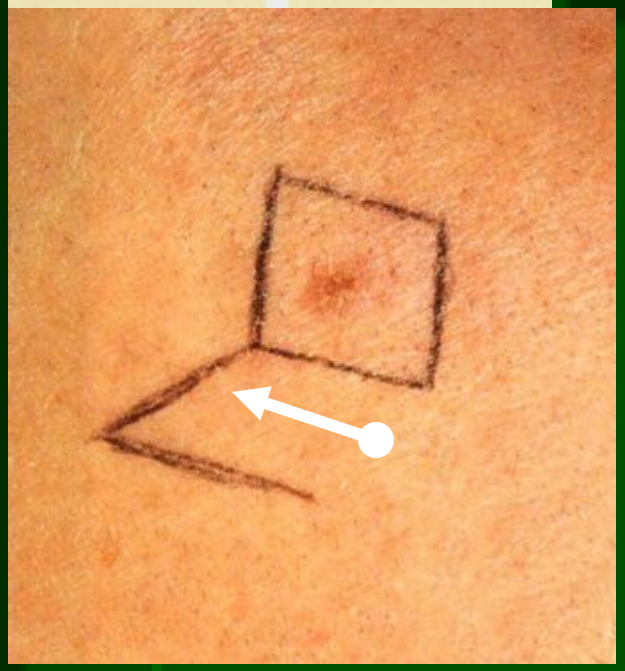


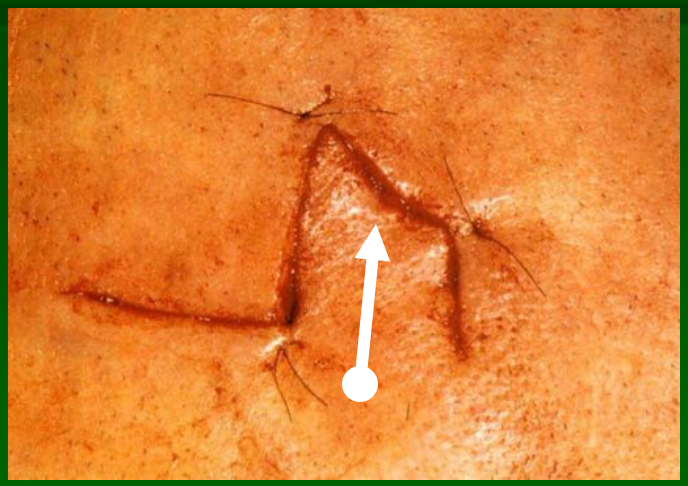
Rhombic. The sides are of equal length and at 90°. The diagonal cut is extended equal distance and back-cut is parallel to the side.



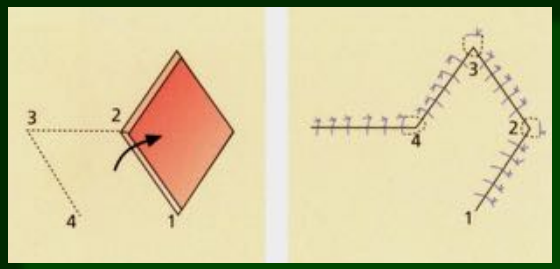
Rhomboid Flap







Transpositional Flaps Closure of Circular or Oval Defects



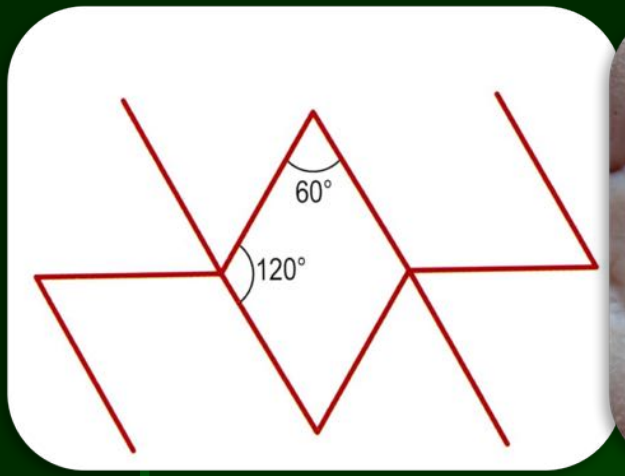
The Rhomboid Flap

Before

After

Transpositional Flaps Closure of Circular or Oval Defects

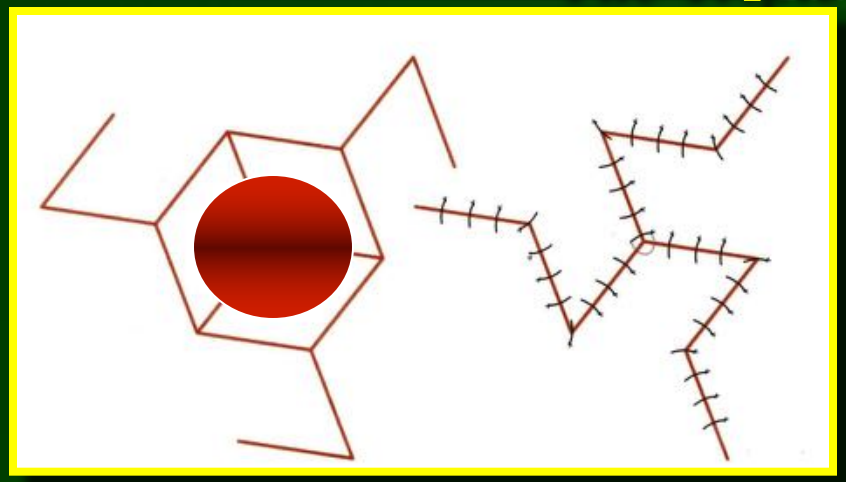
Transpositional Rhomboid Flap with Double-Z



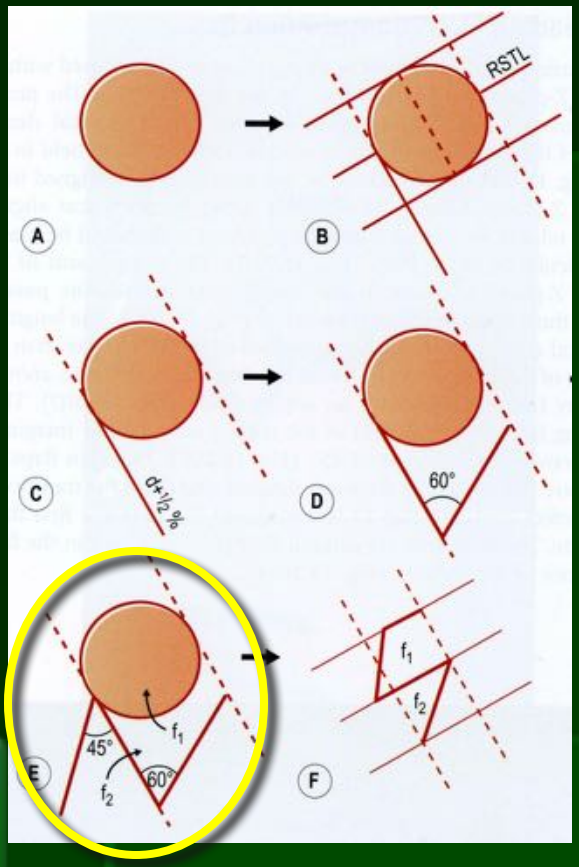
Plastic Techniques

The Transposition Flaps

The Triple Rhomboid



Transpositional Flaps
The “Reading Man” Flap

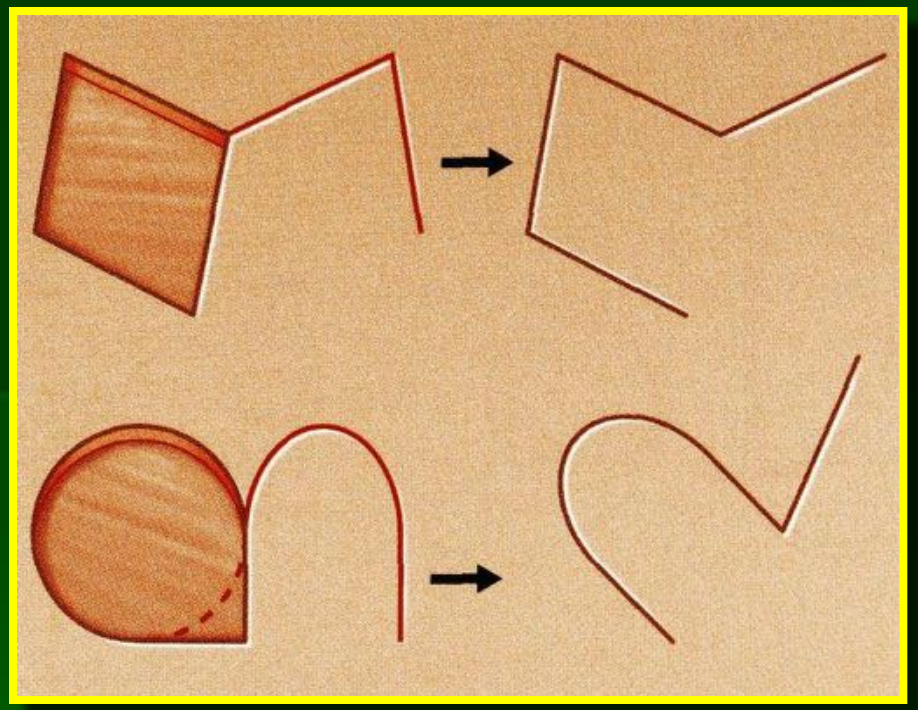


Plastic Techniques for Closure of Circular or Oval Defects

Comparison of a Rhomboid and a Unilobe Flap

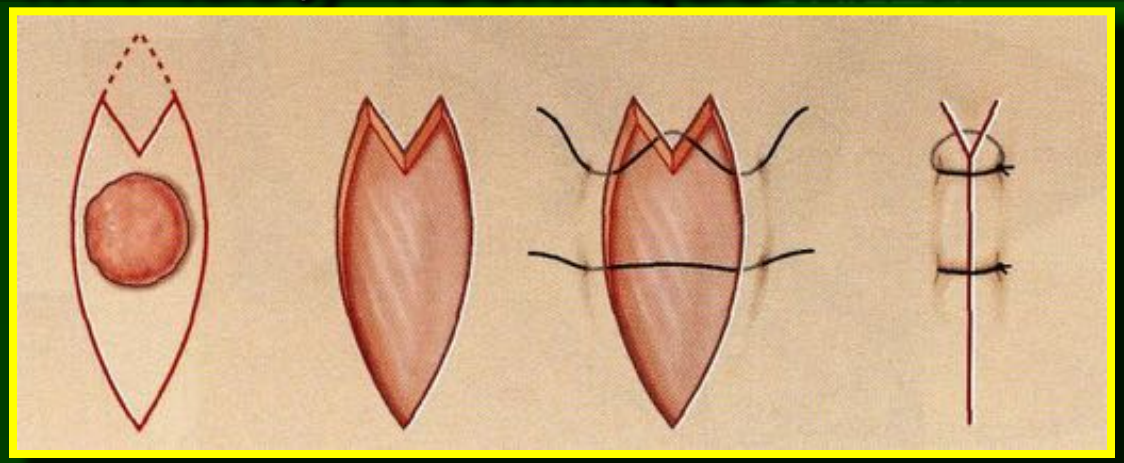
A

B

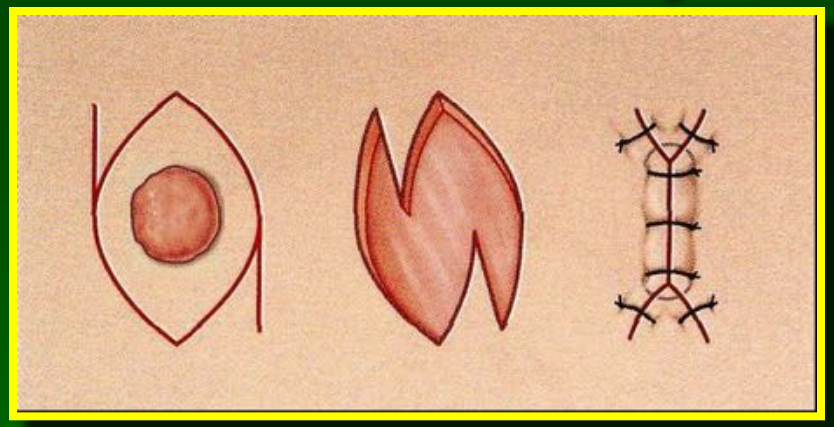


Reciprocal Techniques for Closure of Circular or Oval Defects

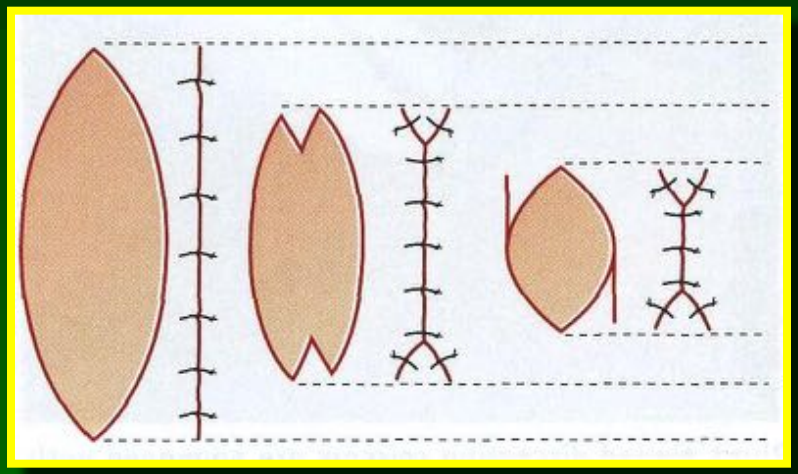
M-Plasty Technique



Modified M-Plasty

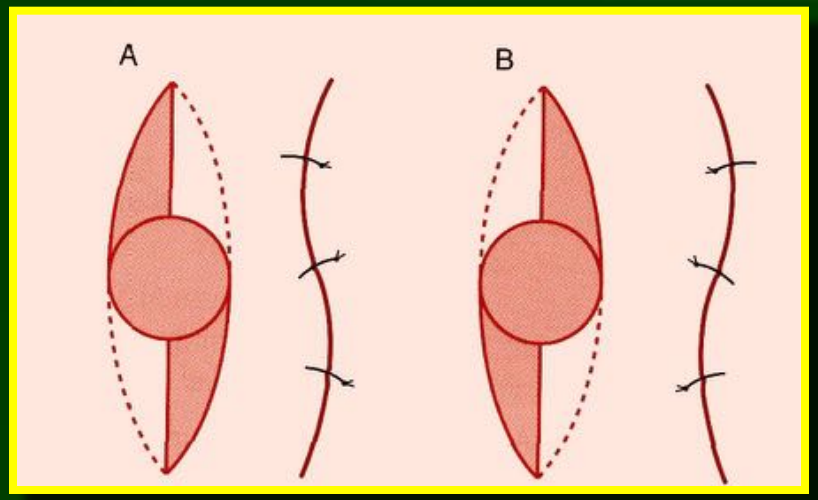


Comparison of All Three Techniques



Reciprocal Techniques for Closure of Circular or Oval Defects

Double-S or Modified Fusiform Excision



The modified fusiform excision can be performed in two different ways allowing greater diversity of the procedure.

The curvilinear incision has less tension than a linear incision of the same length.

Current Recommendations

- Most BCC: narrow margins (2 mm)
- Infiltrating BCC: 2-3 mm margins
- Most SCC < 2 cm: 3-4 mm margins
- SCC > 2 cm: 6 mm margins
- Dysplastic nevi: 1-2 mm margins
- MMIS: 2-5 mm margin to subcutis
- MM < 2 mm in depth: 1 cm margin
- MM > 2 mm in depth: 2 cm margin

Grotz TE, et al. Mayo Clinic Consensus Recommendations for the Depth of Excision in Primary Cutaneous Melanoma. Mayo Clin Proc. 86(6): 522–528, 2011.
Leilabadi SN, et al. Update and review on the surgical management of primary cutaneous melanoma. Healthcare. 2:234-249, 2014.

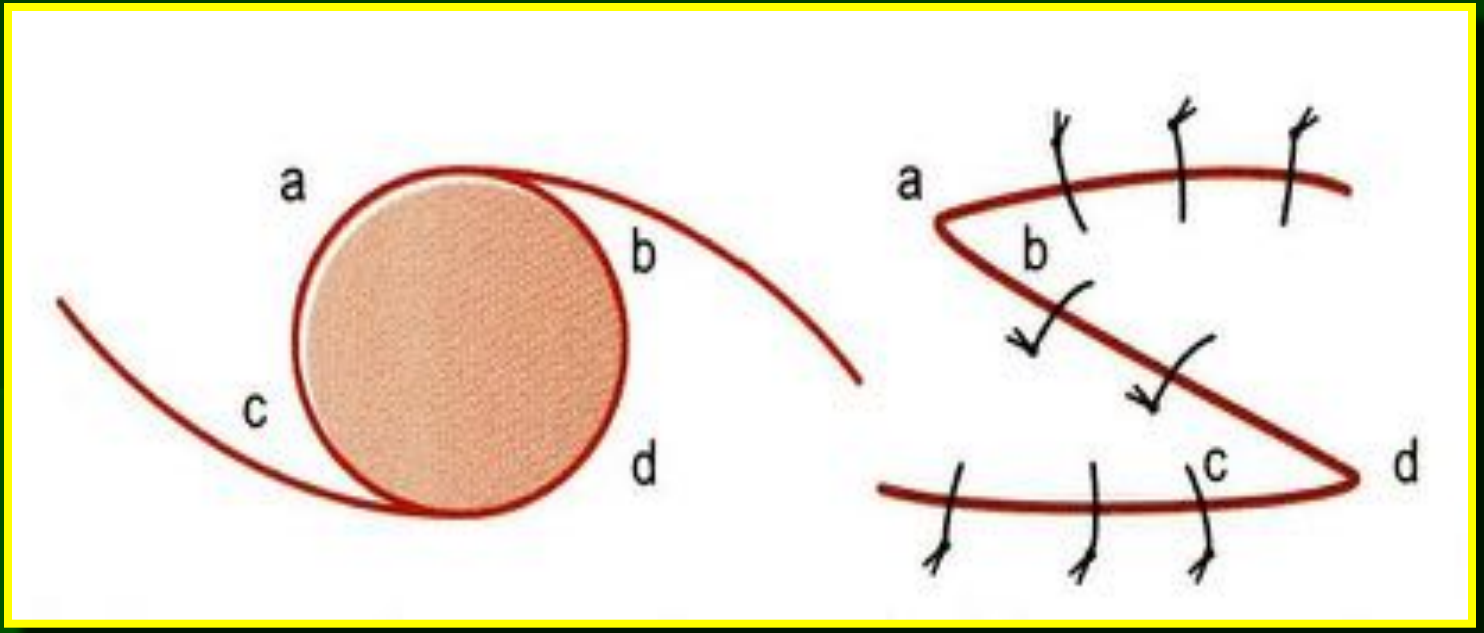
Case Report

46 y.o. female with a 1-cm slightly elevated, irregular, pigmented lesion on ankle

Two 2-mm punch biopsies reveal malignant melanoma in situ (MMIS)

Reciprocal Techniques for Closure of Circular or Oval Defects

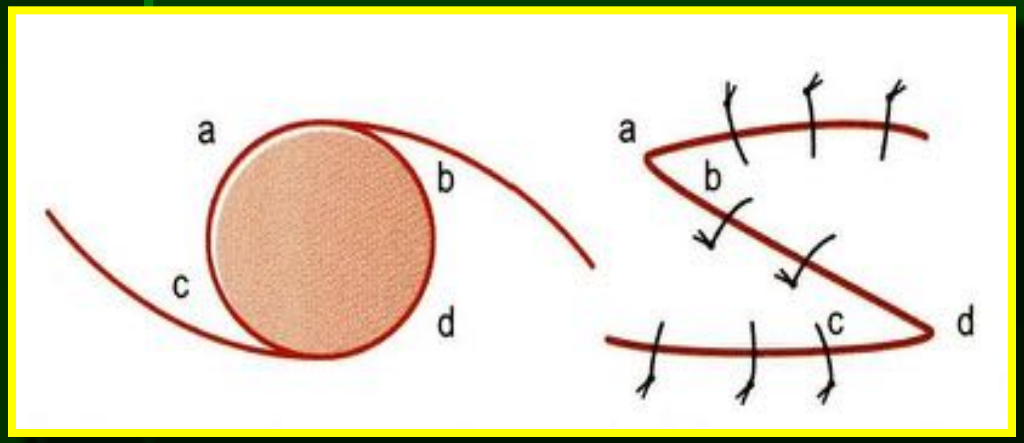
O-Z Plastic Closure



Buckingham EC, Quinn FB, Calhoun KH: Optimal design of O-to-Z flaps for closure of facial skin defects. Arch Facial Plast Surg; 5:92-95, 2003.

O to Z Closure

O-Z Plastic Closure

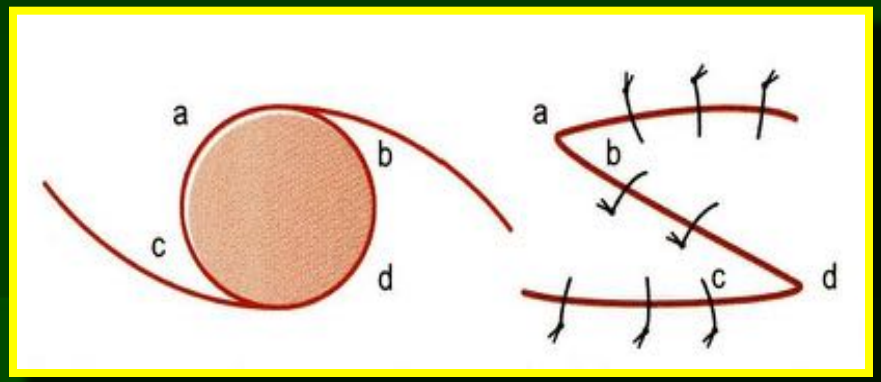


Buckingham EC, Quinn FB, Calhoun KH: Optimal design of O-to-Z flaps for closure of facial skin defects. Arch Facial Plast Surg; 5:92-95, 2003.

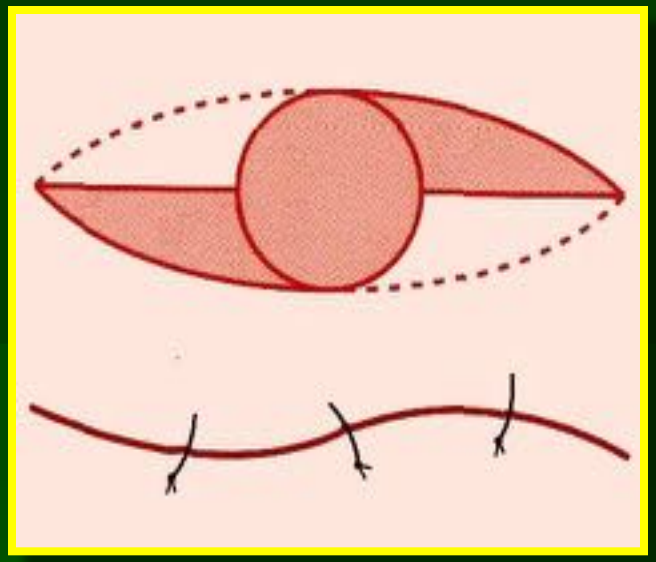
Reciprocal Techniques for Closure of Circular or Oval Defects

Compare O-Z to Alvarado's Double-S

O to Z Closure



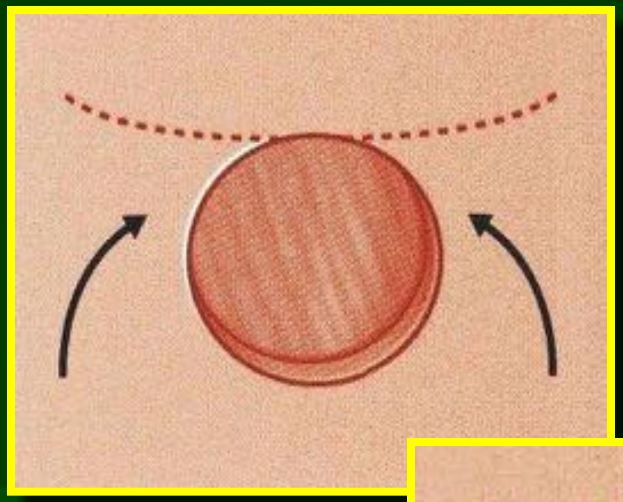
Double-S Closure

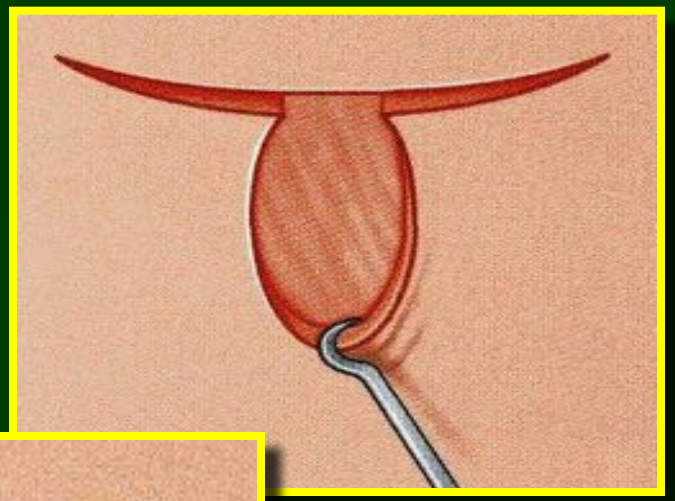


Alvarado AL: Reciprocal incisions for closure of circular skin defects, Plast Reconstr Surg; 67:482-491, 1981.

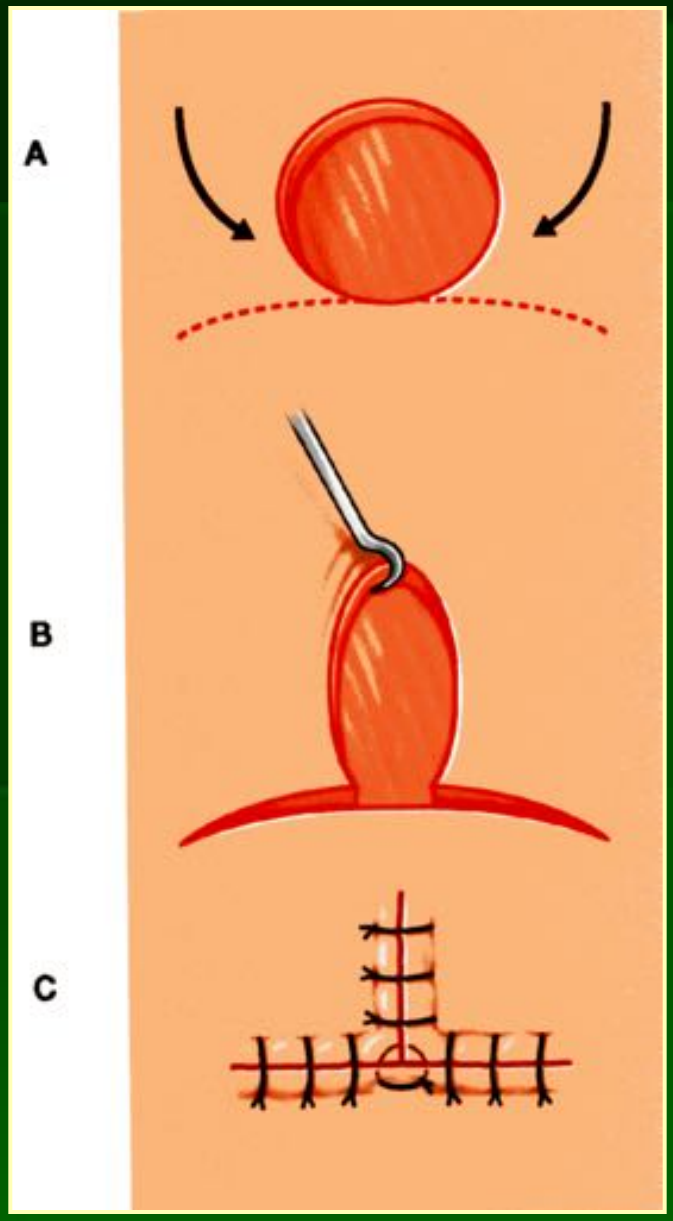
Reciprocal Techniques for Closure of Circular or Oval Defects

O-T Plastic Closure



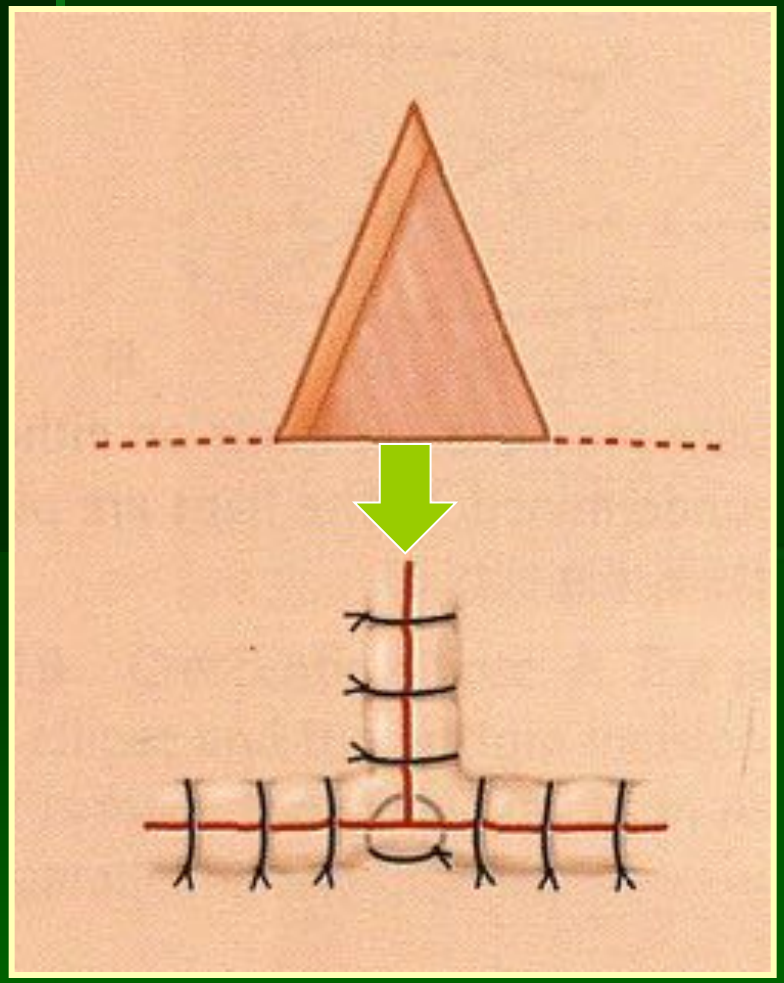


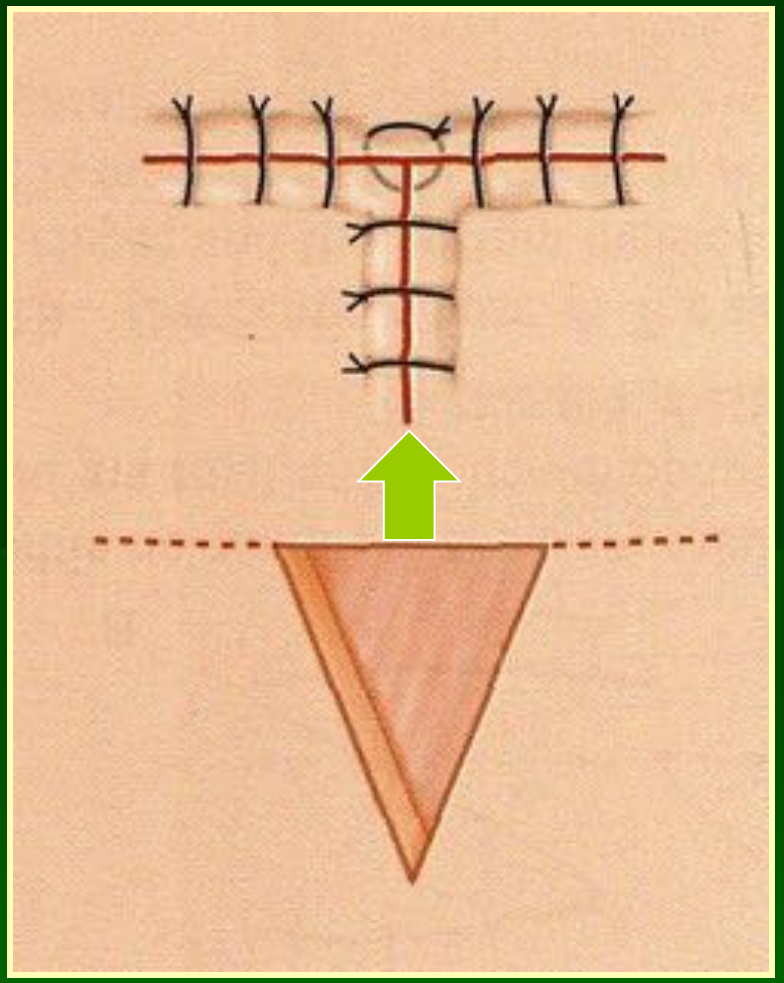
O to T Closure



Reciprocal Techniques for Closure of Circular or Oval Defects

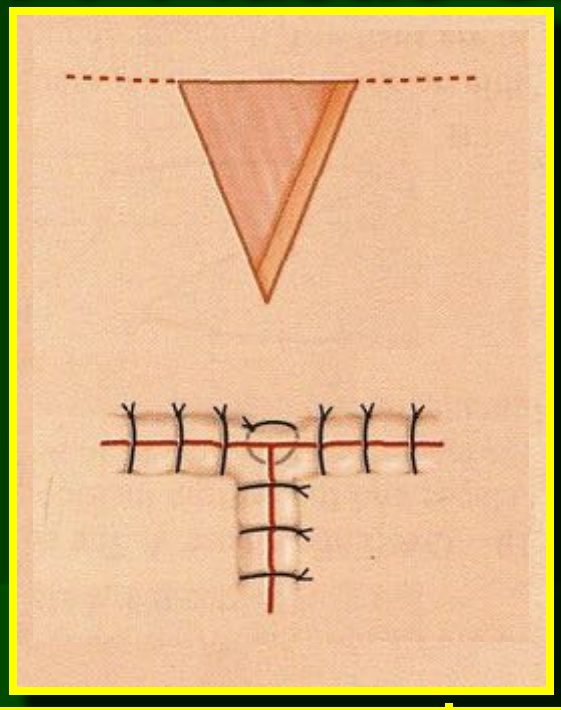
A to T Closure

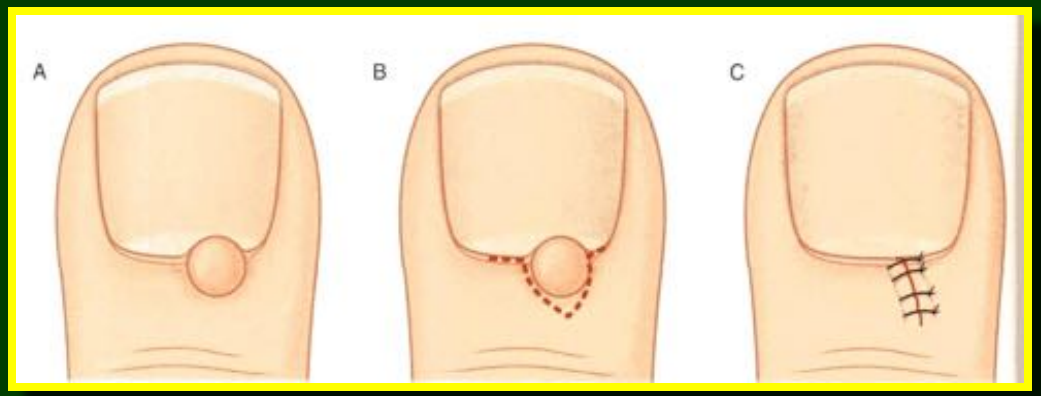


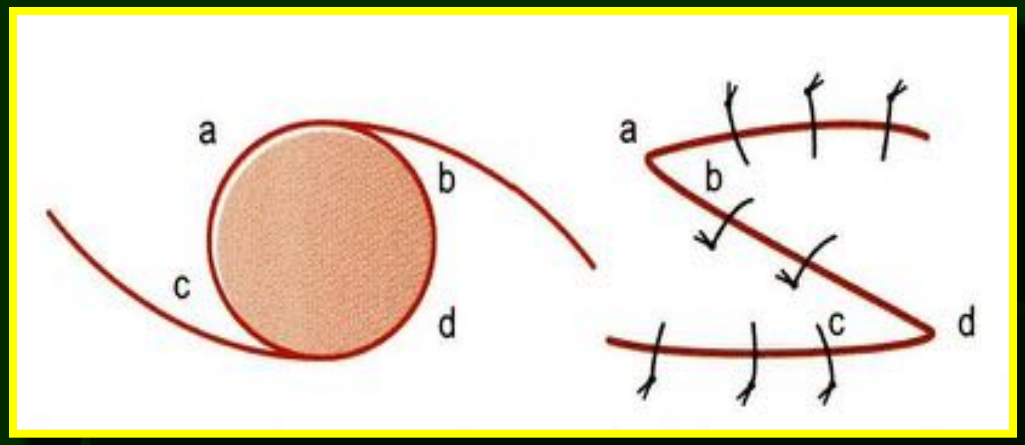


Reciprocal Techniques for Closure of Circular or Oval Defects

A-T Plastic Closure or V-T Closure



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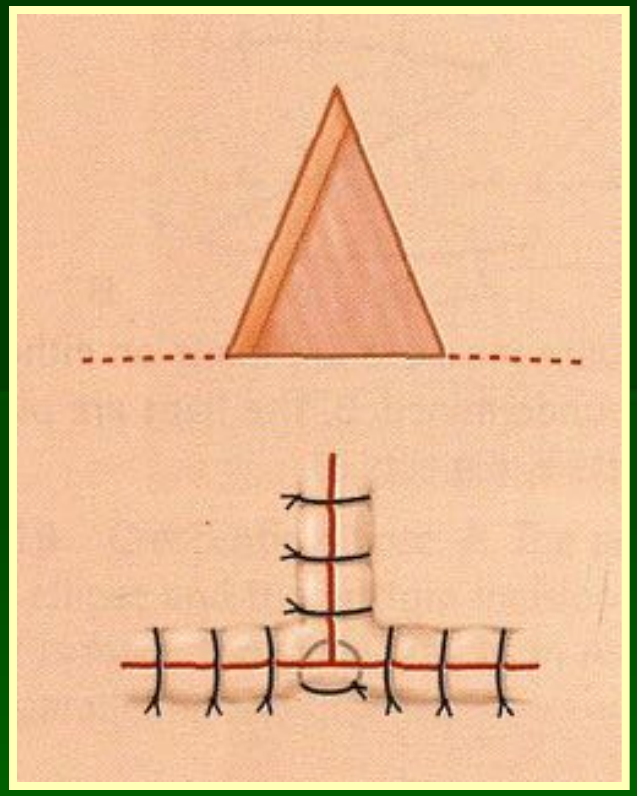

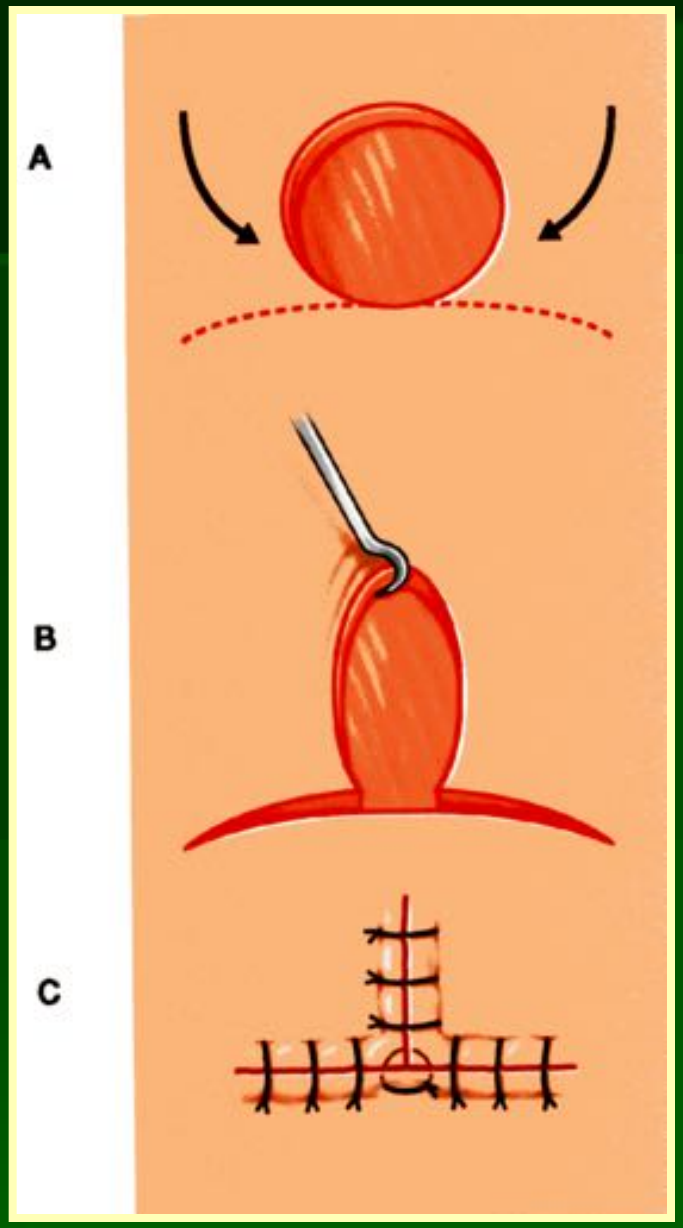
A
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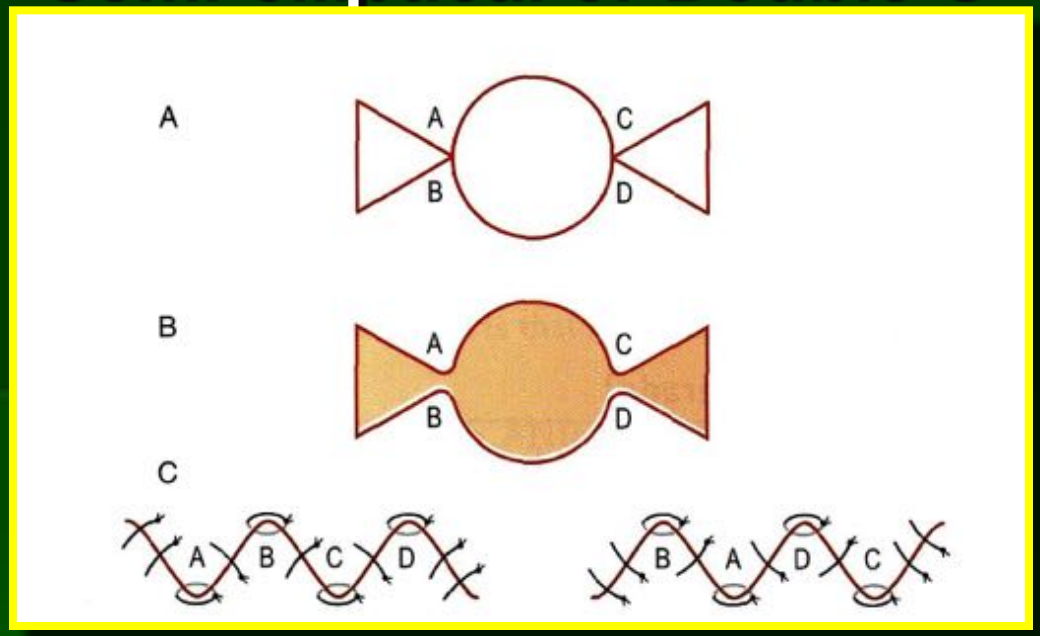
Reciprocal Techniques for Closure of Circular or Oval Defects

BOWTIE Plastic Closure

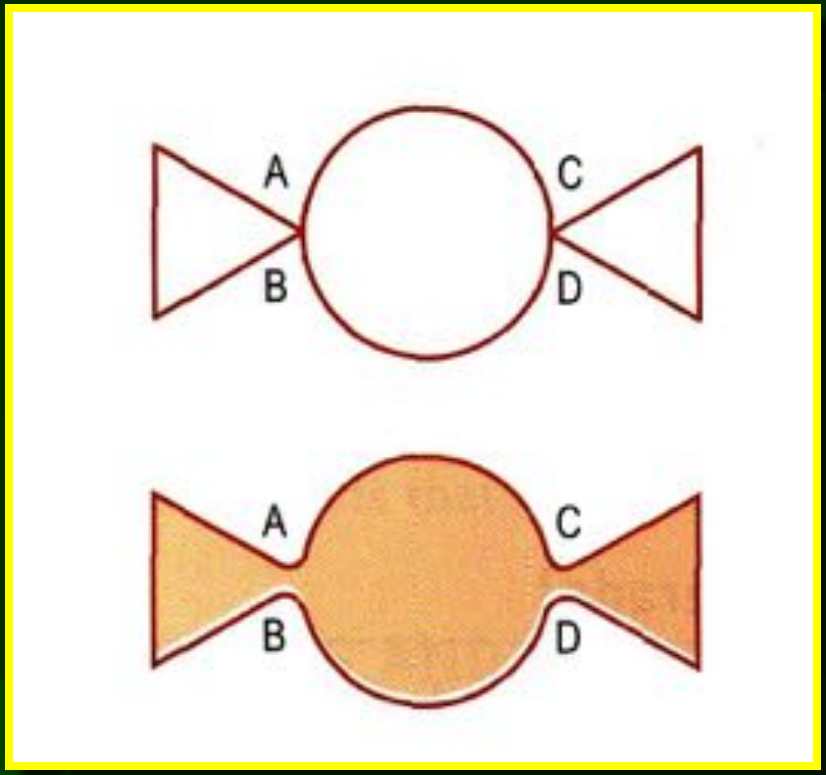
Removes Less Normal Than Semi-elliptical or Double-S

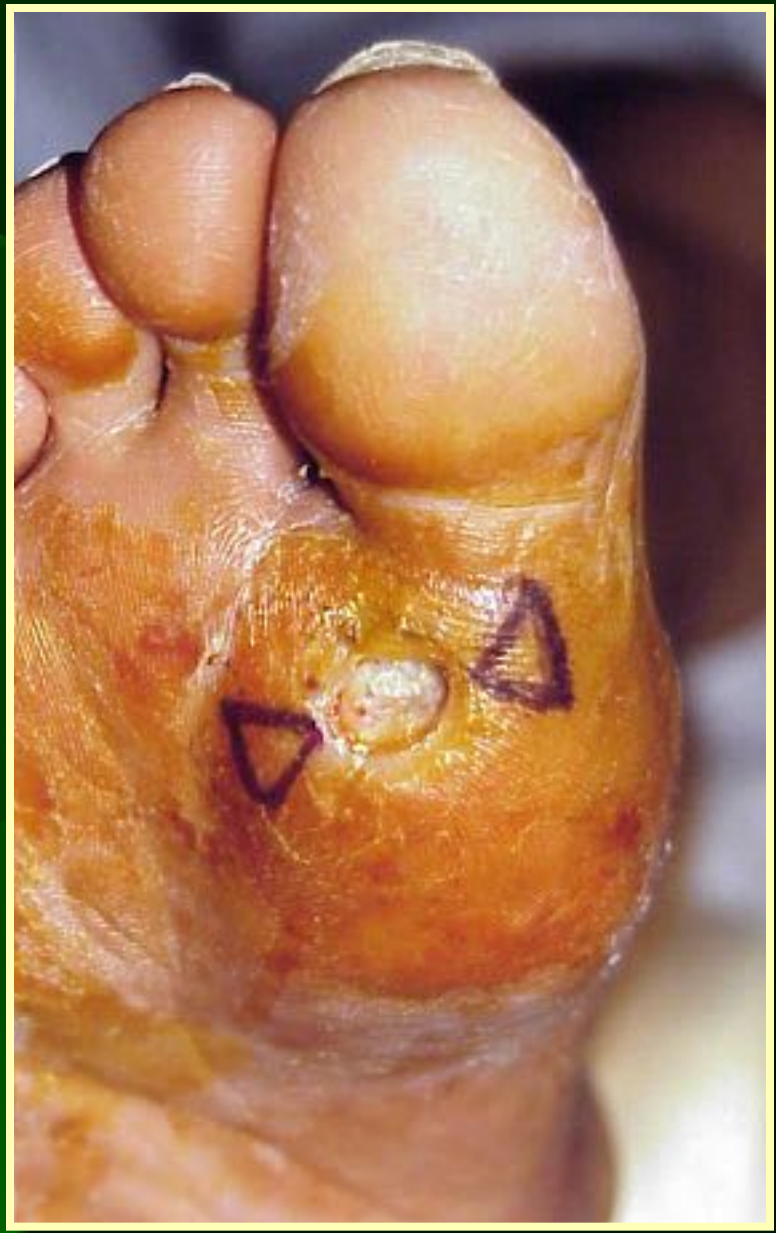


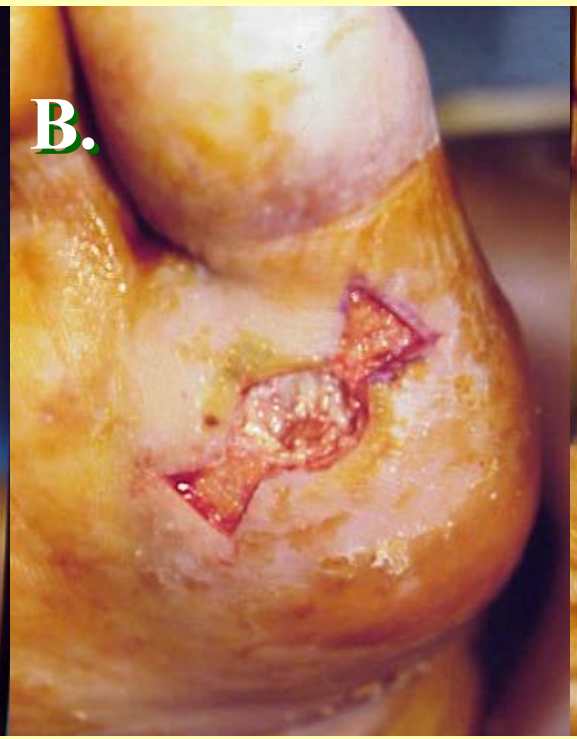
Two Ways to Close Incision

Alvarado AL: Reciprocal incisions for closure of circular skin defects, Plast Reconstr Surg; 67:482-491, 1981.

BOWTIE Plastic Closure







BOW TIE FLAP: For Closure of Circular Defects

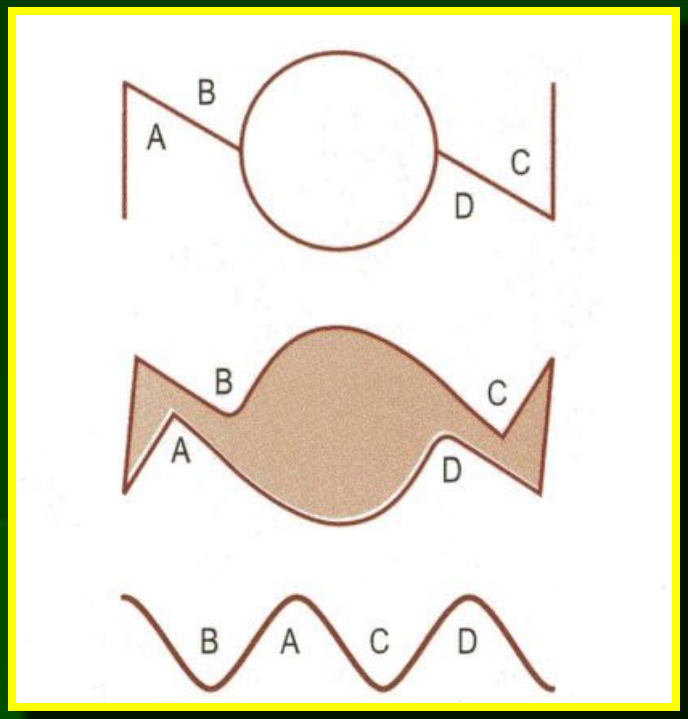
A. Design Drawn, B. Wound Excised, C. Manipulation of Incision to Closure (Two Different Possible Positions)

BOWTIE FLAP: From a Hard-to-Close Wound to a Nice Cosmetic Closure

Plastic Techniques for Closure of Circular or Oval Defects

Modified Bowtie or Combined-V Plastic Closure

Acts Like Double-Z Plasty



Takes the Least Amount of Normal Tissue

Alvarado AL: Reciprocal incisions for closure of circular skin defects, Plast Reconstr Surg; 67:482-491, 1981.

Reciprocal Techniques for Closure of Circular or Oval Defects

Modified Bowtie or Combined-V Plastic Closure

Acts Like Double-Z Plasty

Dockery GL: Excisional techniques and procedures, Lower Extremity Soft Tissue & Cutaneous Plastic Surgery, Elsevier Sciences (Saunders), Philadelphia, 2012.

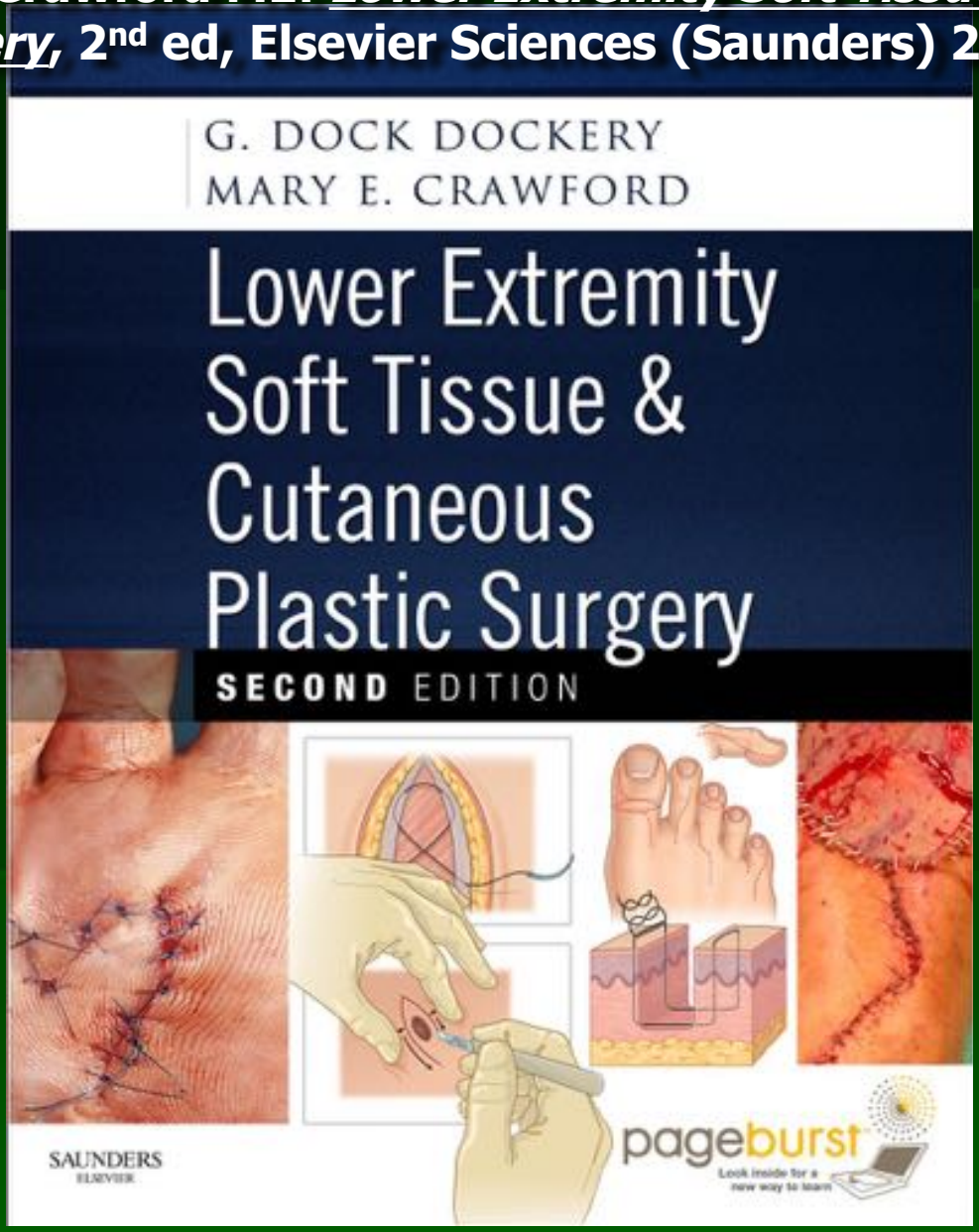
Topical Silicone Sheeting
May be used on new or old scars

Dockery GL, Nilson RZ: Treatment of Hypertrophic and Keloid Scars with Silicone Gel Sheeting. JFAS, 33:110-119, 1994.

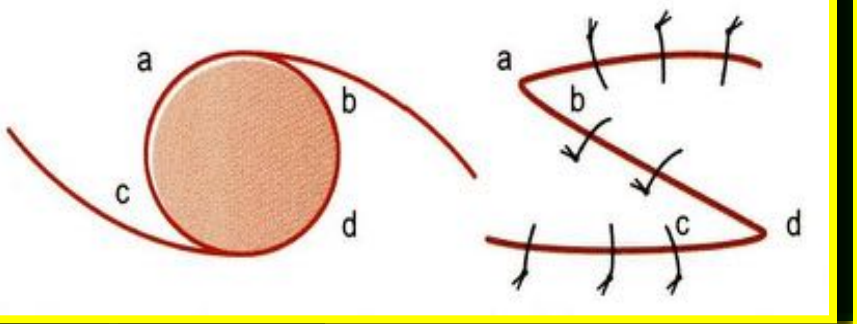
POSTOPERATIVE FLAP CARE

Suture Tracks and Scars Can be Treated with Silicone Sheeting Gel to Lighten and Flatten Them

Dockery GL, Crawford ME: *Lower Extremity Soft Tissue & Cutaneous Plastic Surgery*, 2nd ed, Elsevier Sciences (Saunders) 2012.



Available at Elsevier or at: www.internationalfootankle.org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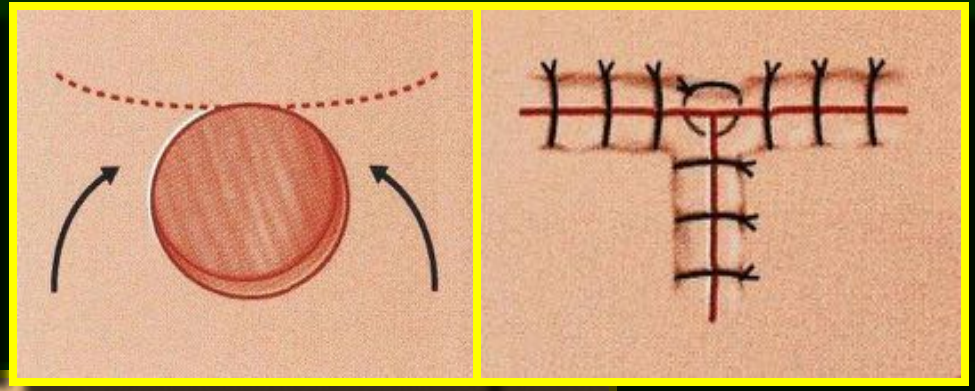

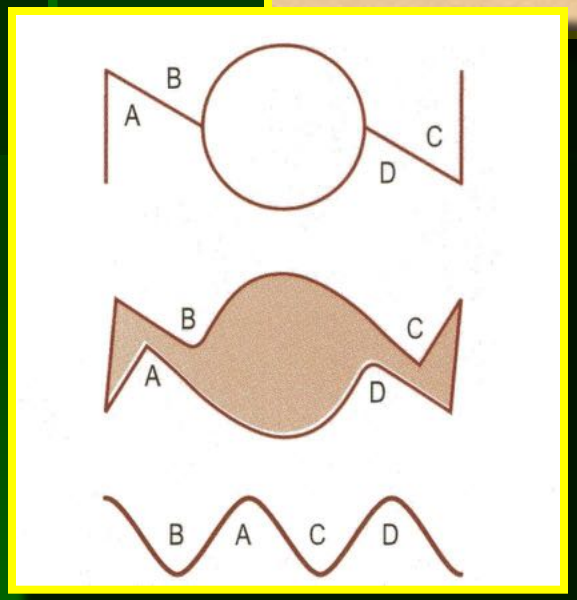
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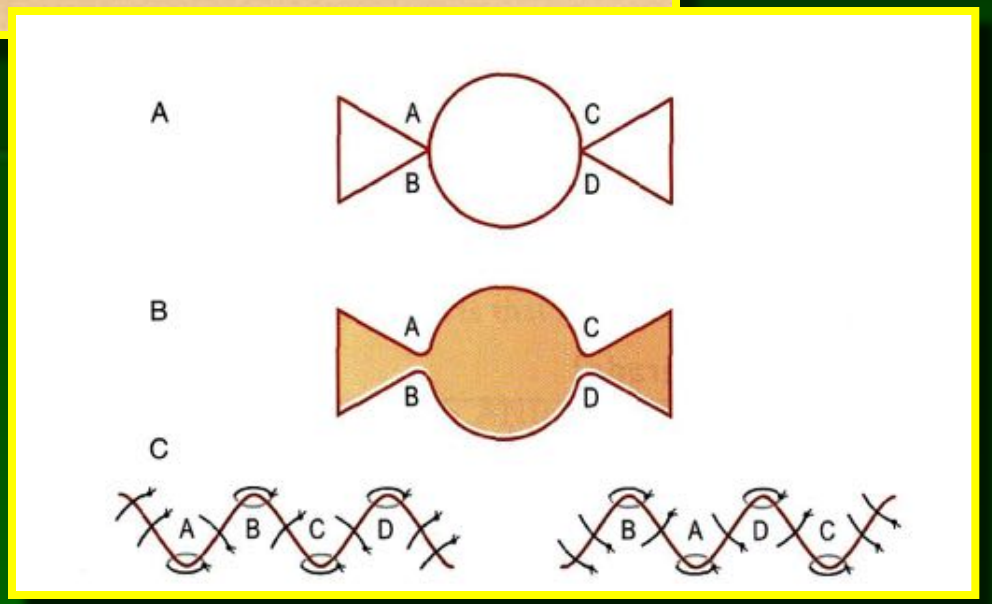
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Plastic Techniques for Closure of Circular or Oval Defects

REFERENCES:

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- Asken A: Modified M-plasty. J Dermatol Surg Oncol; 12:369-373, 1986.
- Buckingham EC, Quinn FB, Calhoun KH: Optimal design of O-to-Z flaps for closure of facial skin defects. Arch Facial Plast Surg; 5:92-95, 2003.
- Dockery GL: Principles of forefoot plastic surgery. In: Butterworth R, Dockery GL (eds): Color Atlas and Text of Forefoot Surgery. St. Louis: Mosby-Yearbook, pp 7-34, 1992.
- Dockery GL, Crawford ME: *Lower Extremity Soft Tissue & Cutaneous Plastic Surgery*, Elsevier Sciences (Saunders) 2006.
- Limberg AA: Design of local flaps. In: Gibson T (ed): Modern Trends in Plastic Surgery. London: Butterworths; 38-61, 1966.
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- Tamir G, Birkby CS, Berg D: Three point-advancement closure for skin defects, J Cutan Med Surg; 3:288-292, 1999.