ترميم الضياعات المادية في
الطرف السفلي باستخدام الشرائح الناحية
RECONSTRUCTION OF THE LOWER LEG
BY USING REGIONAL FLAPS

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ماجستير جراحة تجميلية وتصنيعية وحروق

History

- Hippocrates (460–370 bc): amputation as the method of last resort
- Celsus (25 bc–50 ad): introduced the rules of wound management
- Ambroise Pare (1509–1590): rules of amputation still followed today.
- World War I: antiseptics and antibiotics
- World War II: mortality from 8% to 4.5%
- WW II amputation rate(5.3%) - WW I(2%).
- Korean conflict: amputation rate from 62% to 13%
- In the late 1960s: regional flaps
- 1970s: microsurgery

Anatomy

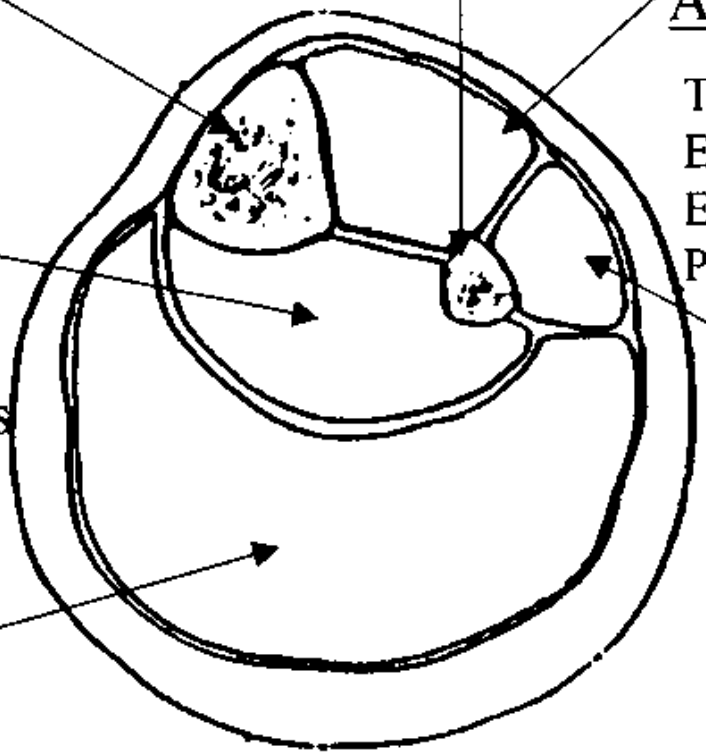
- **Bones: tibia 85% of the weightbearing**

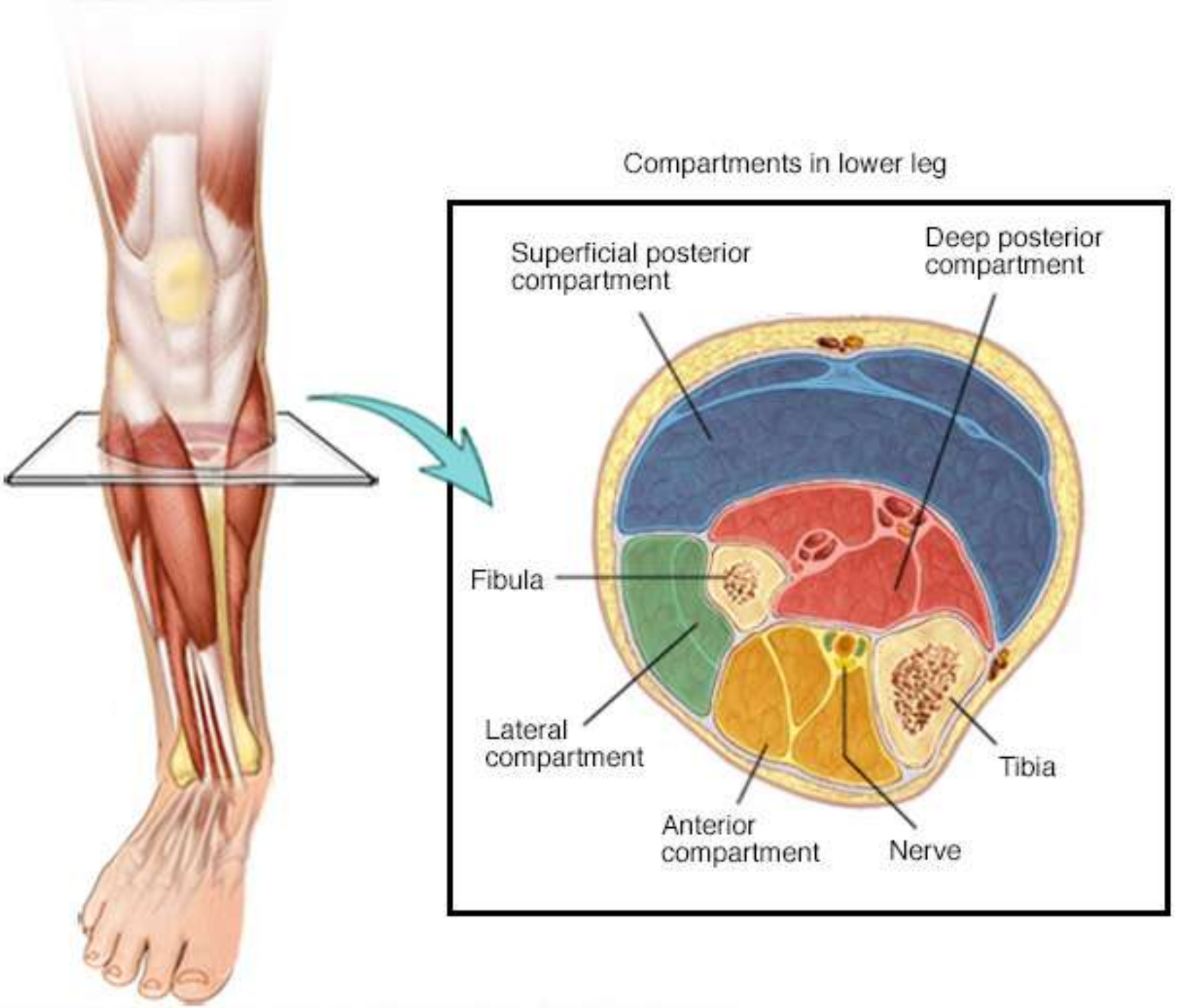
  fibula muscle and fascial attachments

- **Compartments:**

  1. Anterior: tibialis anterior, extensor hallucis longus, extensor digitorum longus, peroneus tertius.
  2. Lateral: peroneus longus, peroneus brevis.
  3. Superficial Posterior: gastrocnemius, soleus, plantaris, popliteus.
  4. Deep Posterior: flexor hallucis longus, flexor digitorum longus, tibialis posterior muscles.

Leg compartments

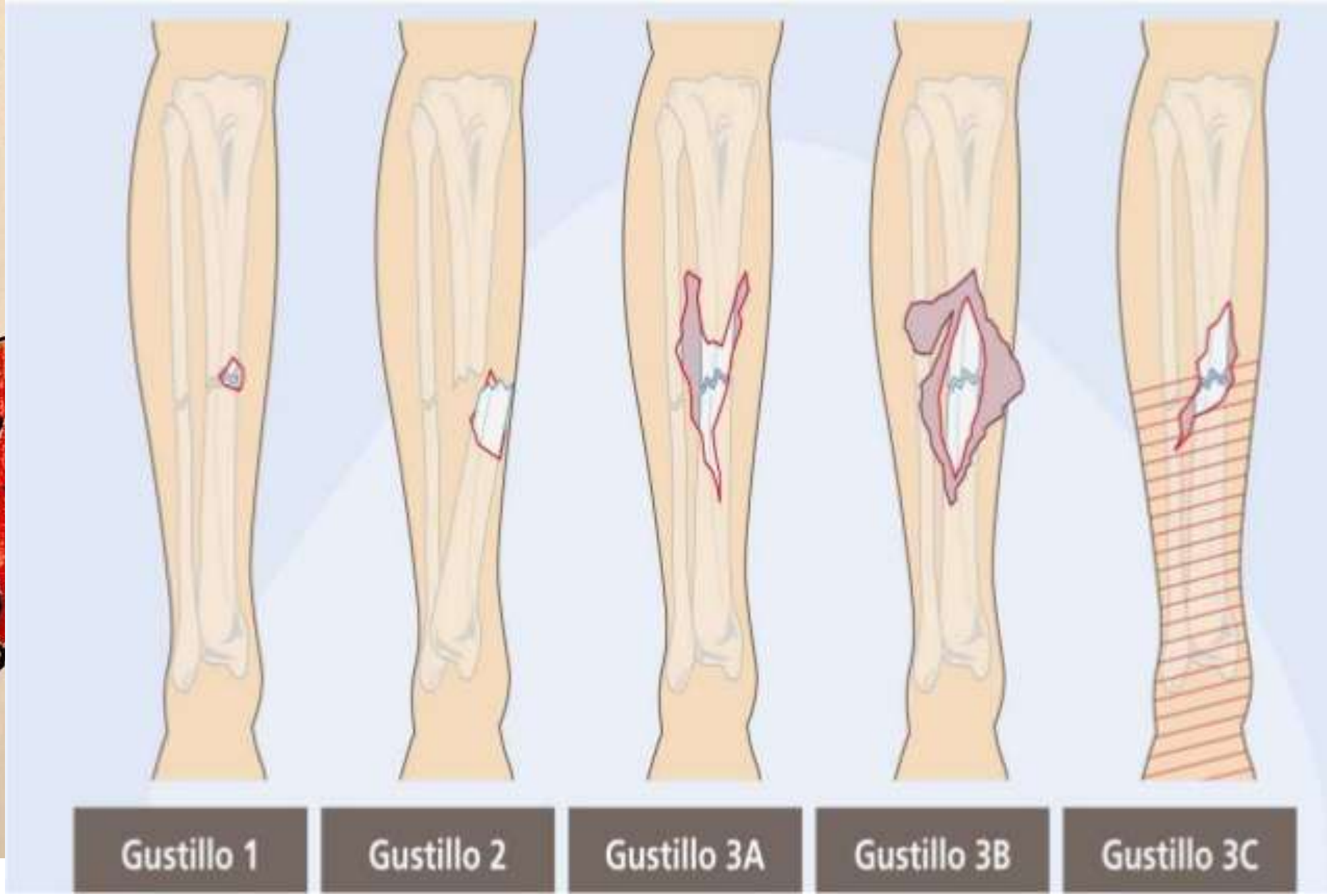




GUSTILO CLASSIFICATION OF OPEN FRACTURES

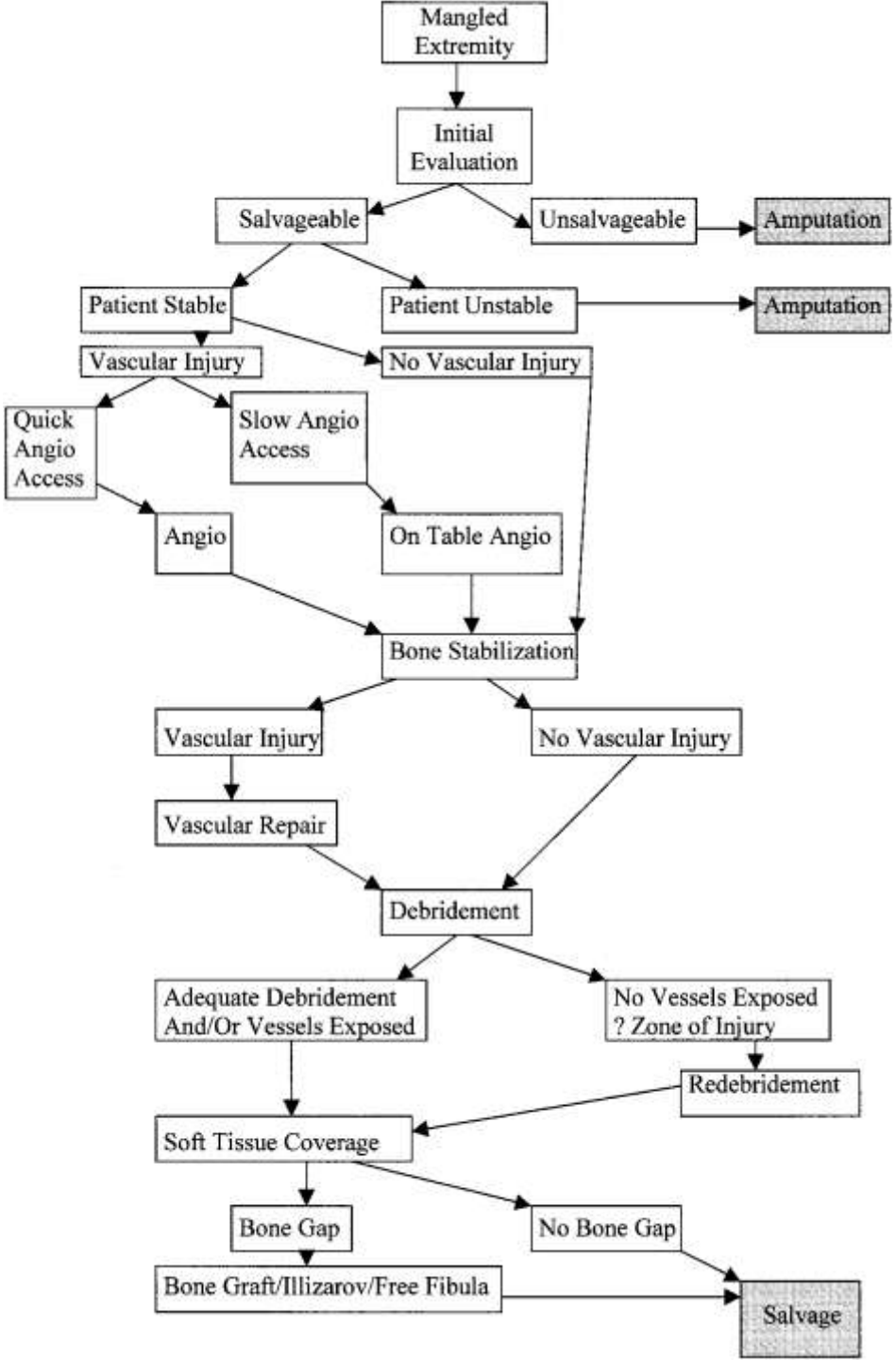
Type	Description
I	wound <1 cm
II	wound >1 cm without extensive soft-tissue damage
III	extensive soft-tissue damage
IIIA	III with adequate soft-tissue coverage
IIIB	III with soft-tissue loss with periosteal stripping and bone exposure
IIIC	III with arterial injury requiring repair

Gustilo classificatie



Reconstructive Plan

- the patient is stabilized
- decision to salvage the extremity
- stabilization of the bone injury
- revascularization is performed
- all nonviable tissue must be debrided


Mangled Extremity
Initial Evaluation
Salvageable
Unsalvageable
Amputation
Patient Stable
Patient Unstable
Amputation
Vascular Injury
No Vascular Injury
Quick Angio Access
Slow Angio Access
Angio
On Table Angio
Bone Stabilization
Vascular Injury
No Vascular Injury
Vascular Repair
Debridement
Adequate Debridement And/Or Vessels Exposed
No Vessels Exposed ? Zone of Injury
Redebridement
Soft Tissue Coverage
Bone Gap
No Bone Gap
Bone Graft/Illizarov/Free Fibula
Salvage

Management of Bone Gaps

1. Nonvascularized bone grafts
2. Ilizarov bone lengthening
3. Vascularized bone grafts

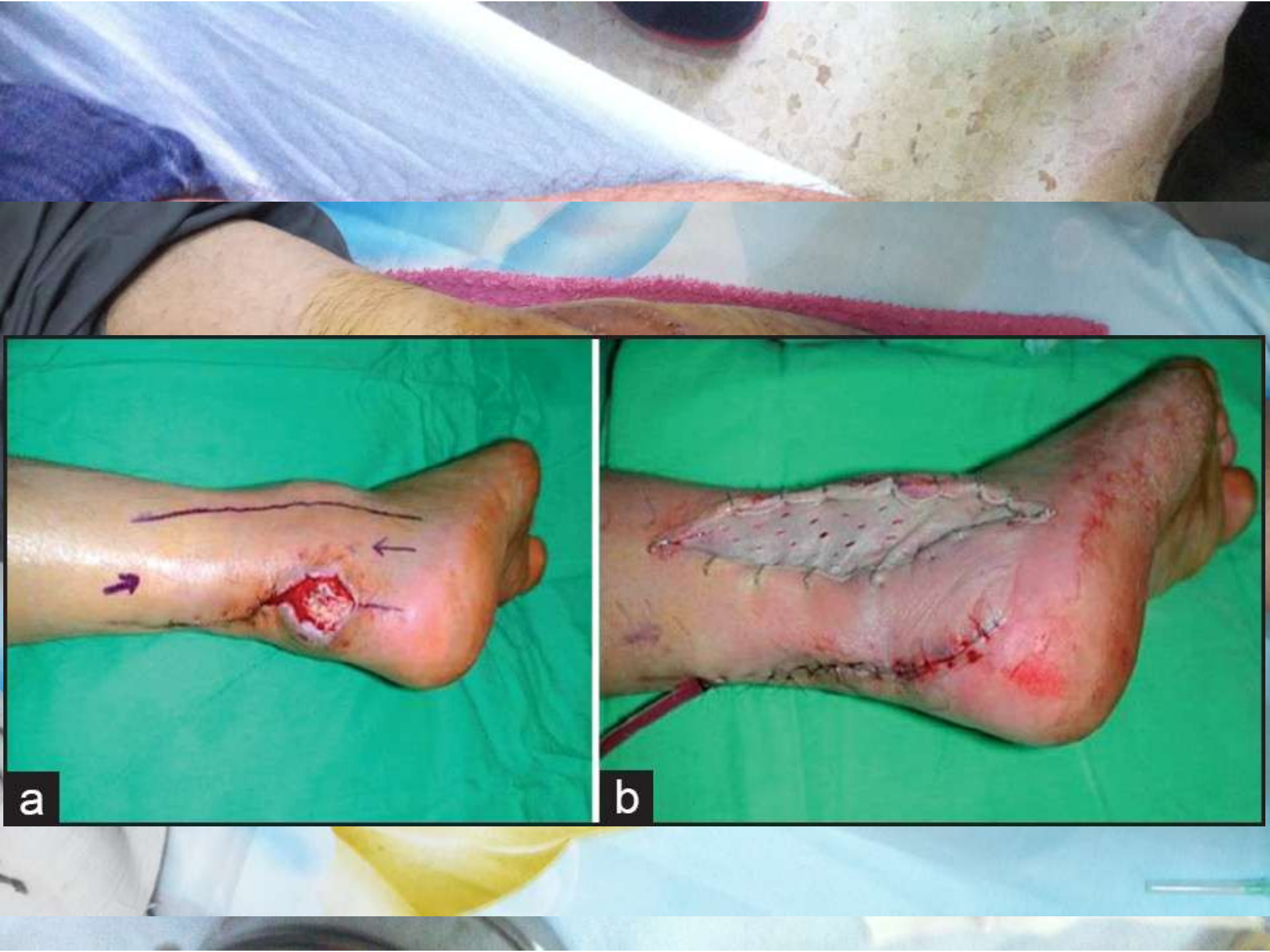
- IIIB, IIIC injuries: external fixation

Soft-Tissue Management

- Reconstructive ladder
- IIIA: STSG
- Local Flaps: proximal or middle third
- **Lower third: free tissue transfer**

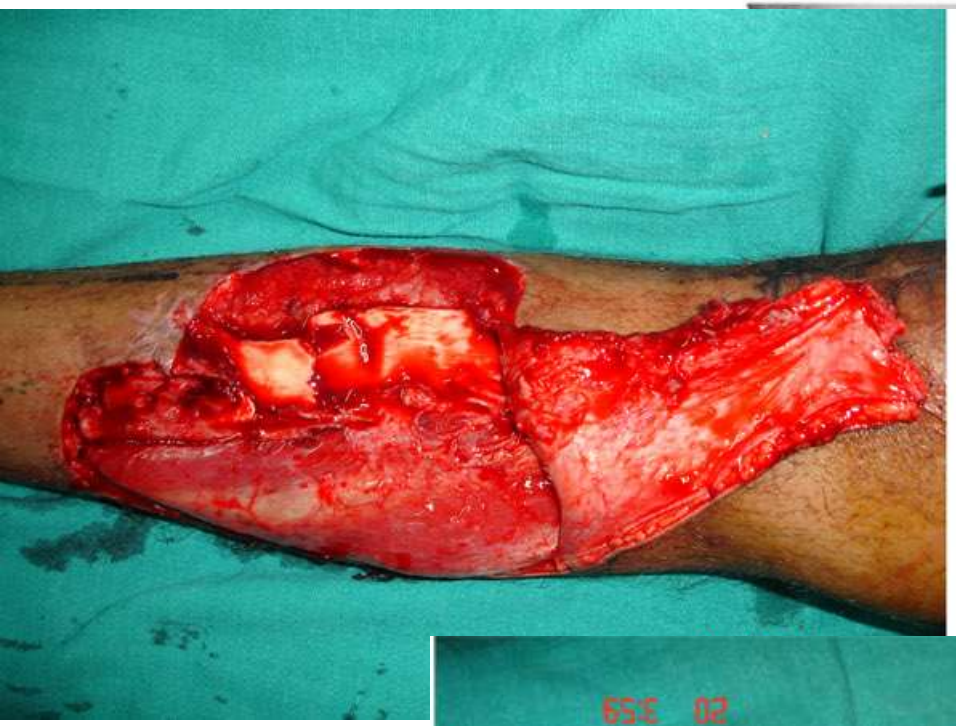
Fasiocutaneous Flap

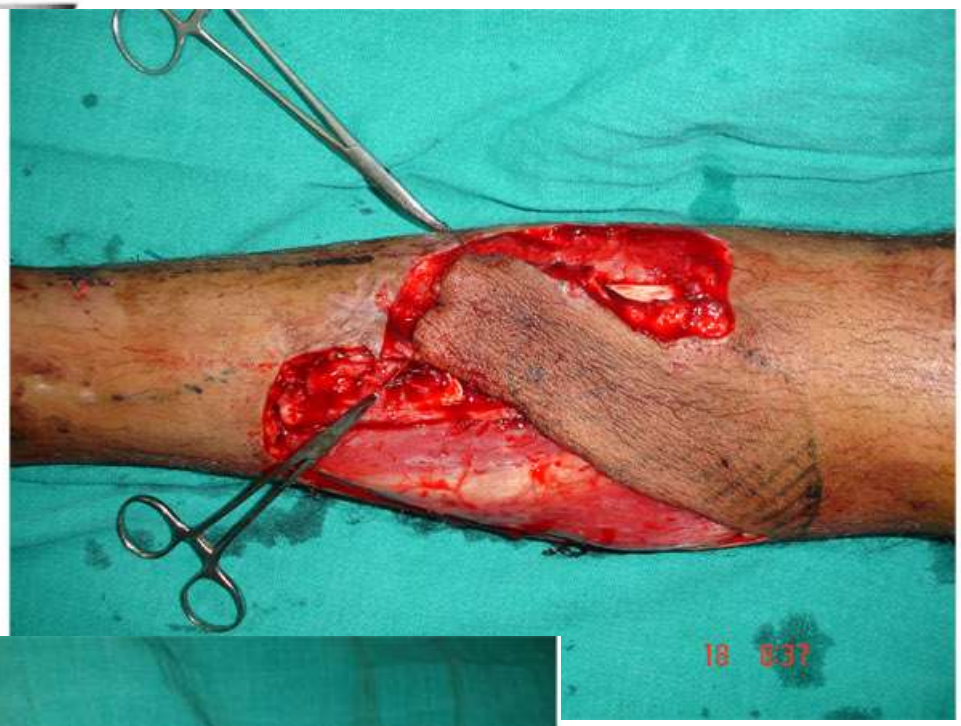
- The operative procedure is simple and short, the flap is safe and stable.
- Good circulation, perforators
- elevate proximally or distally based
- Length: 1×3
- One stage
- The arc of rotation is often quite extensive
- “dogs ear”

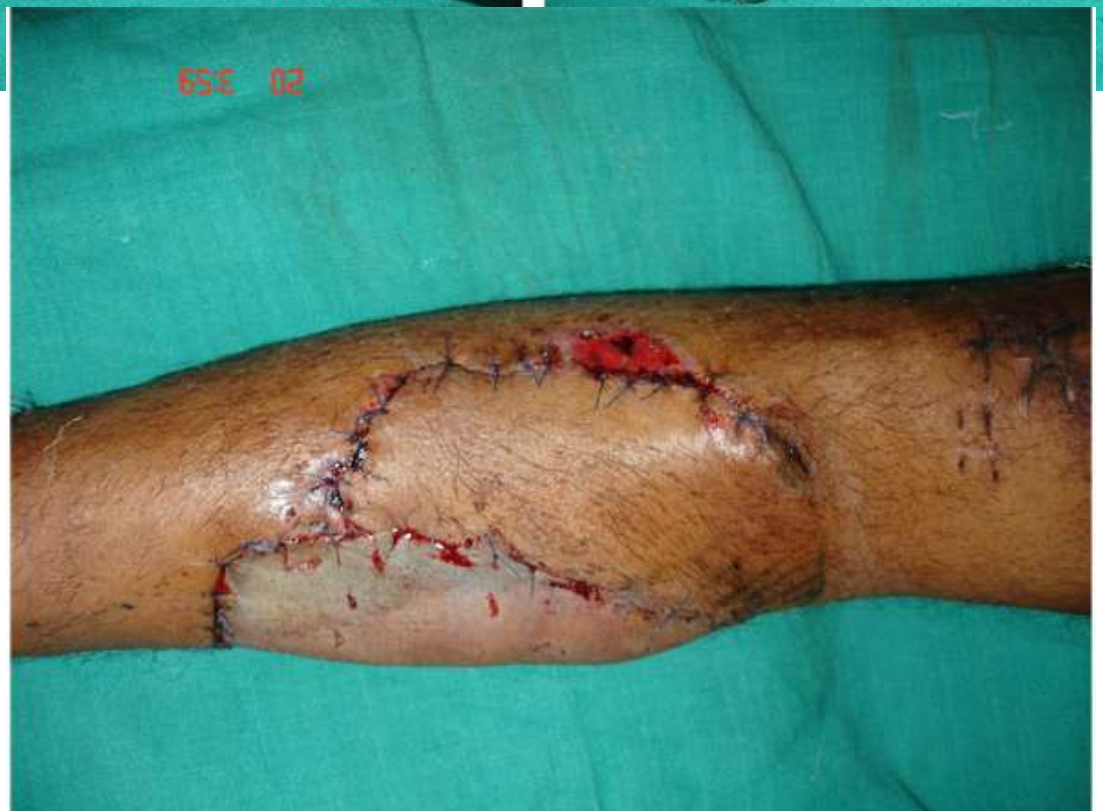

a
b

Saphenous Venous Flap

- covering defects on both the anterior and posterior surfaces of the leg, including the popliteal fossa and knee joint.
- unipedicled type-1 venous flap
- 1: 3 proportioned rectangle, the vein remaining in the middle along the length of the fasciocutaneous island.
- Dimension: 8×24 cm, Arc: 0 to 170 degrees

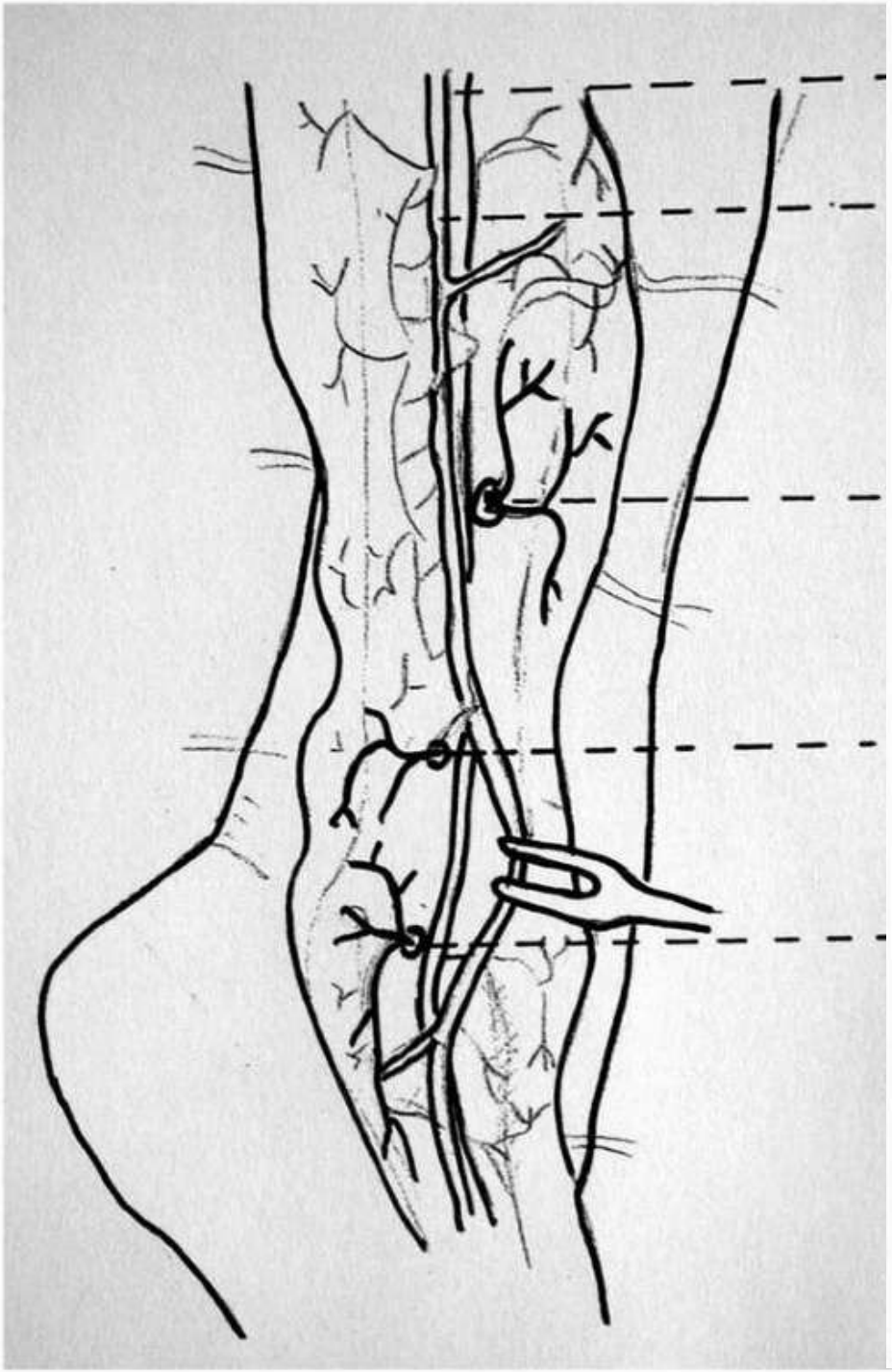


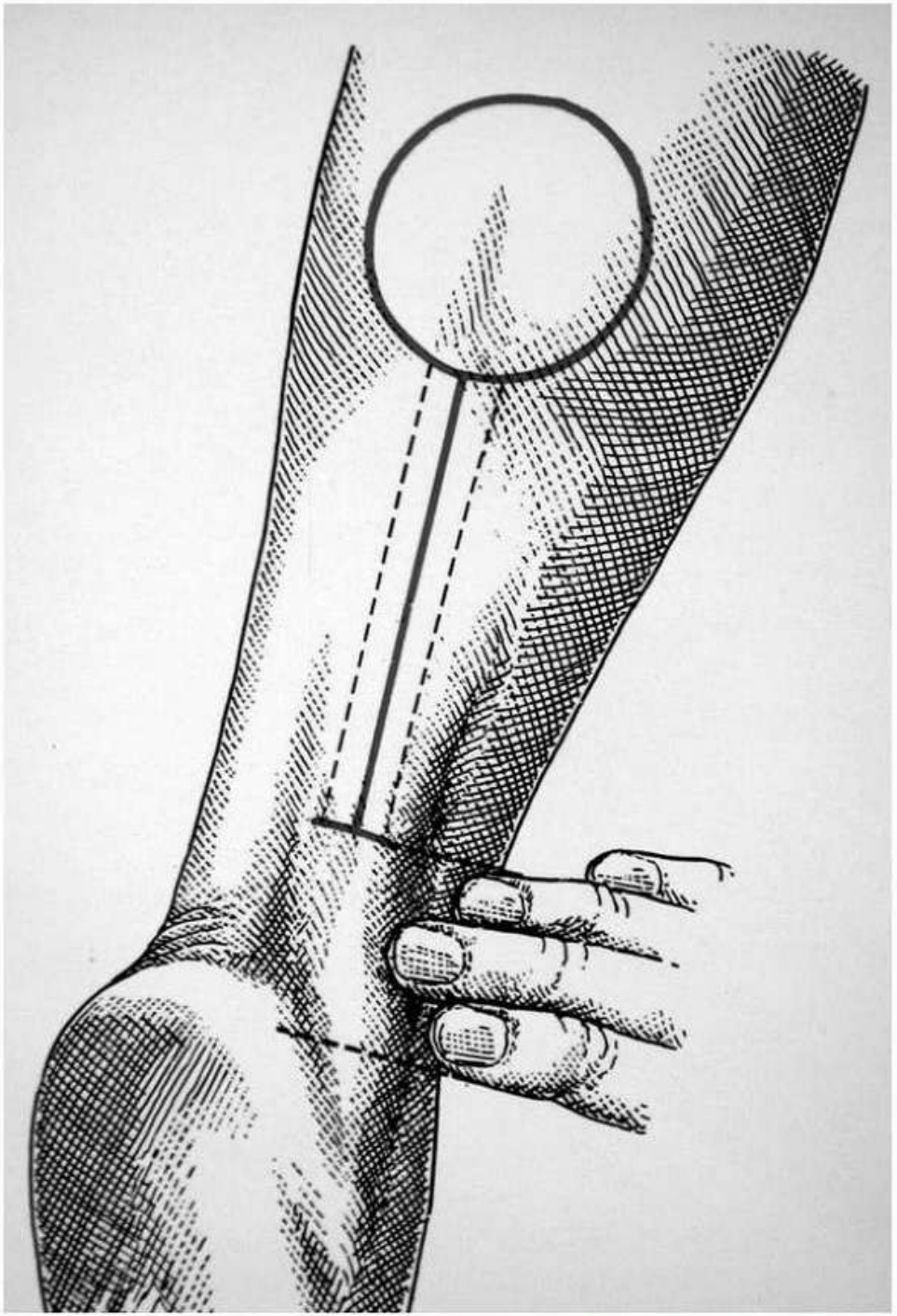


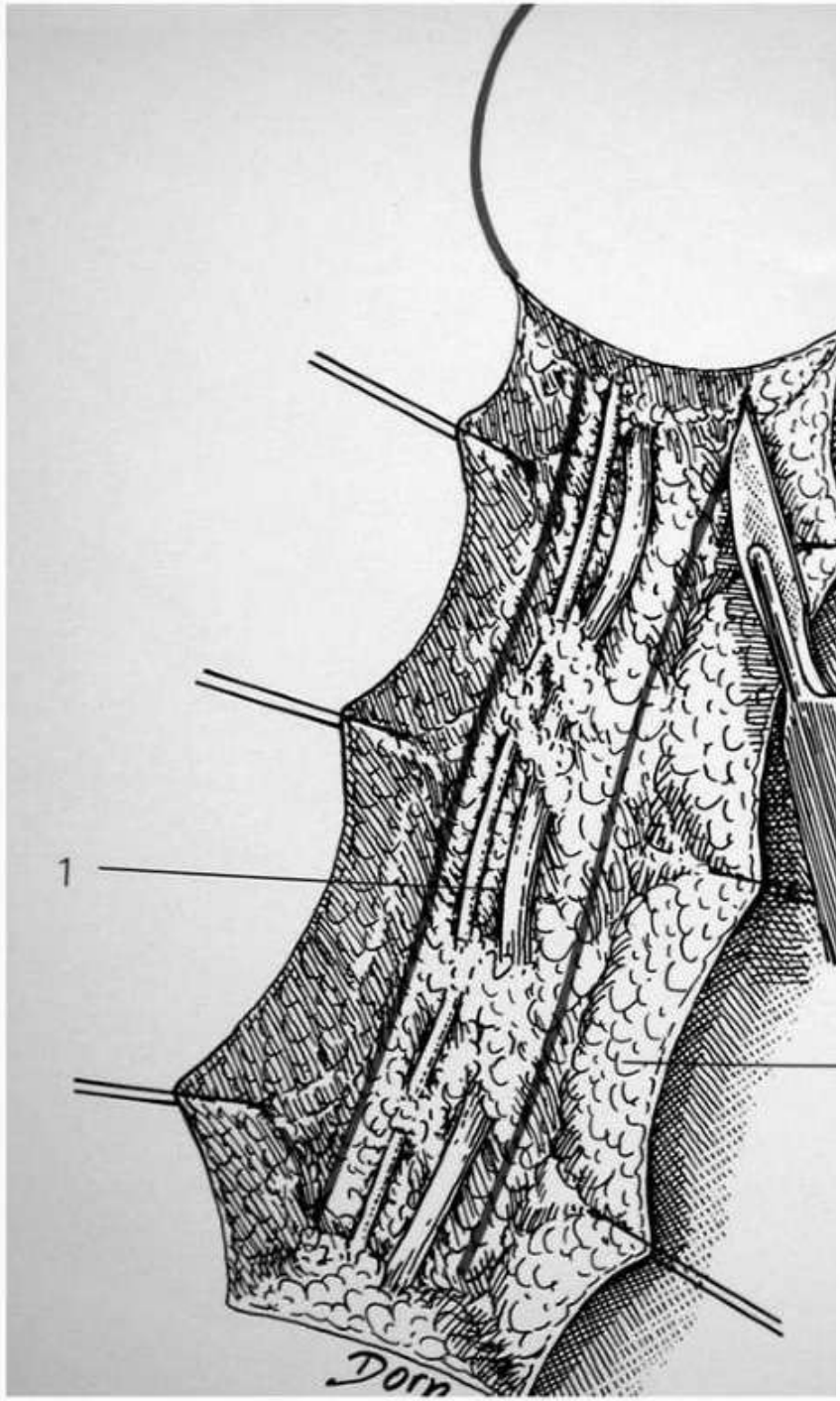


Sural Flap

- reconstruction around the ankle and foot.
- without sacrificing important arteries.
- the flap pedicle includes superficial and deep fascia, sural nerve, lesser saphenous vein, and sural artery.
- Dimentions: reach 15(length)×14(width) cm
- Pedicle: 4×1
- Complications(5-36%): partial or complete necrosis, infection, hematoma, delayed healing, and skin-graft necrosis on the flap margins
- risk factors: diabetes mellitus, venous insufficiency, peripheral arterial disease



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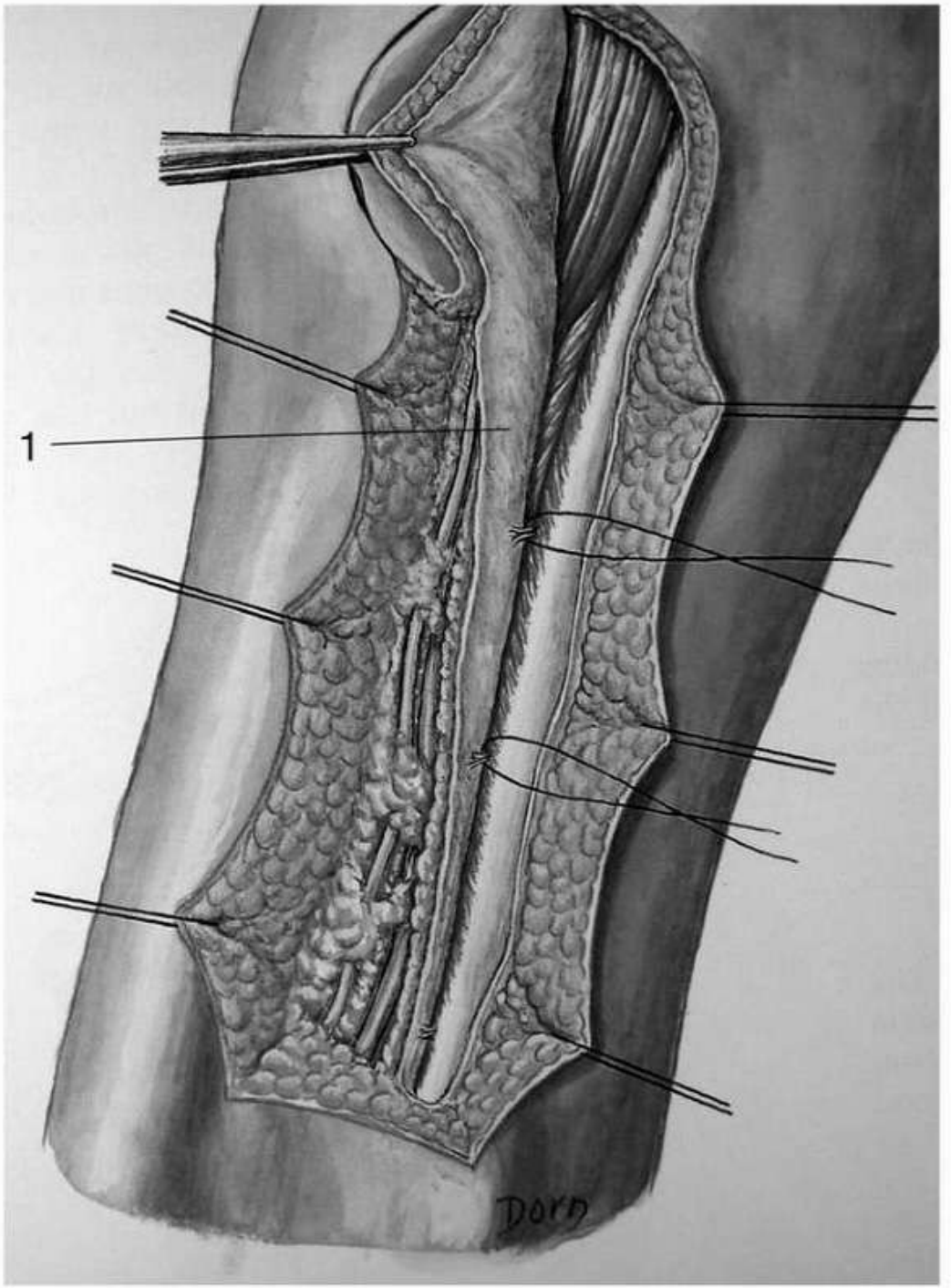
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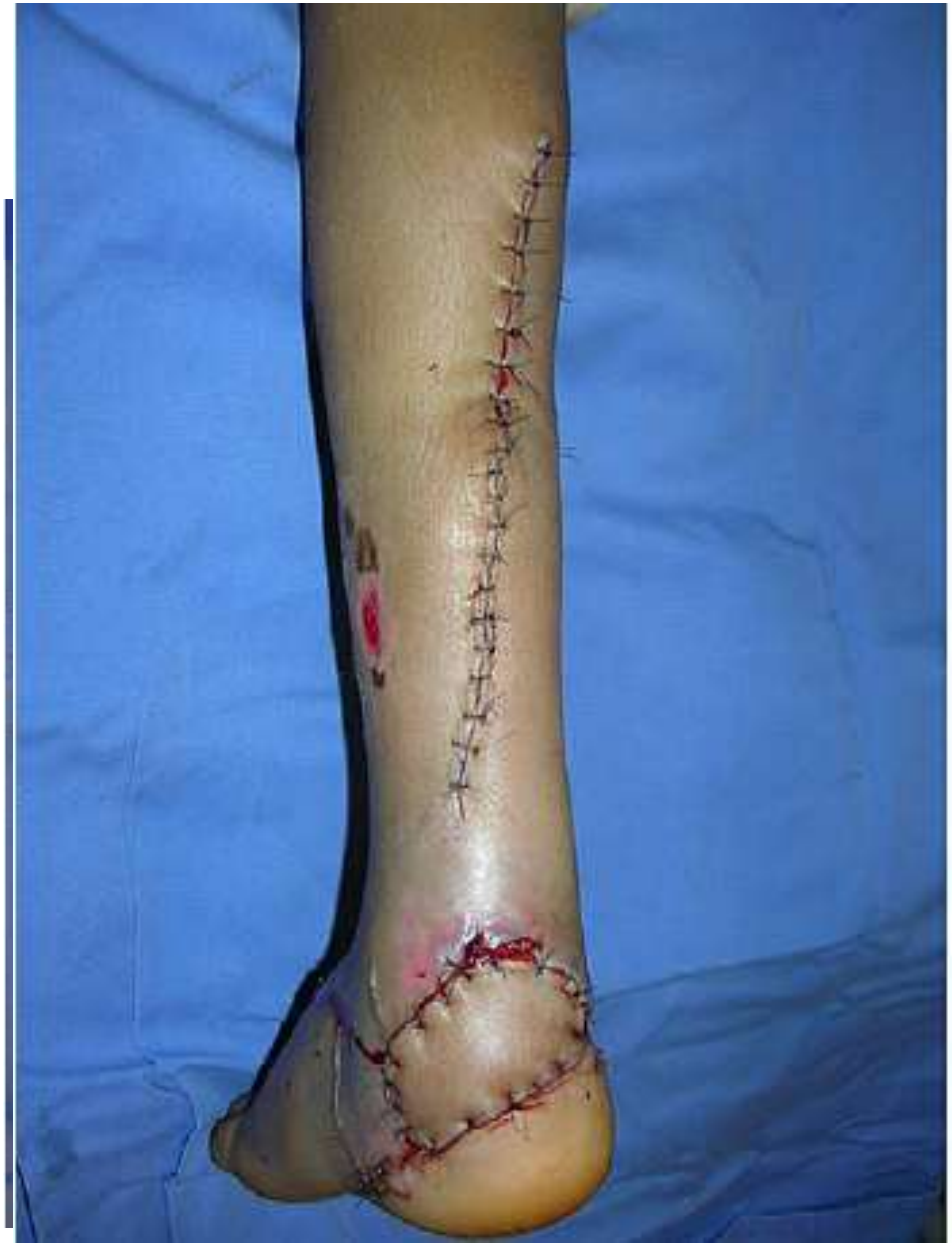
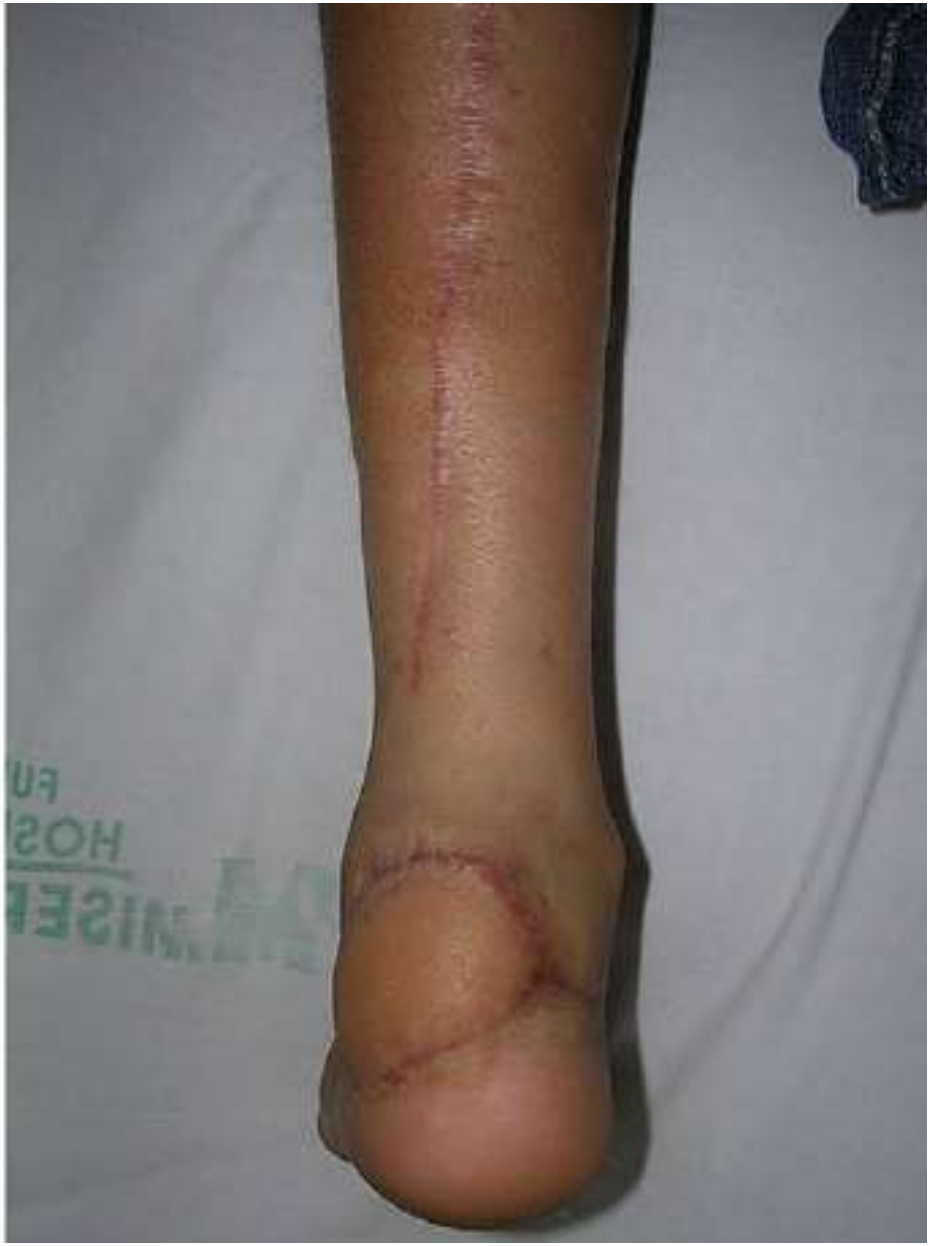
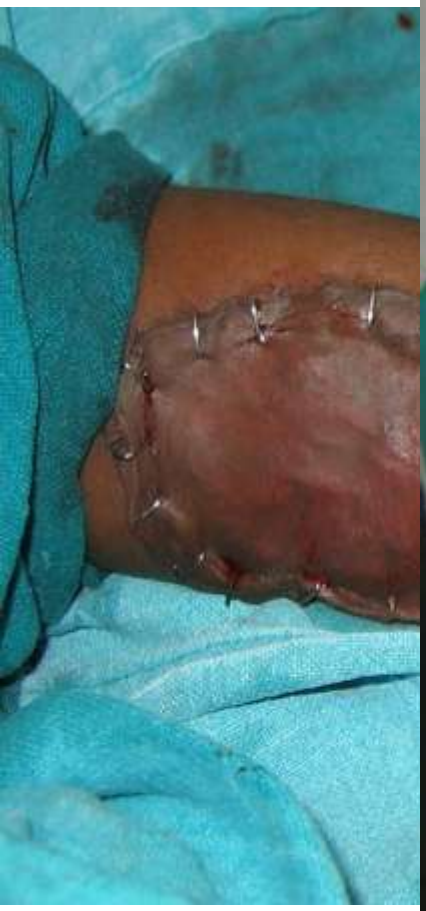
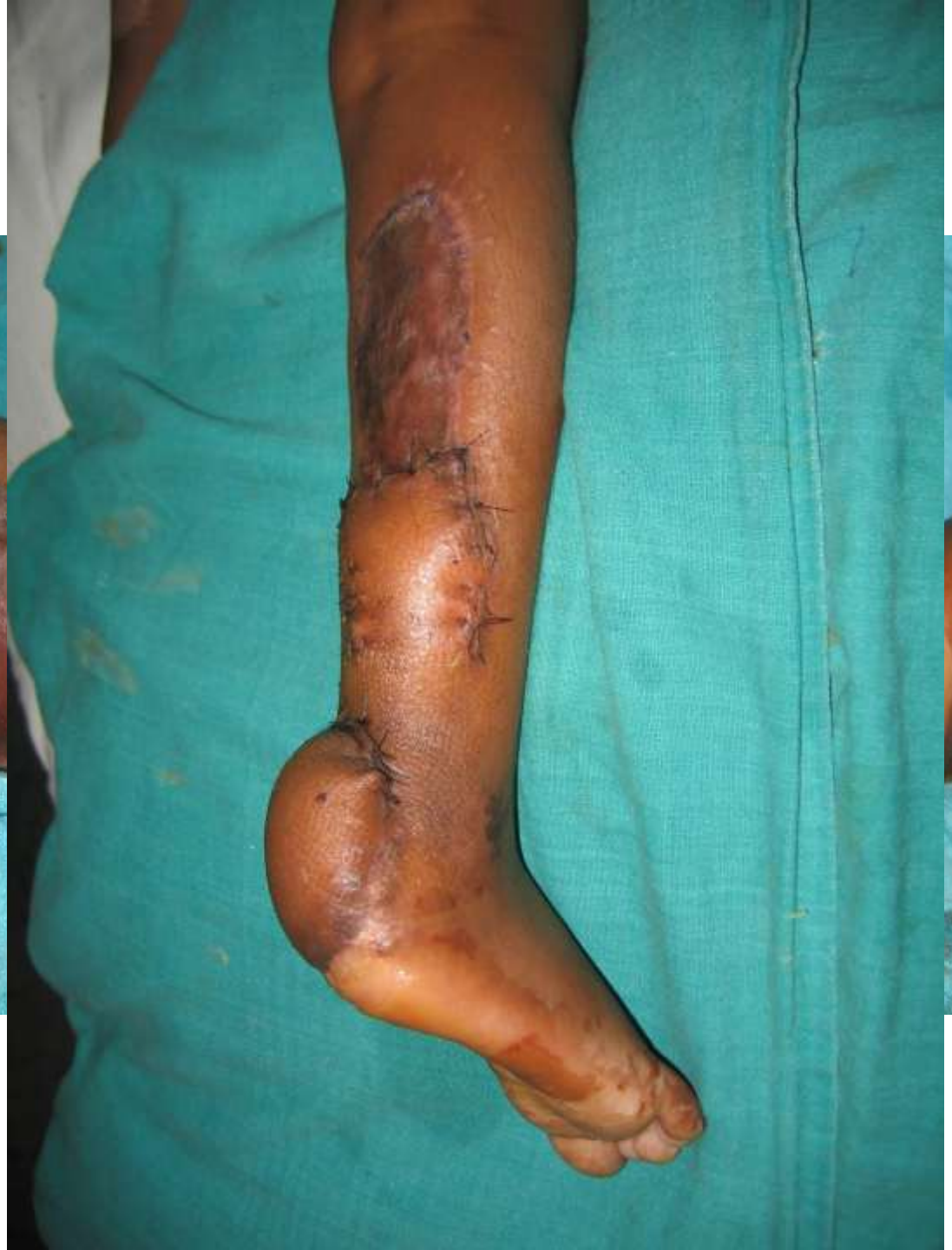
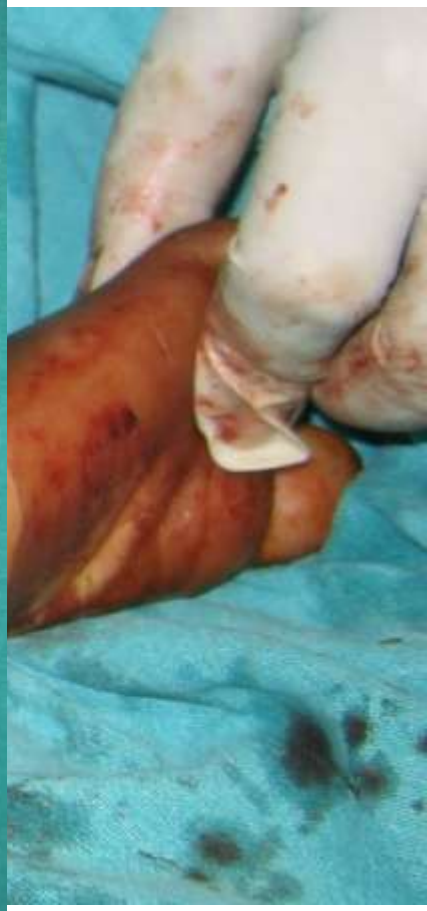
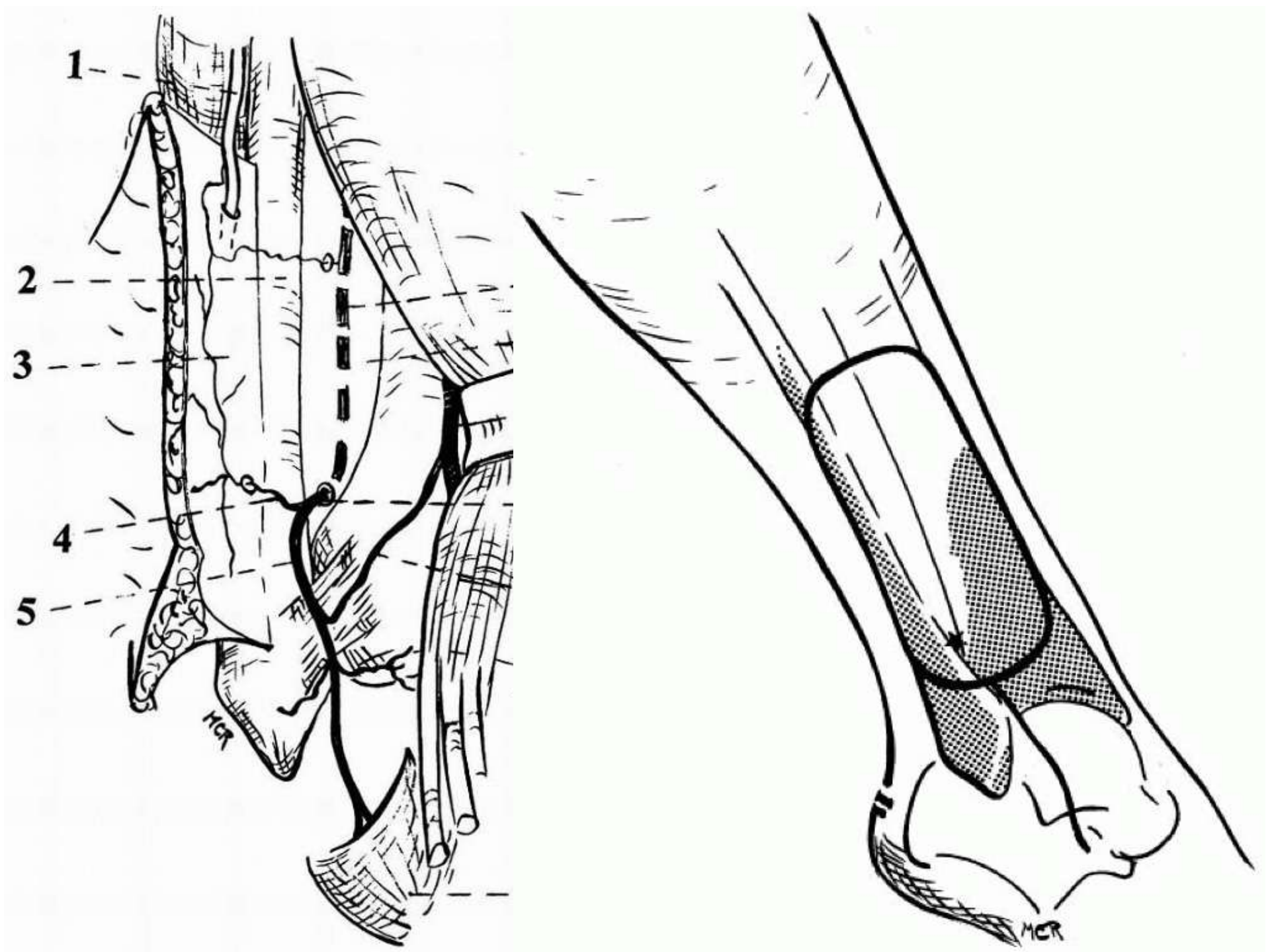




Lateral Supramalleolar Flap

- offering an alternative to a free flap
- Covering: lower leg, ankle, foot(heel, transmetatarsal amputation)
- donor site is quite acceptable # problem in young women.
- perforating branch of the peroneal artery
- pedicle is approximately 15 cm in length
- largest flap is about 20 × 8 cm.
- is not suitable for the weightbearing area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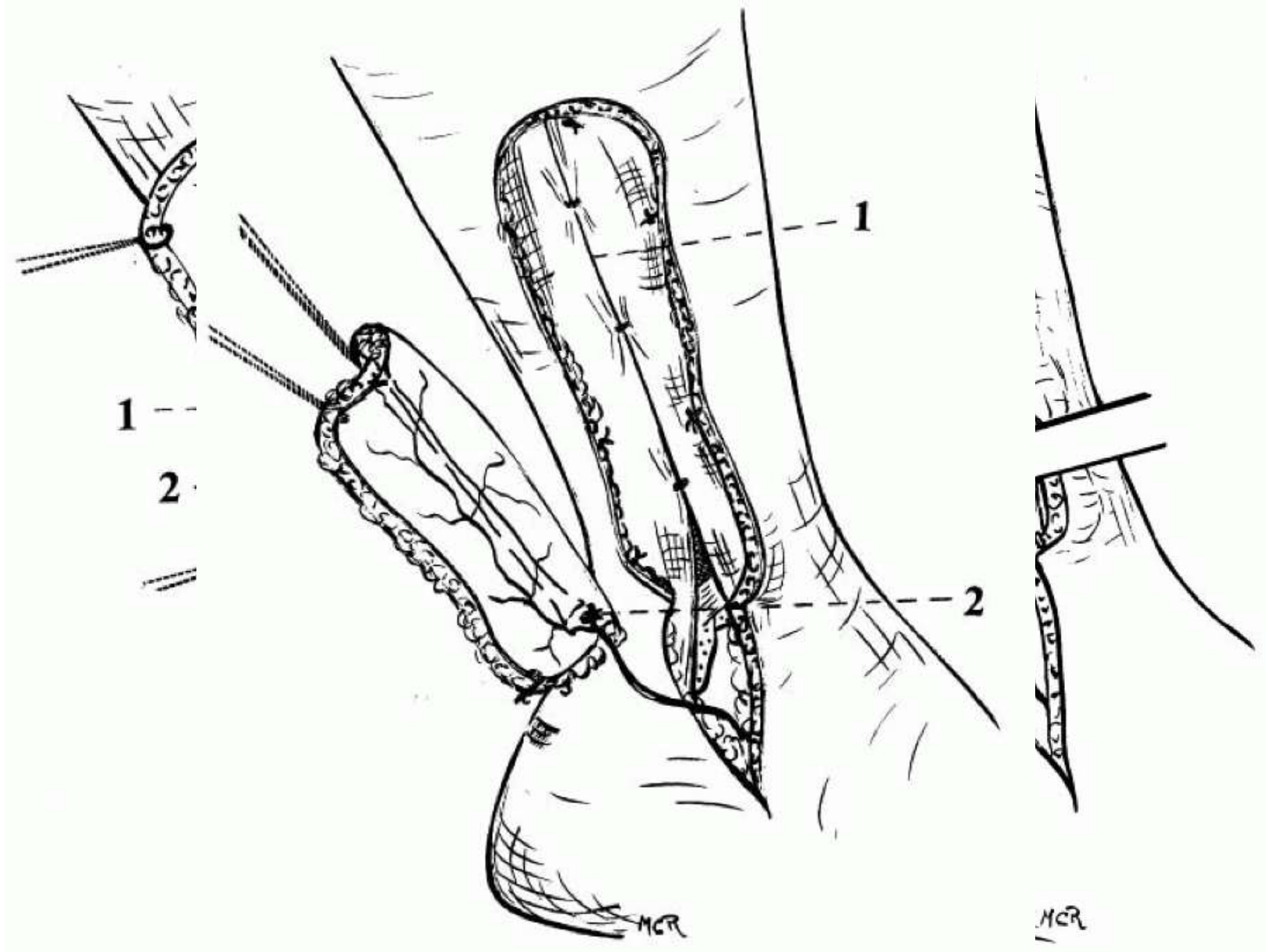
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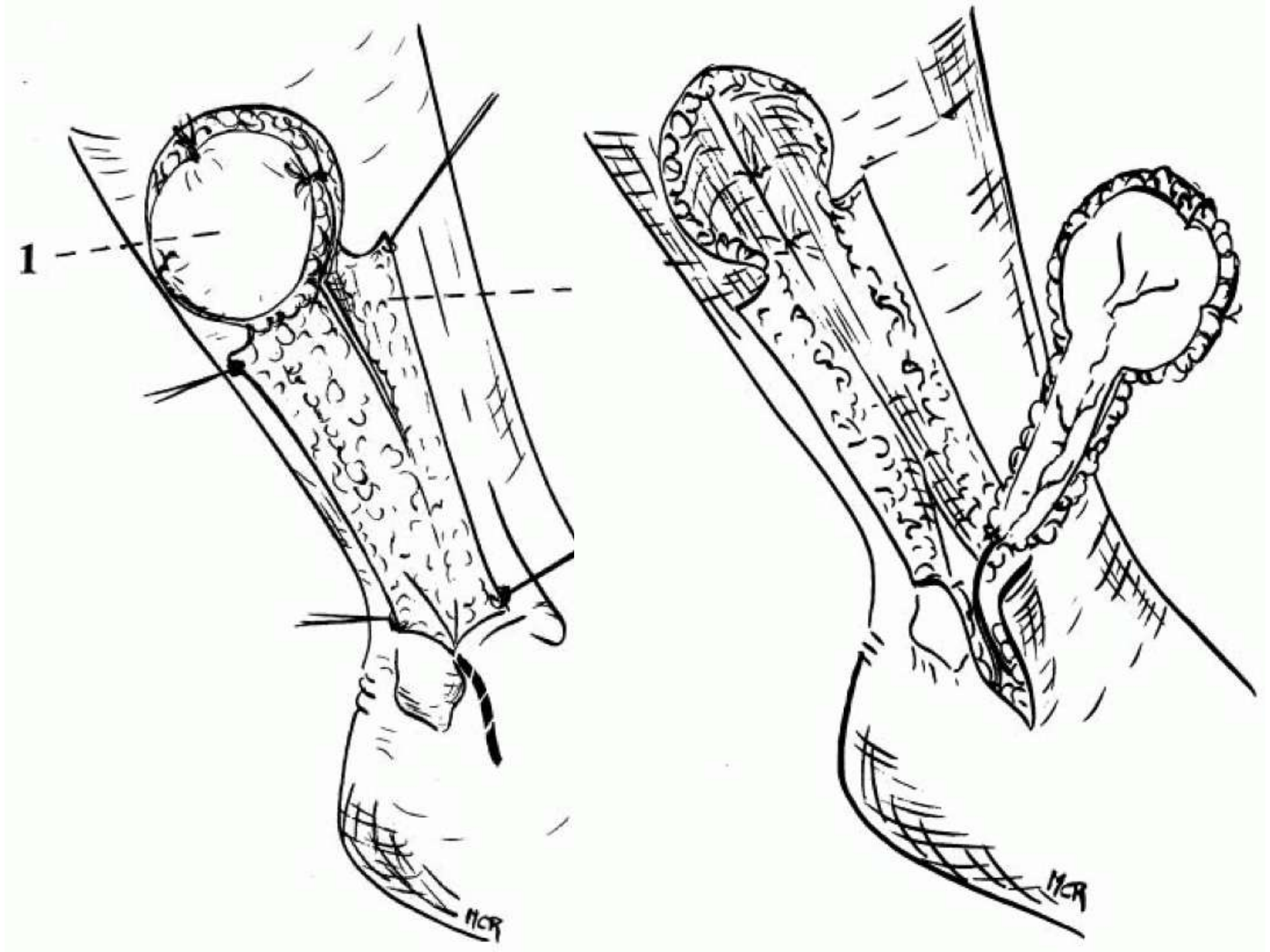
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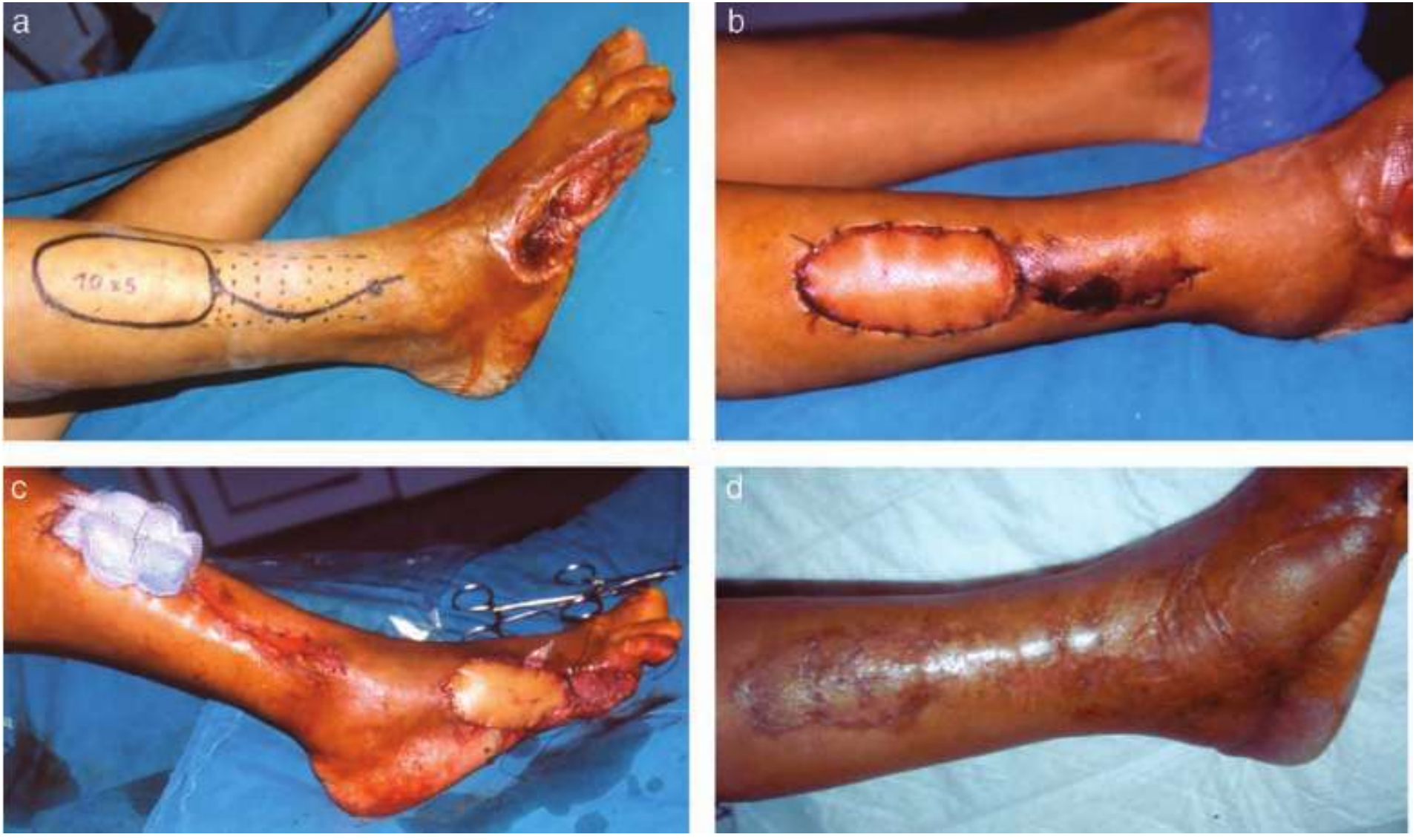
Lateral Supramalleolar Flap

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Dankie
Gracias
Спасибо
شكراً
Merci
Takk
Köszönjük
Terima kasih
Grazie
Dziękujemy
Dėkojame
Ďakujeme
Vielen Dank
Paldies
Kiitos
Täname teid
谢谢
Thank You
Tak
感謝您
Obrigado
Teşekkür Ederiz
감사합니다
Σας Ευχαριστούμ
ขอบคุณ
Bedankt
Děkujeme vám
ありがとうございます
Tack