

AMPUTATIONS IN CHILDREN

Part - 2

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Acquired limb loss in Children

1- Trauma. 60%

= *MVA*

= *Gunshot wounds*

= *Power tool injuries e.g lawnmowers*

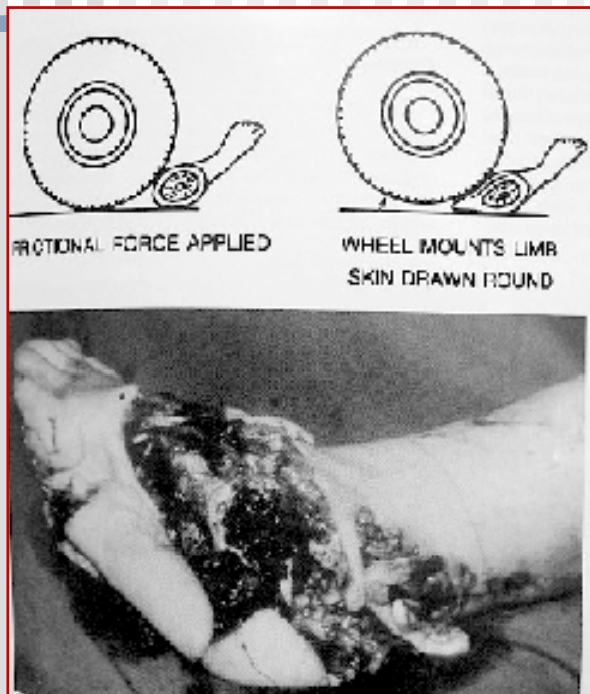
2-Malignant tumors.

3-Vascular,limb hypertrophy.

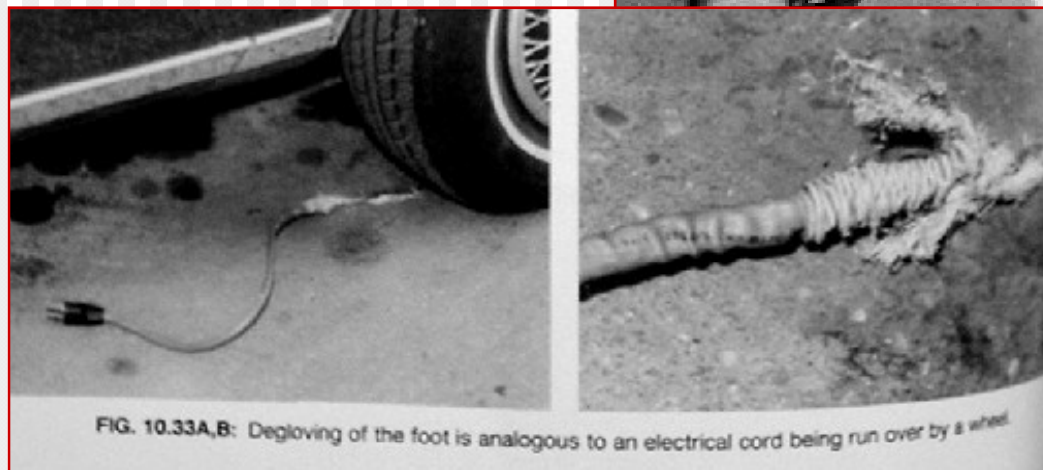
5-Vascular Amputation

e.g Meningococemia , Frostbite

Acquired limb loss



MVA



MVA



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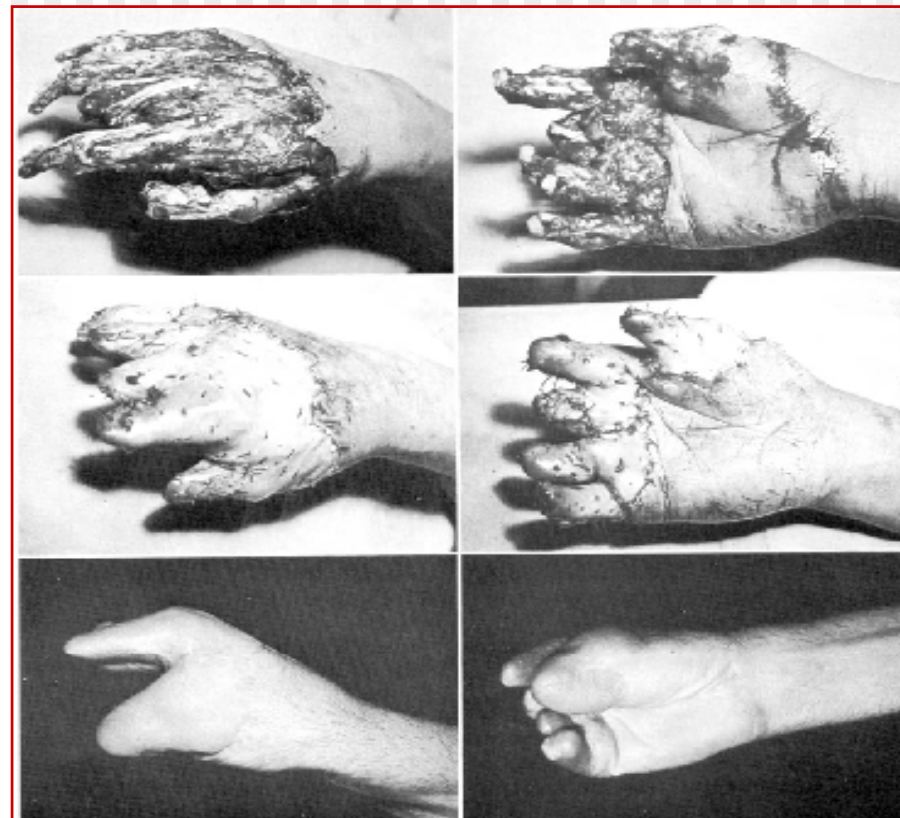


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Acquired limb loss

Power tool injuries



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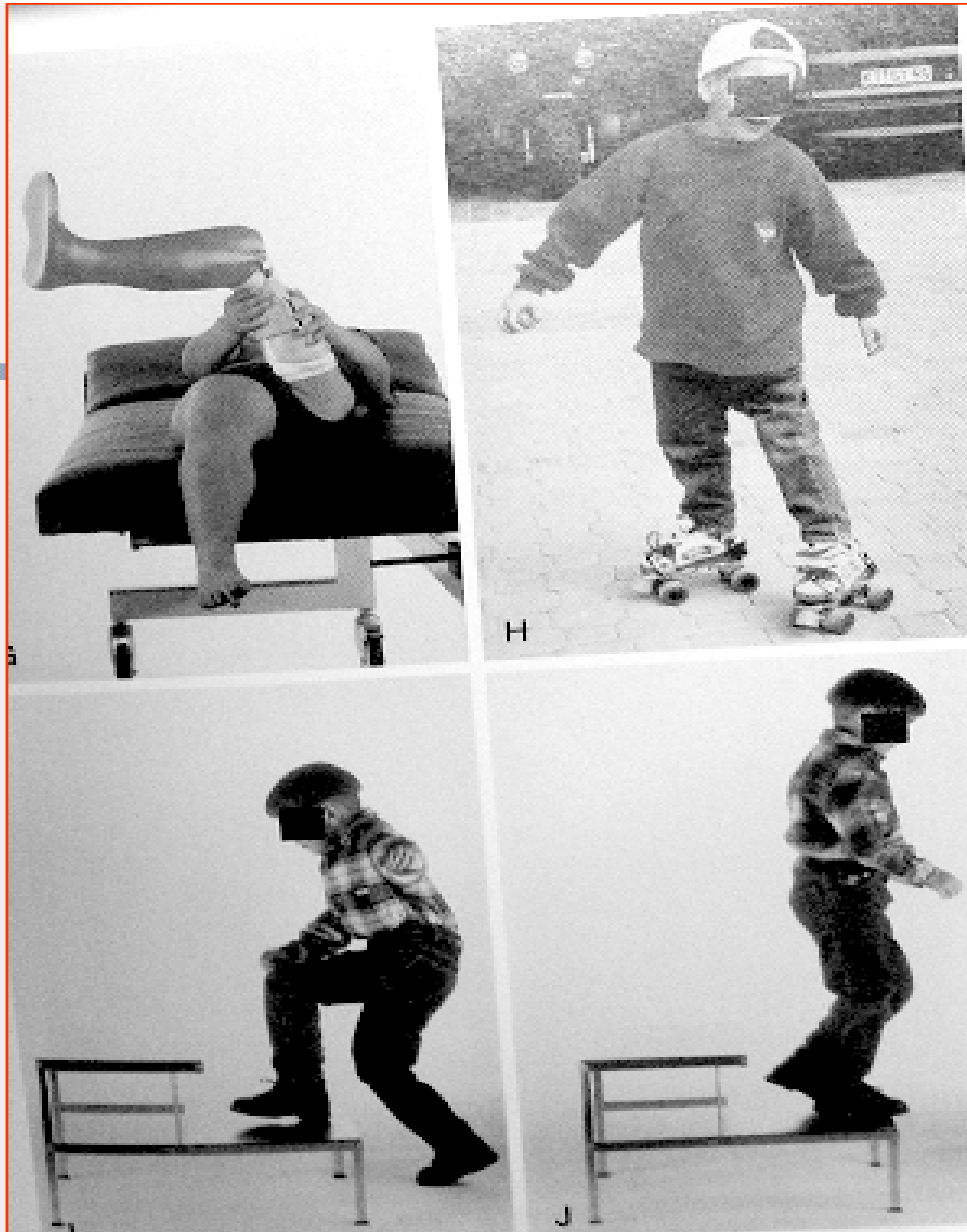
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Acquired limb loss

Malignant tumors

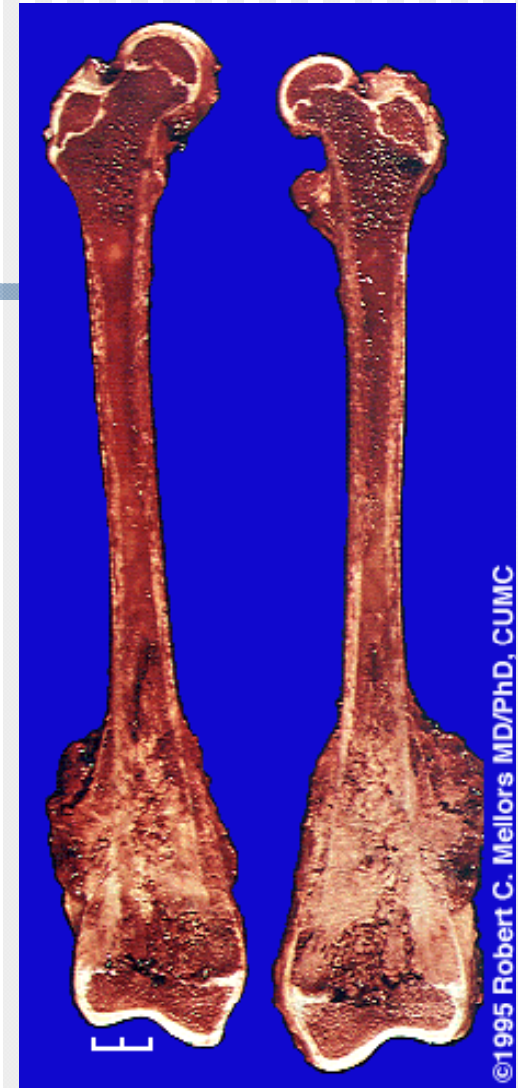
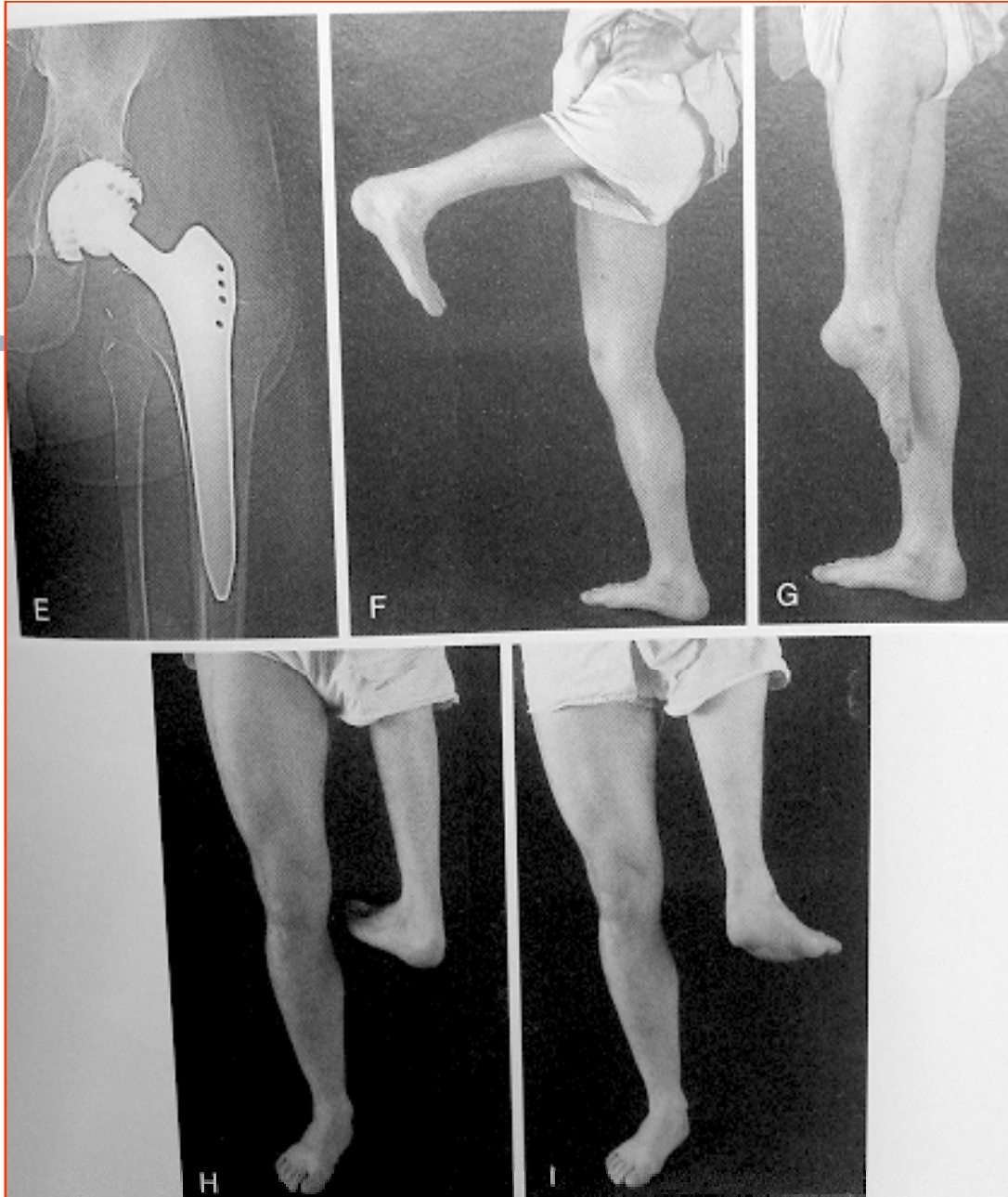


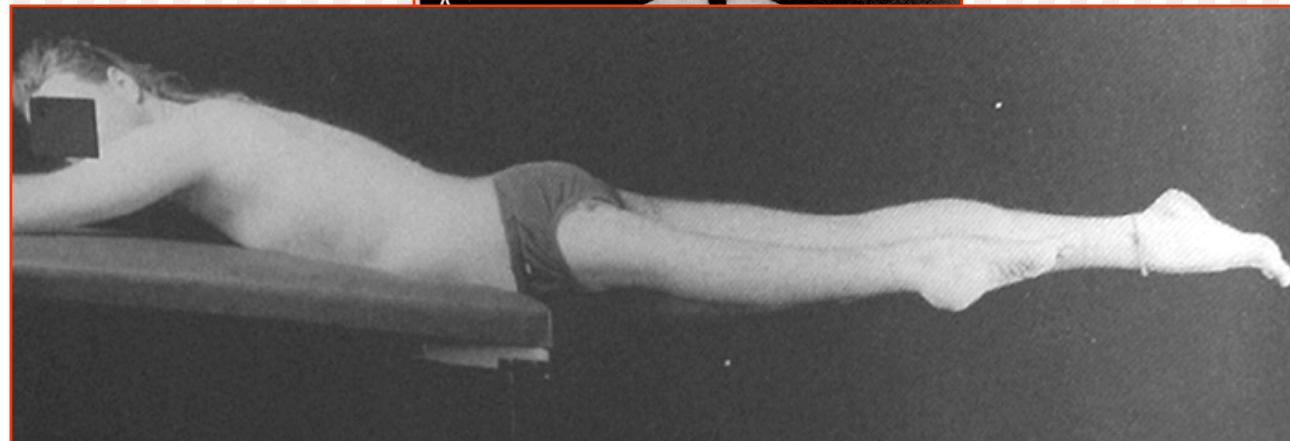
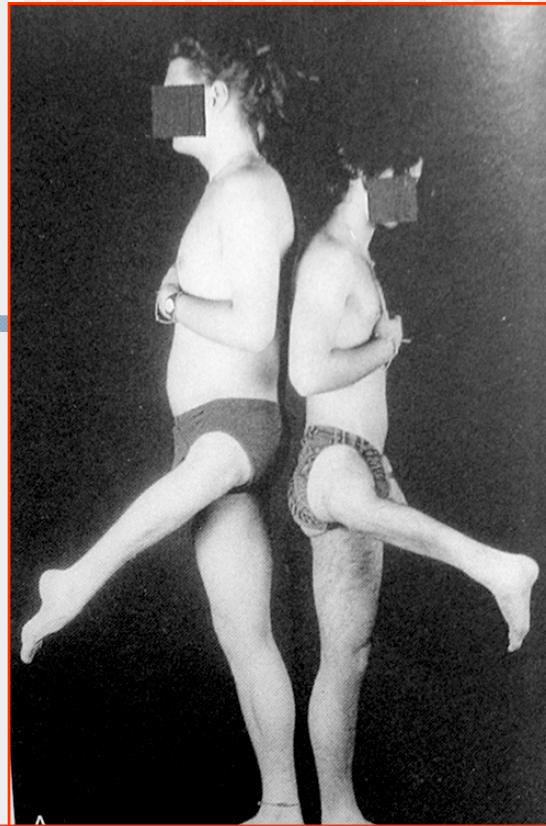




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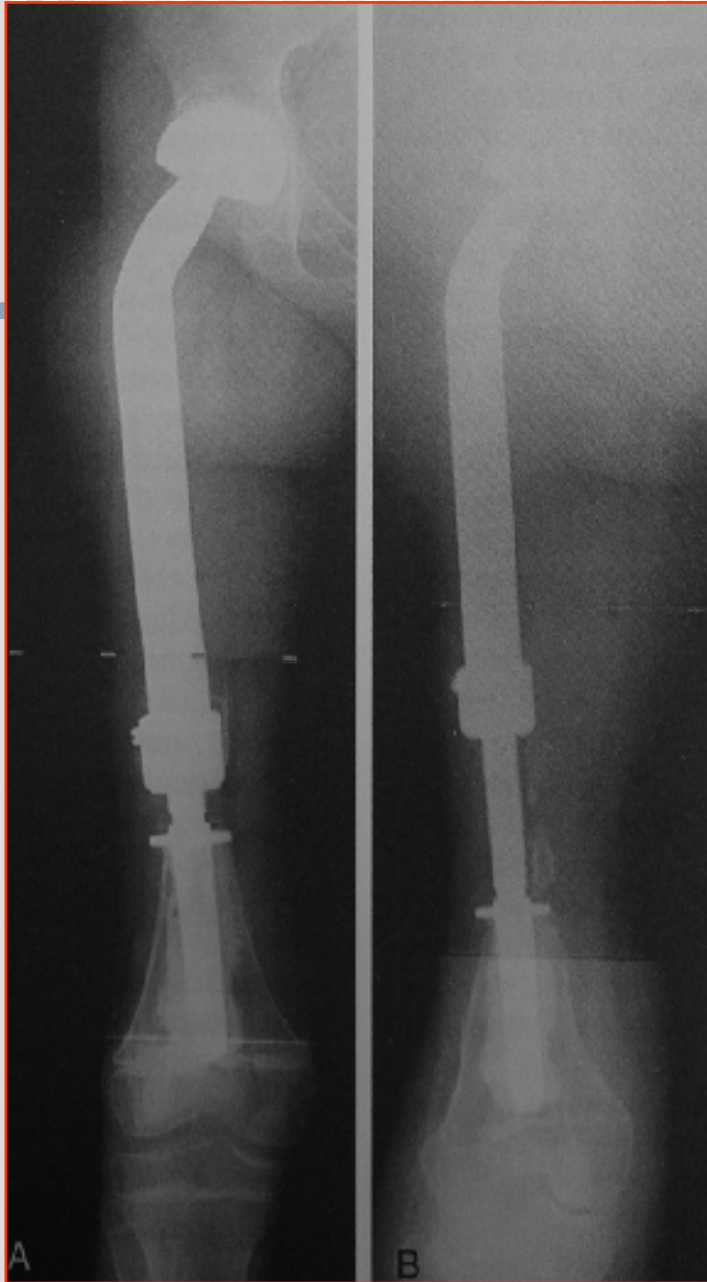
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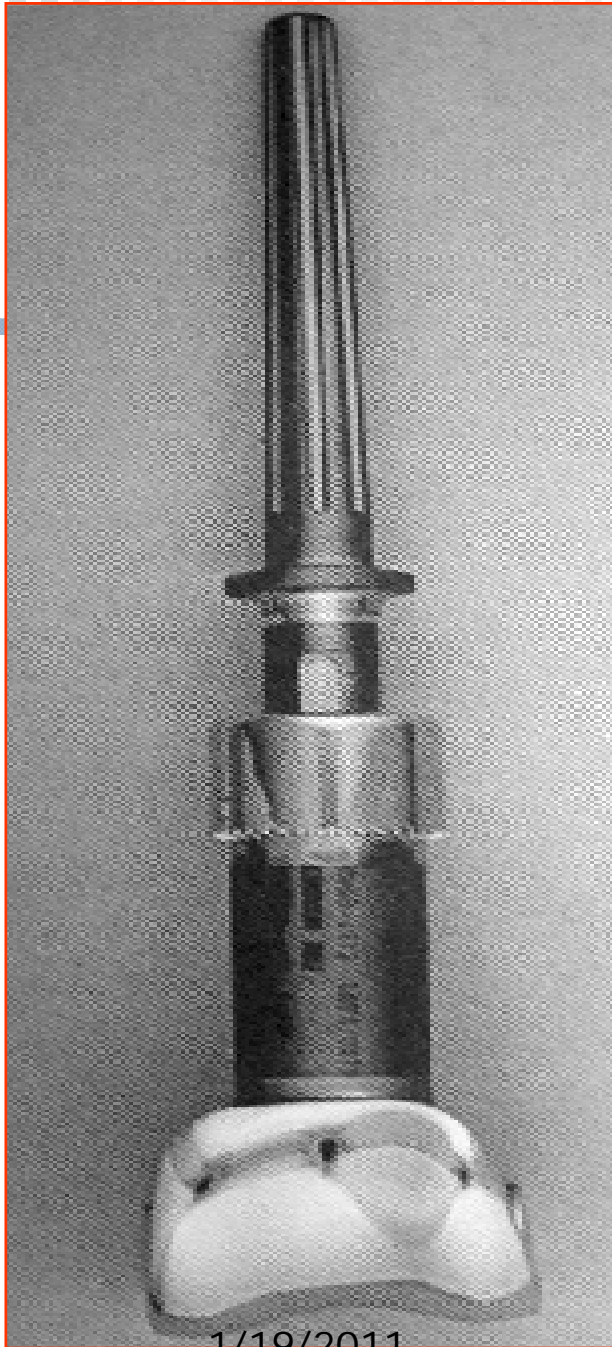
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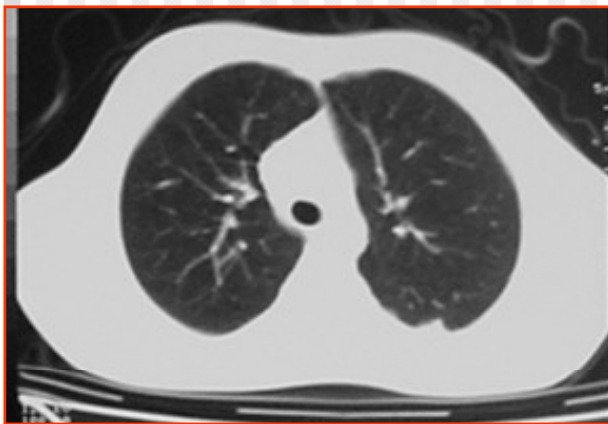


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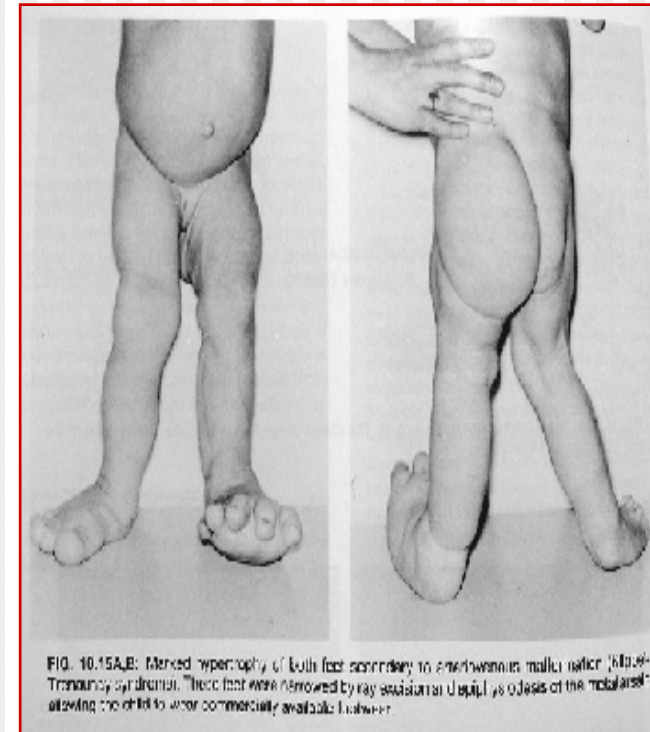


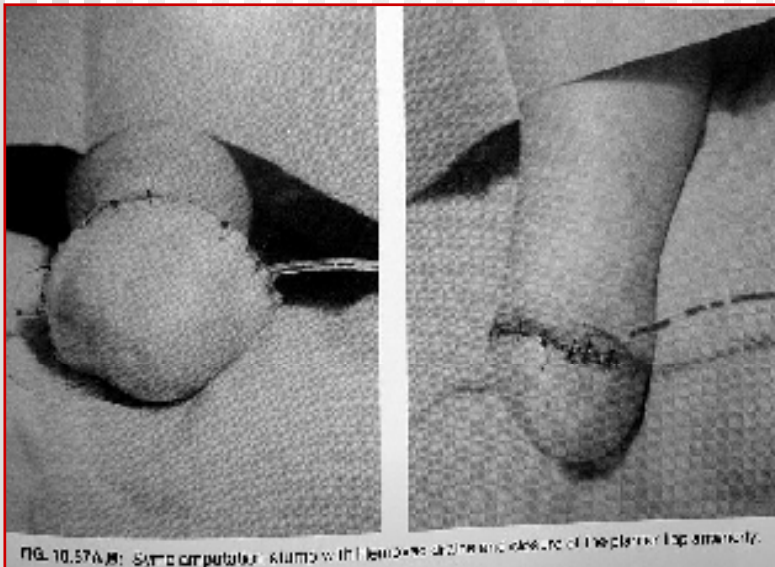
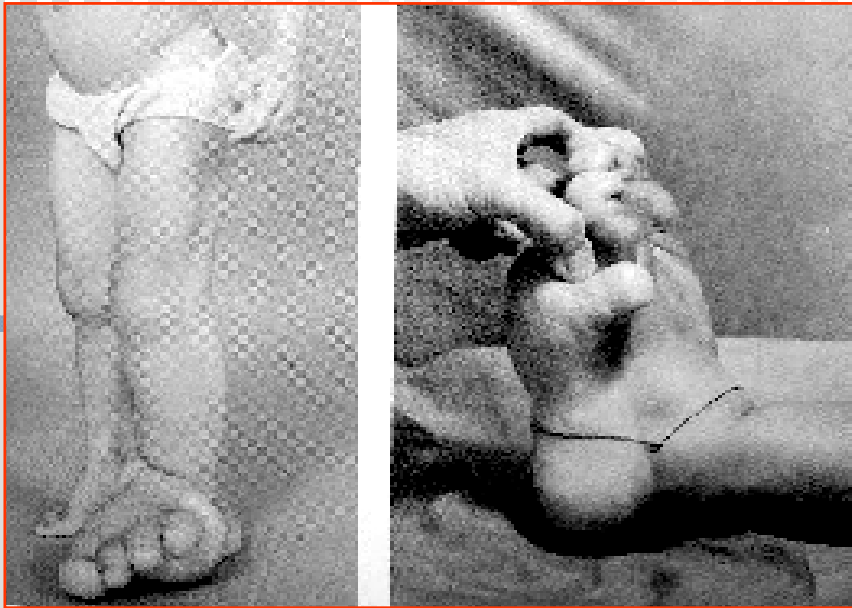
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Acquired limb loss

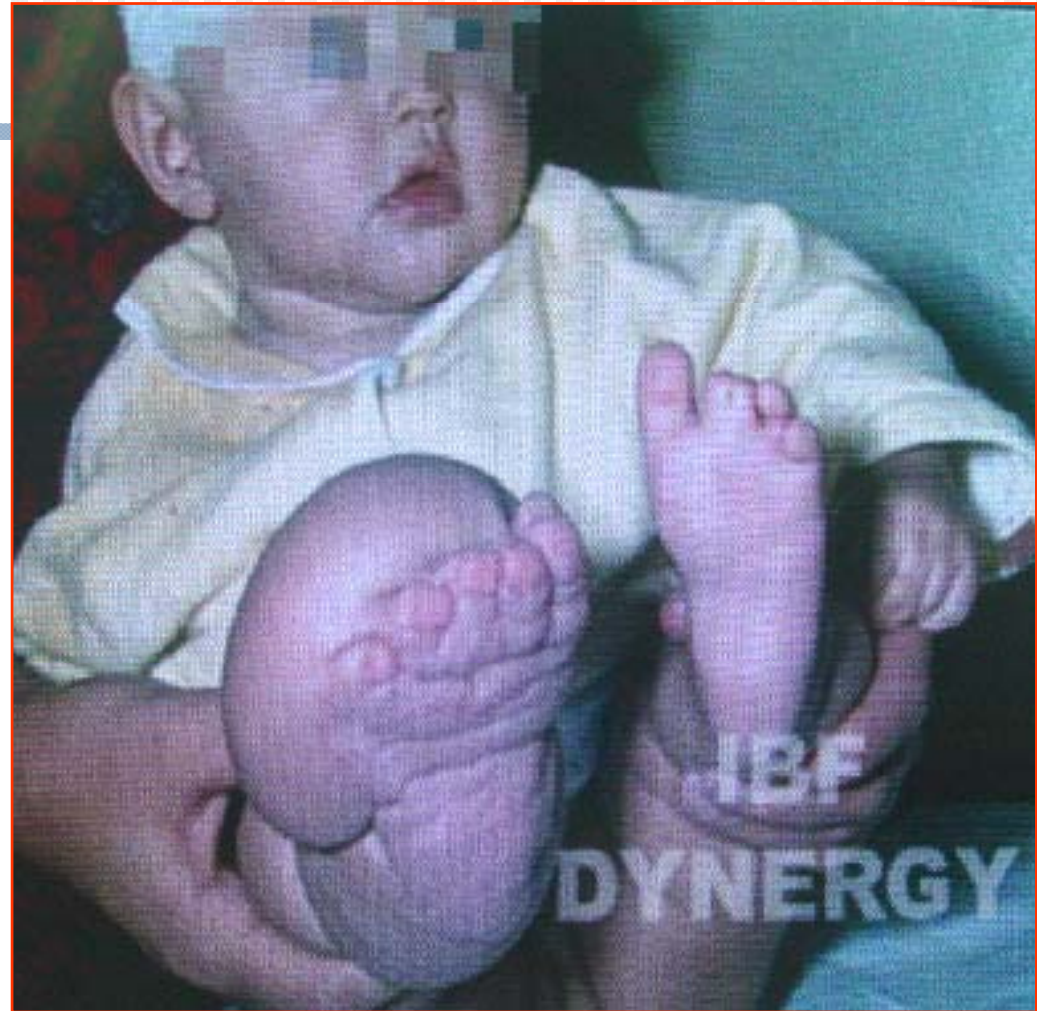
Vascular / Limb Hypertrophy







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Vascular Amputation in Children

1-Maternal D.M

2- Arterial thrombosis and embolism in NICU .B.V puncture, angiography and indwelling catheter.

3-Birth trauma

Vascular Amputation in Children

4-Thrombocytopenia and polycythemia producing hypercoagulability, sepsis, DIC

5-Inadvertent intravascular injections

6-Necrotizing fasciitis, and purpura fulminans

Acquired limb loss



Meningococemia

Vascular Amputation



Frostbite



Iatrogenic Brachial A injury, due to faulty insertion of infusion catheter

External iliac A thrombosis due to birth trauma



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Gangrene of the right crus and foot at a newborn baby due to the a birth trauma and thrombosis of common iliac artery.



The same patient: operation of exarticulation of a knee joint.

Birth trauma



The same patient after exarticulation of a knee joint, 5th day after birth. Picture on operating table.

Principles of amputations in children

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1-Preserve all length possible.

2-Preserve growth plates.

3-Use disarticulations when possible.

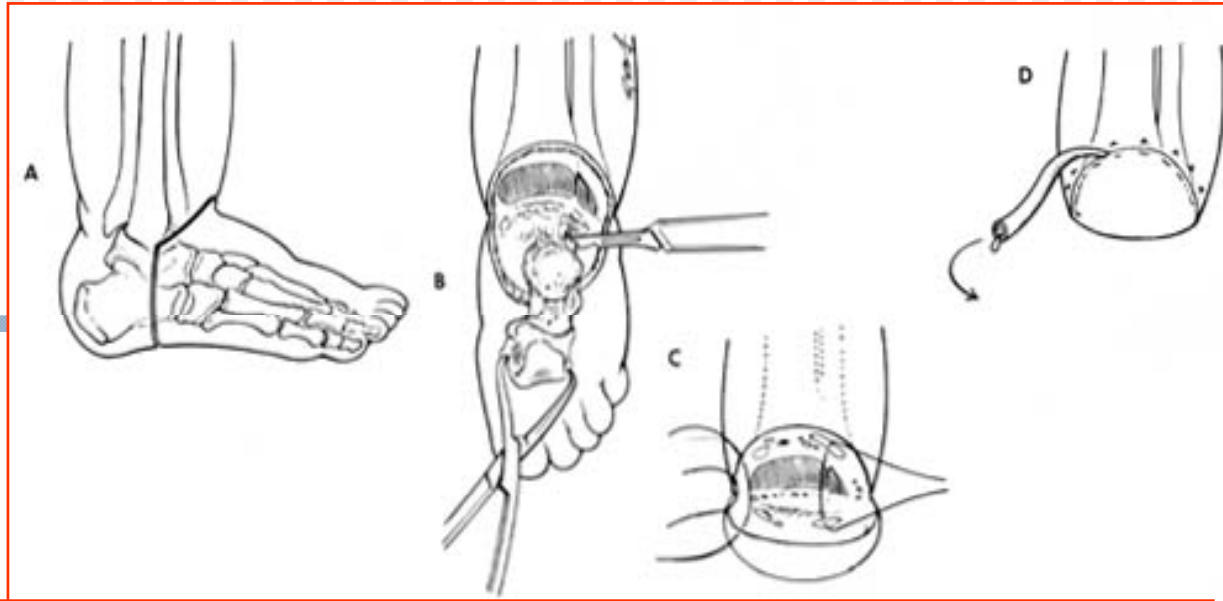
4-Preserve the knee J when possible .

5-Stablilize the proximal limb.

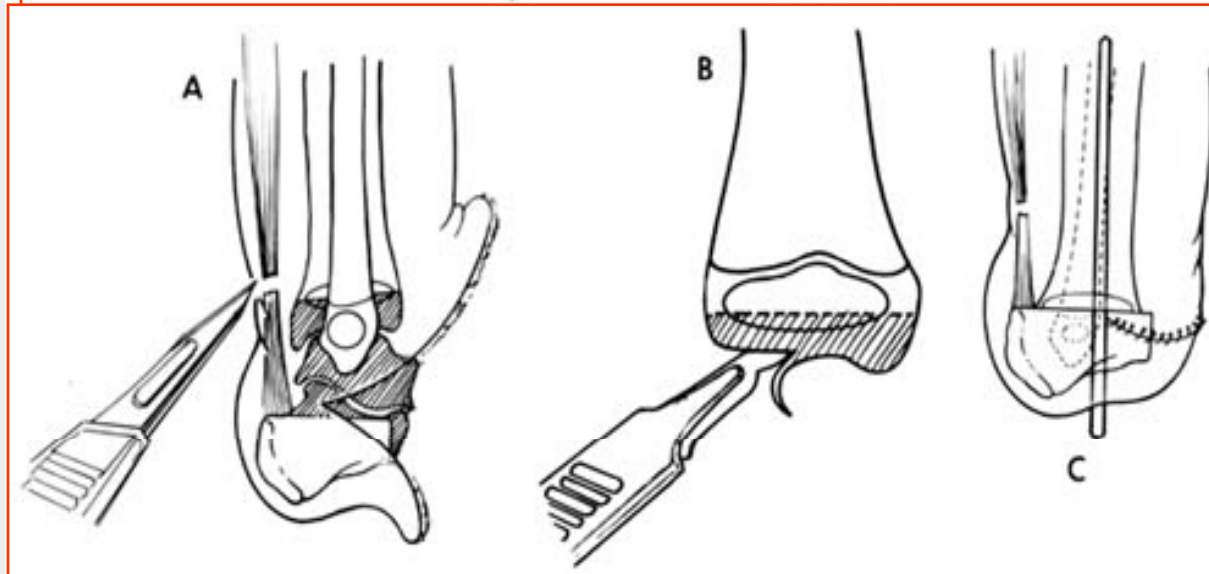
Disarticulation

- 1- Preserves the physis distally → growth of the stump continues at a normal rate.**
- 2- Prevents terminal overgrowth of the bone.**

Symes



Boyd



Boyd amputation Vs Symes amputation

Advantages of Symes

1-Symes amput. acts as ankle disarticulation in a child. →It provides an excellent weight bearing stump,

2-Allows room for a prosthetic foot when the residual limb is normal length

Boyd amputation Vs Symes amputation

Complication of Syme amputation

**Migration of the heel pad,
which is not firmly fixed to
the tibia**

Boyd amputation Vs Symes amputation

Advantages of Boyd amputation

**Preserves the calcaneus,
and the calcaneus is fused
to the tibia, → No migration
of the heel pad.**

Boyd amputation Vs Symes amputation

Disadvantages of Boyd amputation

1-longer waiting period before prosthetic fitting is necessary.

2-Extra length of the residual limb can make prosthetic foot fitting difficult.

Growth Abnormalities in Amputation Stumps in Children

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Overgrowth Phenomena

**As a result of appositional growth.
(not physeal growth)
it occurs commonly in the humerus,
fibula, less often in the tibia, femur,
radius, and ulna in that order**

Below knee stump

- 1-Ant. bowing associated with post. tilting of physis.**
- 2-Varus type of bowing with distal element pointing med.**
- 3-Fibula will usually outgrow tibia, which may result in →**

(A) formation of bursa .

**(B) prominent spicule of bone
which may perforate skin &
surrounded by granulations.**

**4-Overgrowth of tibia, causing
subcutaneous bony projection.**



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Above knee stump

1- Hemiatrophy of pelvis assoc. with C. valga and elongation of lesser trochanter.

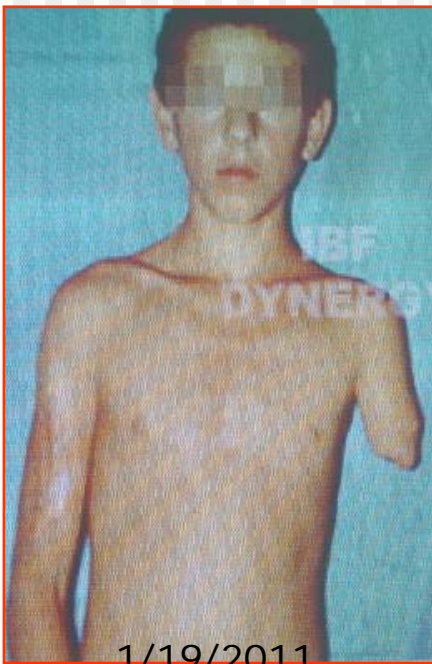
2- Femur and ilium usually smaller than on normal side

Below Elbow stump

- **Pincer-like contour from overgrowth of radius in relation to ulna.**
- **Tilting of prox. Radial epiphysis.**

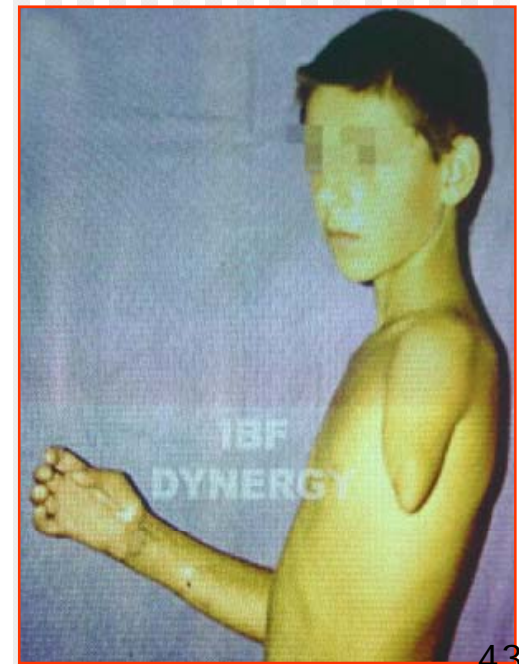
Above Elbow stump

- Humeral Varus
- Overgrowth of humerus in relation to skin → subcutaneous projection.



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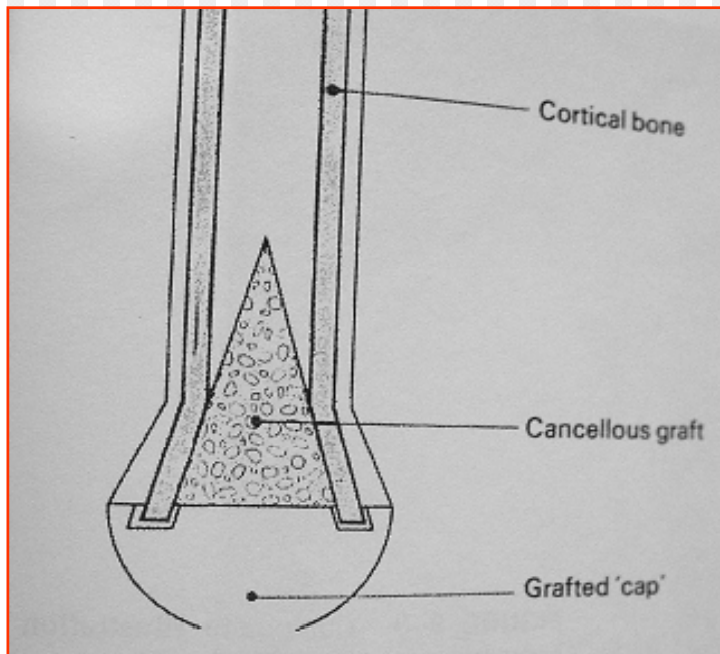
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Treatment of Overgrowth

**Resection of the excess bone.
Capping the resected bone end
with a tricortical iliac crest bone G**



The juvenile amputee differs from the adult.

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- 1-The limb continues to grow.**
- 2-Appositional bone growth, esp., of through-bone amputations.**
- 3-The functional demands on the residual limb and prosthesis are very different for the playful, active child than those for the more sedentary adult.→frequent changes in the socket, and for fitting with new prostheses.**

4- Psychological problems after amputation are rare in children.

5-The incidence of multiple limb amput. more frequent, → complexity of decision-making.

6-The juvenile amputee rarely experiences phantom limb pain.

7-Complications after surgery tend to be less severe in children.

The role of lengthening of the residual limb

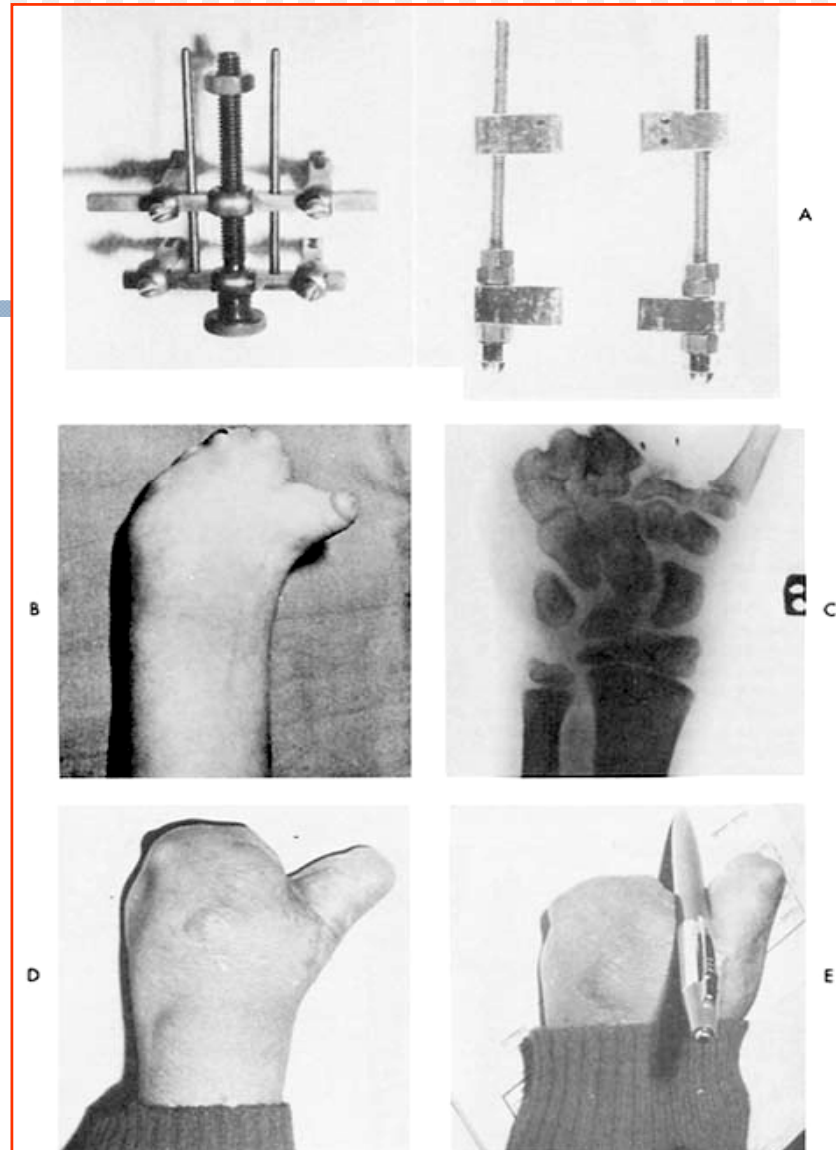
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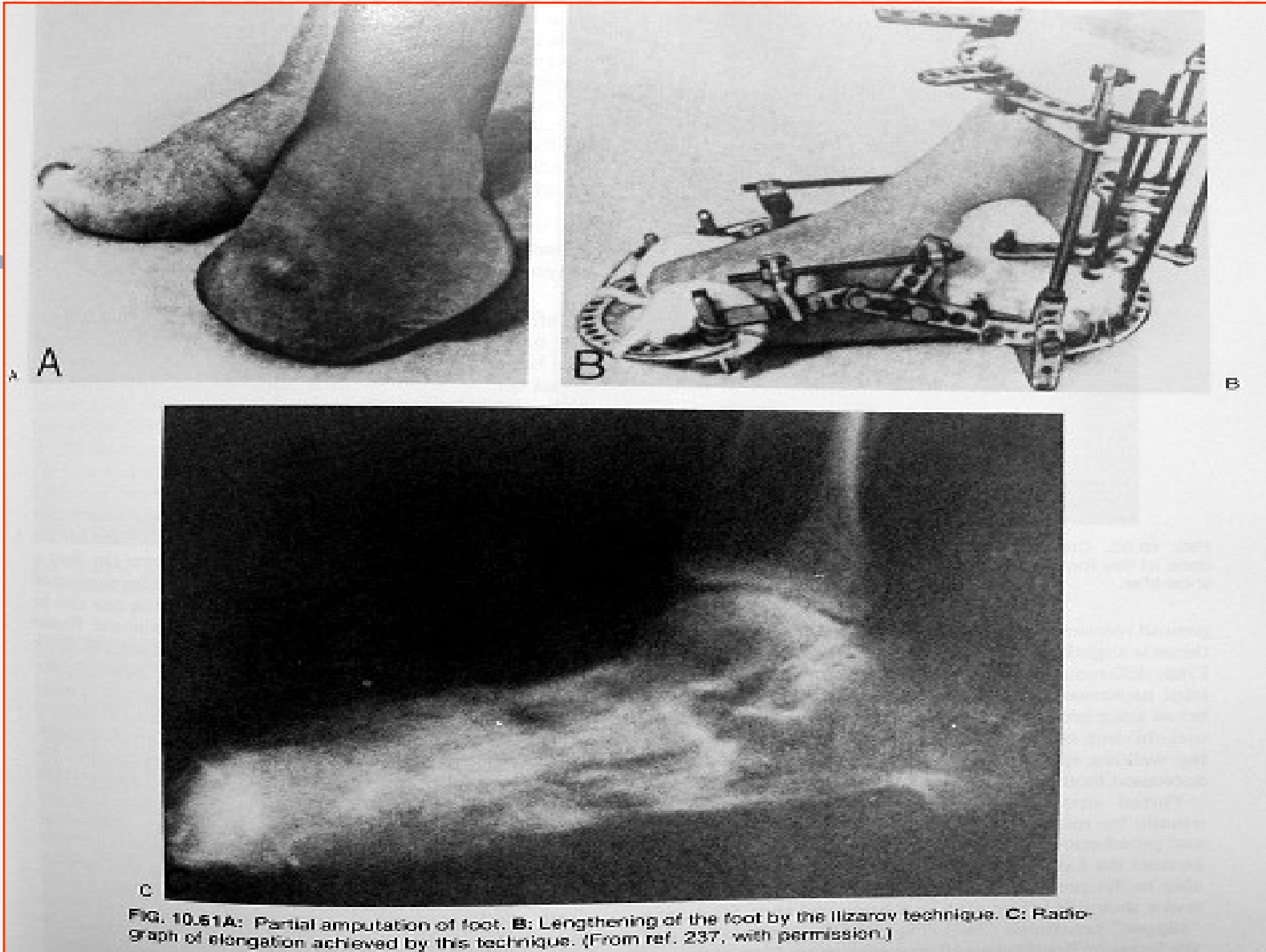
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1-In the very short below elbow or BK amputee, →providing better leverage for prosthetic fitting, and improved function.

2-Lengthening a short humerus may allow the child to cradle objects against the trunk.





A photograph of a person climbing a rock face. The climber is on the left side, silhouetted against a bright blue sky with a faint rainbow. The background shows a rugged, rocky landscape with mountains under a clear sky. The text 'Thank you' is overlaid in a large, light blue, outlined font, slanted upwards from left to right.

Thank you