SNS COLLEGE OF PHYSIOTHERAPY
COIMBATORE-35

COURSE:	**BPT**
SUBJECT:	**CLINICAL ORTHOPAEDICS**
TOPIC:	**UPPERLIMB AMPUTATION**
UNIT:	**IV**
PREPARED BY:	**ARCHANA K** **(ASSISTANT PROFESSOR)**

AMPUTATION

DEFINITION

- Shoulder Disarticulation:
- Removal of the entire upper limb at the glenohumeral joint

Indications

- High-grade malignancies, severe trauma, non-functional limb due to brachial plexus injury
- Surgical Approach:
- - Myoplasty for stability
- - Preservation of deltoid contour for prosthetic fitting

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- - Myoplasty for stability
- - Preservation of deltoid contour for prosthetic fitting
- Rehabilitation Goals:
- - Shoulder girdle muscle strengthening
- - Core stability training
- - Prosthetic training (passive, myoelectric, body-powered)

Above Elbow (Transhumeral) Amputation

- Definition: Amputation between the shoulder and elbow joint
- Indications: Severe trauma, vascular insufficiency, tumors
- Surgical Considerations:
- - Preservation of humeral length for better prosthetic function
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Above Elbow (Transhumeral) Amputation

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- - Myodesis for muscle anchoring
- Rehabilitation Goals:
- - Stump conditioning and desensitization
- - Shoulder and residual limb strengthening
- - Prosthetic adaptation and functional training.

Below Elbow (Transradial) Amputation

- Definition: Amputation between the elbow and wrist
- Indications: Crush injuries, infections, non-healing wounds
- Surgical Considerations:
- - Preservation of elbow joint for functional mobility
- - Bone beveling to prevent sharp edges

Below Elbow (Transradial) Amputation

- Rehabilitation Goals:
- - Residual limb mobilization
- - Grip strength training for prosthetic use
- - Sensory re-education

Amputation Through Metacarpals and Phalanges

- Types:
- - Transmetacarpal Amputation
- - Transphalangeal Amputation
- - Finger Amputations
- Indications: Trauma, severe infections, non-healing ulcers
- Surgical Considerations:
- - Maximum tissue preservation for grip function
- - Skin flap design for optimal closure

Amputation Through Metacarpals and Phalanges

- Rehabilitation Goals:
- - Finger mobility exercises
- - Grip strengthening
- - Use of assistive devices (customized hand prostheses)

Complications

- Wound healing and stump care
- Phantom limb pain management Psychological adaptation and counseling
- Early prosthetic training to optimize function

DIAGNOSTIC EVALUATION

- Preserve Functional Length
- Prioritize preserving the thumb and index finger as they are critical for hand function.
- Save as much thumb length as possible — even partial thumb is better than none.
- Skin Flaps & Coverage
- Volar flap should be longer than the dorsal flap to ensure tension-free closure and full stump covrage.

DIAGNOSTIC EVALUATION

- Nerve Management
- Digital nerves must be identified, cleanly cut, and allowed to retract proximally (≥6 mm) to prevent painful neuroma formation.
- Blood Vessels
- Digital arteries should be doubly ligated and cauterized to ensure hemostasis and avoid postoperative bleeding.

TREATMENT

- Tourniquet Use
- A tourniquet is employed for a bloodless field, except in ischemic limbs.
- Always release the tourniquet before closure to check and control bleeders.
- Debridement
- Perform thorough debridement before final amputation — remove all non-viable tissue and foreign bodies to reduce infection and ensure proper healing.
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TREATMENT

- Tendon Handling
- Flexor and extensor tendons must be pulled distally, sharply cut, and allowed to retract — this prevents tethering within scar tissue.
- Bone Smoothing
- If amputating through a joint, remove bony flares (condyles) to smooth the stump.
- Bone should be cut proximal to the muscle section to avoid prominent edges.

THANK YOU…