

“ La gestione dei tessuti molli  
nei traumi del volto

Roberto Rizzo CMF TS

”



# Soft Tissue Injuries

Reconstruction following trauma

- Different for each individual
- Depends on nature & location of Injuries

## Soft Tissue Injuries

First priority

- **A**irway, **B**reathing, **C**irculation
- Life-threatening emergency before treating facial injuries



## Soft Tissue Injuries

Over 60% with severe facial trauma

- Serious injuries in Head, Chest, or Abdomen
- Enormous forces to fracture facial bones
- Damage to Brain, Spinal Cord in Neck & Eyes.



# Wounds Management



- All wounds should be evaluated for **depth, size**, and status of the wound for **contusions, abrasions, crush injury, viability of the wound edges**, and **contamination**.
- wounds should be kept **moist** with gauze soaked in **saline** until final management.
- **Hemorrhages** should be managed with pressure, ligation or electrocautery
- **Exposed structures** should be identified, evaluated, and documented, with particular attention to cranial nerves V, VII, and XII
- **Parotid duct injuries** should be suspected in any patient with lacerations extending from the pretragal region to the middle half of the upper lip.

# Wounds Management



- **Exposed cartilage** that cannot be covered initially should be dressed with aureomicine.
- **Neurovascular structures** that cannot be covered should be dressed with nonadherent dressings such as gauze with aureomicine/bacitracin ointment.
- **Eyelid avulsion wounds** require immediate ophthalmic antibiotic ointment and an occlusive eye shield to prevent exposure **keratopathy**.

# Soft Tissue Injuries

Imaging studies postponed for 24~72 hours

- Treat injuries to other organ systems
- Patient out of danger, x-ray & CT scans

## Soft Tissue Injuries

- Facial injuries - potential for permanent disfigurement
  - Contusions,
  - Lacerations,
  - Puncture wounds,
  - Tattoos with debris &
  - Avulsive injuries

## Soft Tissue Injuries

### Early Treatment

- Prevent post-traumatic facial deformities
- Early / immediate surgical treatment & stabilization of bone fragments
- Goal of restoring pre-injury facial appearance & function
- Patients with significant deformities
  - treated inadequately
  - other life-threatening injuries preclude treatment
- Prevent “secondary injury”

Intervenire prima della **contrazione** della ferita che ne complicherebbe il trattamento.

Un intervento tardivo produrrebbe significative deformità difficili e costose da trattare in un secondo momento

## Soft Tissue Injuries

### Types of Soft Tissue Injuries

- Abrasion
- Laceration
- Avulsion
- Crush injury

### Contamination

- Various layers of tissues involved



## Soft Tissue Injuries

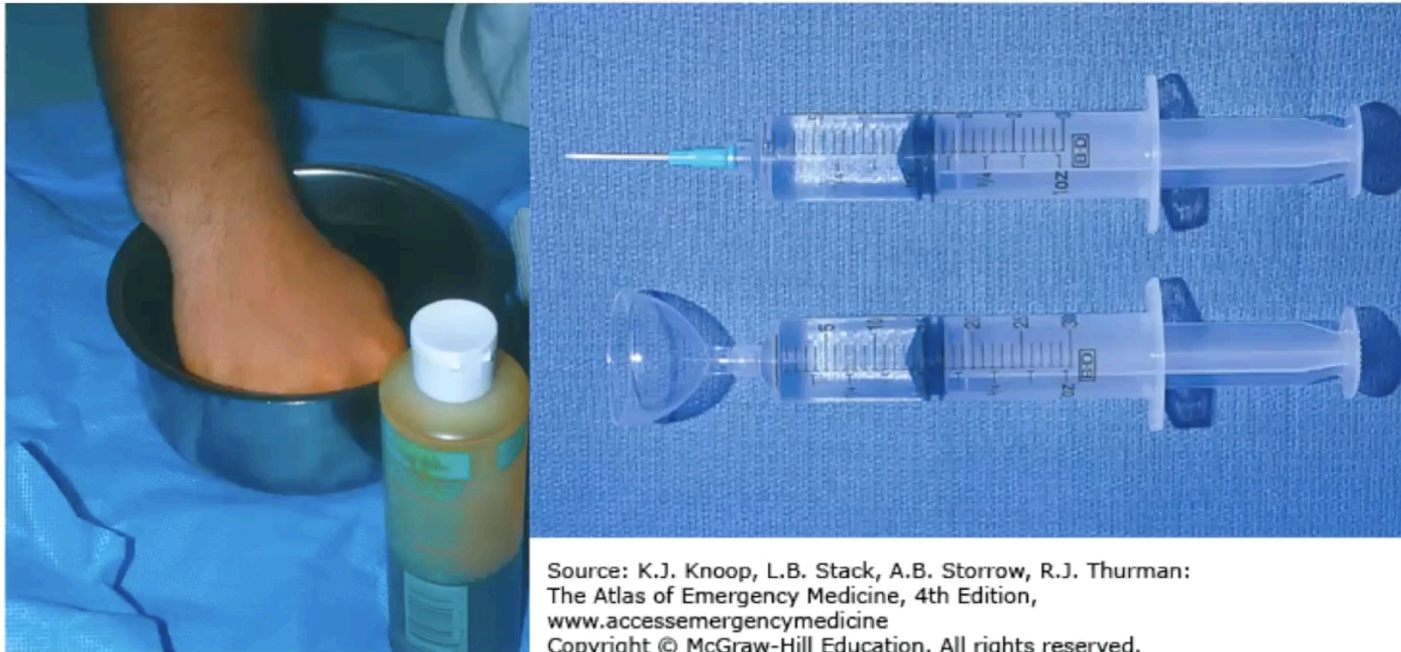
### Irrigation of Tissues

- Normal Saline
- Tap Water
- Hydrogen Peroxide
- Concentrated Ionic Detergents Solutions –  
NOT TO BE USED

Preferire irrigazioni con  
litri di Soluzione  
Fisiologica o Acqua Sterile  
Limitando l'uso di soluzioni  
denaturanti

“The Solution to Pollution is Dilution”

## Soft Tissue Injuries



Source: K.J. Knoop, L.B. Stack, A.B. Storrow, R.J. Thurman:  
The Atlas of Emergency Medicine, 4th Edition,  
[www.accessemergencymedicine](http://www.accessemergencymedicine)  
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Abbondante uso di irrigazione

## Soft Tissue Injuries



### Principles

- Careful assessment
- **Gentle Handling** of tissues
- Minimal Debridement
- **Removal of all foreign matters**
- Meticulous reconstruction of injured tissues

## Soft Tissue Injuries



- Gentle handling & Suturing
  - Inadequate alignment \*
  - Poor healing & scarring



6 months

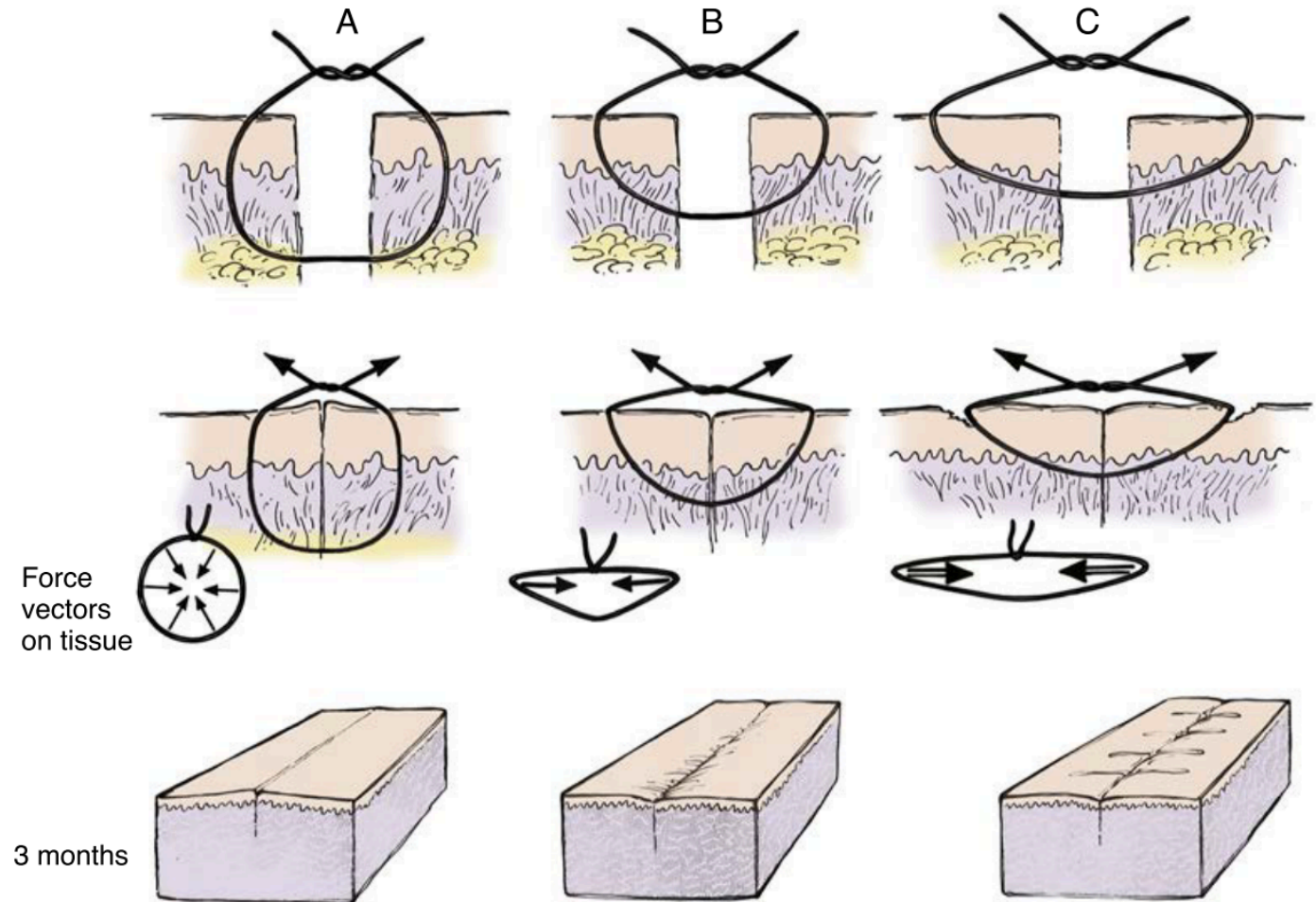
Corretto allineamento  
per strati

Assenza di tensione

# Suture Technique and Suture Materials



- Simple wound closure requires placement of sutures at the proper level in a **trapezoidal** fashion to create wound eversion. This principle applies to placement of subcutaneous sutures as well. Improper placement results in wound inversion

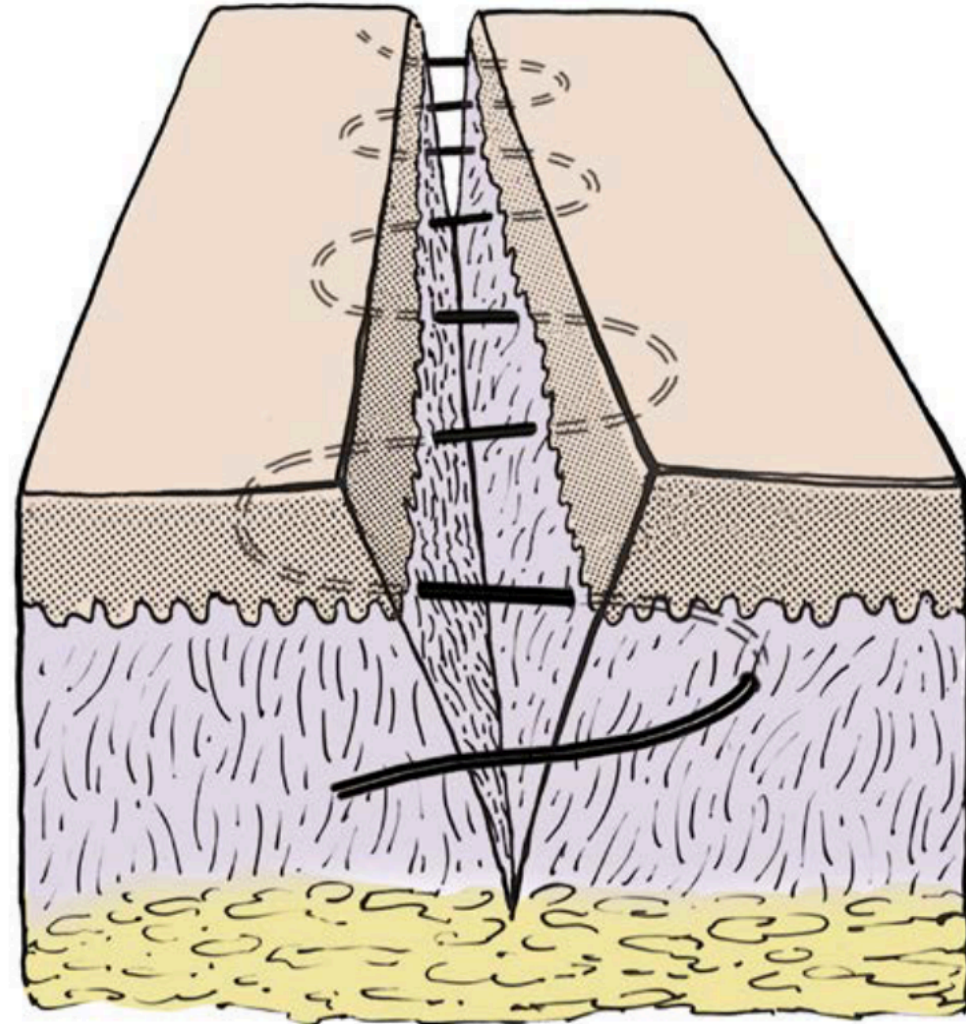




# Suture Technique and Suture Materials

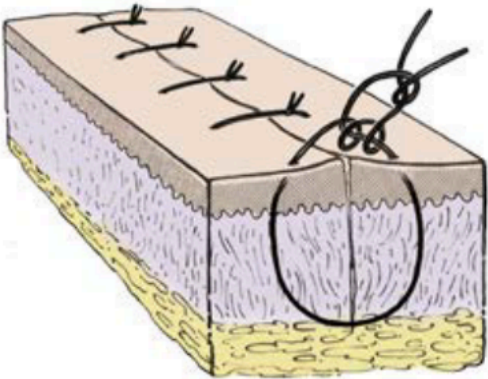


- In complex wounds, multilayered closure is required to eliminate dead space and provide wound eversion. This can be accomplished with either an interrupted suture or continuous suture technique

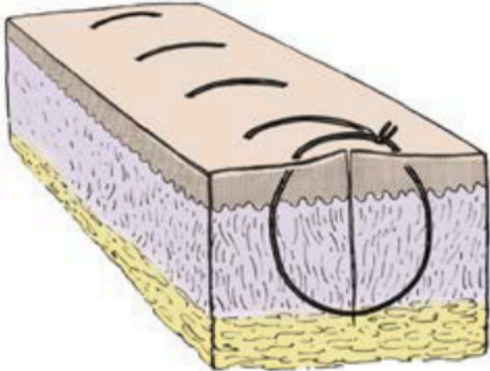




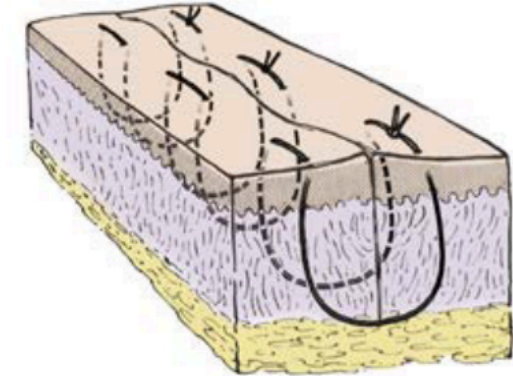
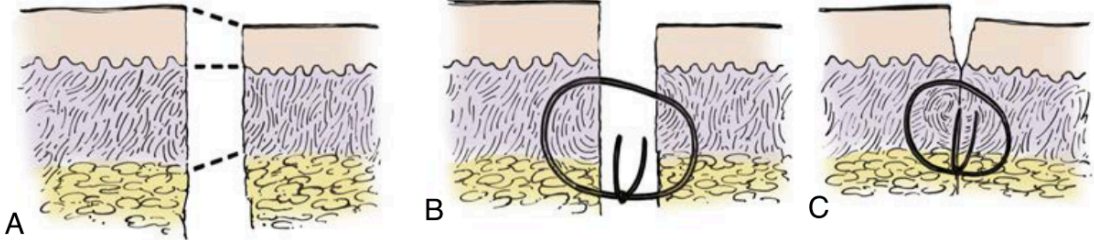
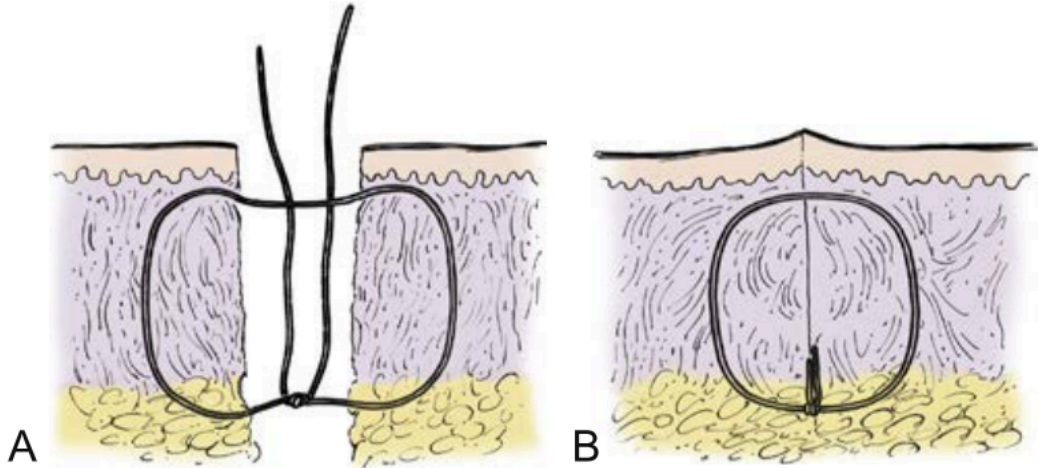
# Suture Technique and Suture Materials



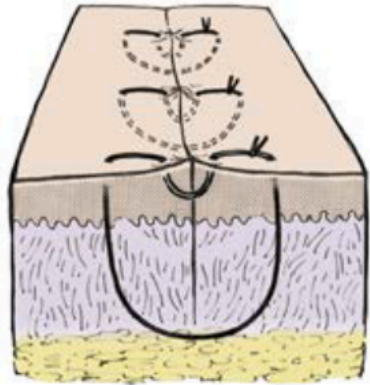
A Simple interrupted



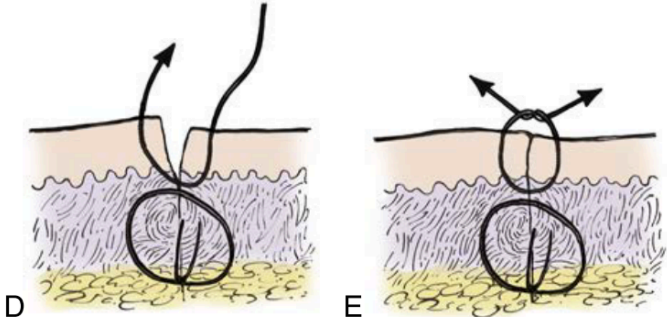
B Simple continuous



C Horizontal mattress



D Vertical mattress



# Suture Technique and Suture Materials



**TABLE 4-2** A Regional Guide to Suture Selection

Region	Cutaneous Suture	Subcutaneous/ Fascia Suture	Comments
Eyelid and periorbital	#6-0, #7-0	#4-0, #5-0	Minimal tensile strength requirements Esthetic concerns at a premium
Nose and pinna	#5-0, #6-0	#4-0, #5-0	Small tensile strength requirements Esthetic concerns at a premium
Lip and vermillion	#6-0	#3-0, #4-0	Moderate tensile strength requirements due to highly active region Esthetic concerns at a premium
General facial and anterior neck	#5-0, #6-0 #4-0, #5-0	#3-0, #4-0	Moderate to high tensile strength requirements due to regional mobility Significant esthetic concerns
Nasal and oral mucosa	#3-0, #4-0	#3-0, #4-0	Moderate tensile strength needed due to tissue mobility May select based on ease or no need for removal No esthetic concern
Scalp and posterior neck	#3-0, #4-0	#2-0, #3-0	Tensile strength needed for moderate to heavy tissue and very mobile region Minimal esthetic concern
Superior trunk	#2-0, #3-0	#2-0, #3-0	Tensile strength needed for heavy tissue in a relatively mobile area
Major musculocutaneous flaps	#4-0, #5-0	#1-0, #2-0, #3-0	Maximal tensile strength needed because sutures are often under significant tension May require long-term tensile strength

Marcus BC: Wound closure techniques. In Baker SR: *Local flaps in facial reconstruction*, ed 2, St Louis, 2007, Mosby.

# Suture Technique and Suture Materials



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# Suture Technique and Suture Materials



- Care must be taken **not to scrub** the wound because this can increase inflammation and result in poor esthetic outcome.
- 35-cc syringe and an 18 gauge catheter found that pressures of 13 psi, generated by using a needle and syringe, were effective in reducing inflammation and infection
- After cleansing, all **irregular wound edges** and **devitalized tissues** should be debrided.
- A **layered closure** is critical to obliterate dead spaces and also to relieve tension on the epidermal layer.
- Definitive repair of **bony and soft tissue** injuries can be achieved in a single operation, as successive operations rarely improve functional outcomes



## Soft Tissue Injuries



Nessuna fretta nel togliere il corpo estraneo  
Eeguire sempre una preventiva attenta valutazione della situazione vascolare sottostante con angiotac, ecografia, ecc.

## Soft Tissue Injuries



- Definitive repair in Operating room instead of emergency room
- *Facility, Equipment, Time*
- Experienced surgeon
- Severe injuries – Definitive procedures if possible or foundation for later Revision

Il trattamento delle ferite del volto richiede tempo. Prendersene tutto il necessario  
In un ambiente adatto  
Con i materiali adatti  
L'aiuto adatto



## Soft Tissue Injuries



### Bony Reconstruction – General Principles

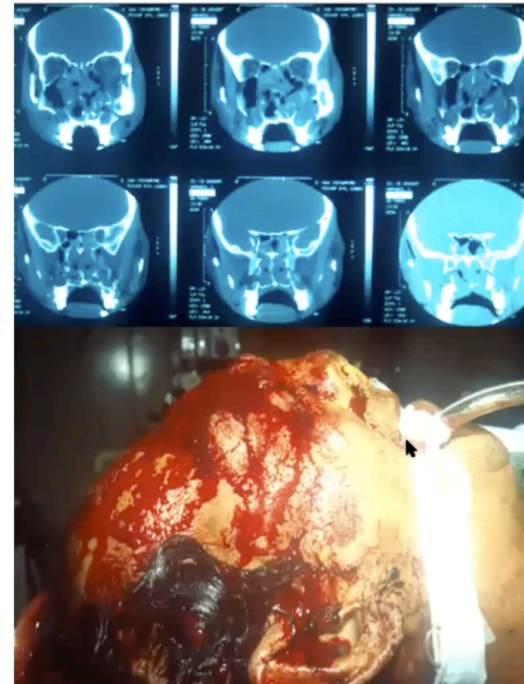
- Facial bony deformities reconstructed
- Lays Foundation for soft tissue cover
- Blunt, Penetrating or Avulsive Facial Injuries - significant soft tissue deformity

Un buon trattamento delle ferite del volto non può prescindere da una corretta ricostruzione dei tessuti duri sottostanti

## Soft Tissue Injuries



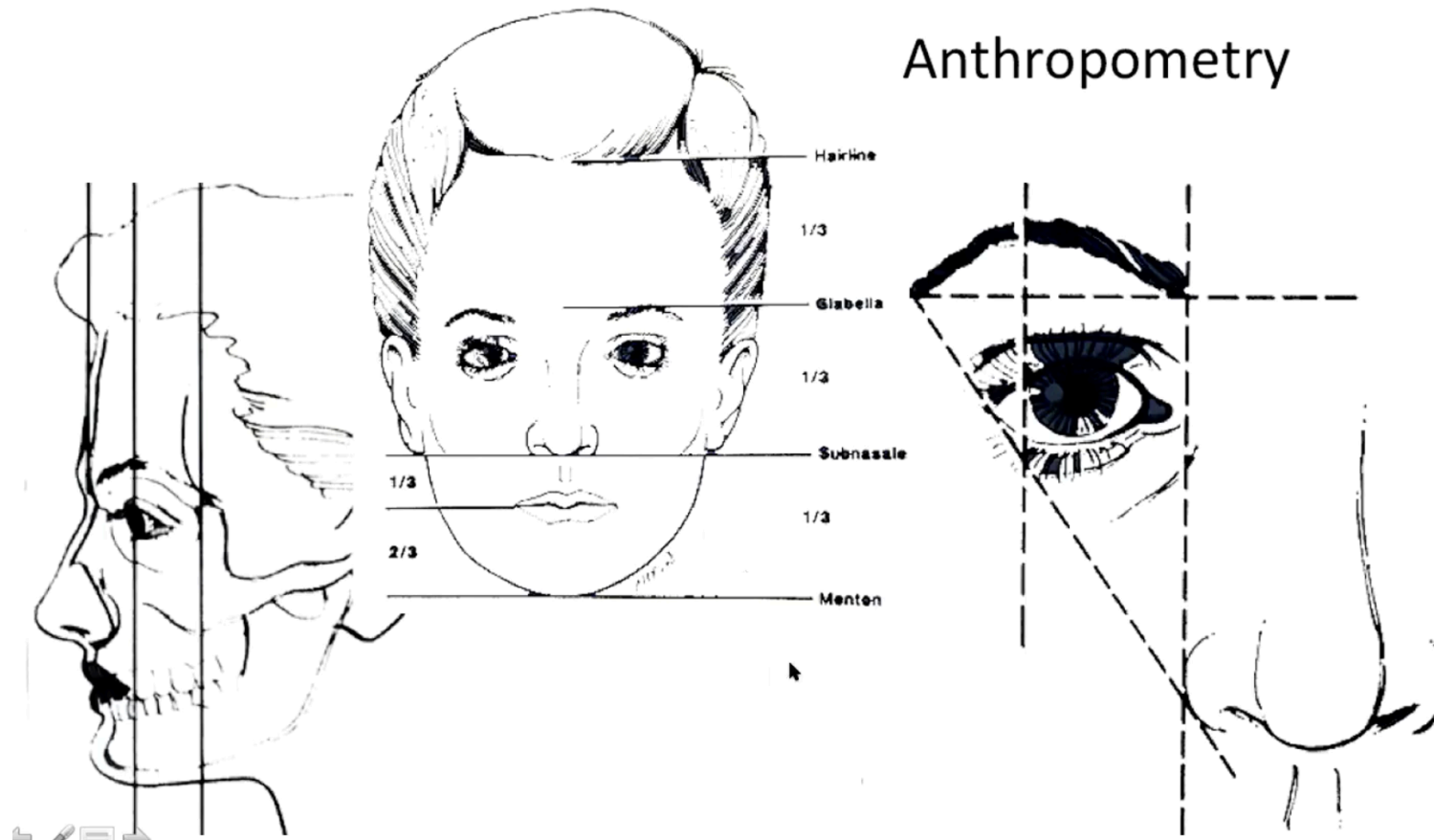
## Bony Reconstruction - General Principles



## Soft Tissue Injuries



### Anthropometry



# Soft Tissue Injuries

## Shadows & Highlights

