

SUTURING

Purpose

A. Functional

Close wound

2 Promote more rapid healing of wound

Prevent infection

Preserve function

B. Cosmetic

1. Promote wound healing with least amount of scar and deformity

Adherence to these 2 principles will dictate how a wound is handled, the techniques used to close the wound and the type of suture material used.

II. Types of suture material

A. Absorbable ex.--plain and chromic cat gut, Dexon Vicryl

1. Purpose--closure of deep layers-sub Q, fascia, and sub cuticular

2. Why close deep layers primarily?

a. Close deep space--prevent abscess formation

b. Take tension of skin sutures

c. Prevent herniation of muscle through fascia

B. Non-absorbable

1. Synthetice monofilament-ex. nylon, Prolene

2. Braided silk

III. Principles which minimize scarring and deformity

A. Minimum amount of tension on skin edges

1. Do not strangulate, appose skin edges only

2. Even tension on both skin edges

a. place sutures at same distance from edge and at same depth on side of wound

b. close deep layers primarily

B Minimize amount of foreign body in wound

1. Use smallest size suture material strong enough to hold wound together

- 2. Thorough cleansing and debridement of wound
- C. Remove sutures as soon as possible
- D. Use least inflammatory suture material available
- E. Debridement of ragged and/or contused nonviable edge
- F. Avoid inversion of skin edges--casts a permanent visible shadow
- G. Modify configuration of wound to enable more precise closure

IV Wound Assessment (Includes History)

- A. Location
- B. Size
- C. Shape
- D. Depth
- E. Relationship to surrounding structures
- F. Underlying structures
- G. Need for debridement or restructuring
- H. Is repair beyond your capabilities?

V. Step by step approach to wound repair

- A. Assessment
- B. Anesthesia--only after checking neurologic function
- C. Wound prep--by E.R. attendant---Betadine scrub-saline-irrigation
- D. Additional wound prep.--Betadine
 - 1. For badly contaminated wounds-jet irrigation with N/S with 21g needle
- E. Debridement
- F. Closure of Fascia and/or periosteum
- G. Sub Q closure--interrupted sutures with Vicryl
- H. Sub cuticular--interrupted with inverted Knon or running Vicryl
- I. Skin closure--size dependent on location
 - non absorable monfilament
- J. Cleanse wound and surrounding tissue with N/S and dress
- K. Charting

V Specific lacerations--by location

A. Scalp

1. Shave area of scalp
2. Lidocaine with epinephrine
3. Repair galea-3 or 4-0 Vicryl
4. Skin--3 or 4-0 Prolene 1 week suture removal
5. No dressing essential
6. Close in single layer after galea is closed

B Face 6-0 Prolene 3-5 days for suture removal

1 Eye brow

- a. Do not shave eye brow
- b. Proceed with repair layers as necessary
- c. If debridement is necessary, debride both sides in a line parallel to direction of hair follicles

2. Eye lids

- a. If margins of lids are involved--consult ophthalmology
- b. If near medial epicanthus look for lacrimal duct injury

3. Cheek

- a. Be aware of stensen's duct
- b. If near tragus or over parotid, check facial N function prior to repair or anesthesia

4 Lip

If vermilion border is involved it is crucial to get exact approximation of border

2. Use layered closure if necessary
- 3 First stitch at vermilion border
4. Tattoo vermilion with methylene blue
5. Anesthesia--upper lip infra orbital
6. Nerve Block--lower lip Mental nerve
7. Check to see if through and through
8. Skin--6-0 Prolene Mucosal surface 5-0 silk

5 Ear--6-0 Prolene

- a. If cartilage involved, repair with Vicryl opposing perichondrium only.
- b. Anesthesia for extensive injuries use nerve blocks (lesser occipital, greater auricular, auriculo temporal and branch of vagus in canal)

Stint dressing

Nec:

Be sure platysmus is not violated

D Leg

1. On area of knee, be sure laceration doesn't extend into joint--
X-ray looking for air in joint.
- 2 Generally blood supply to skin poor. Leave sutures longer 10-14 days
 - a. 4-0 Prolene
 - b. 3-0 Vicryl deep

E Arm

- 1 Be sure distal vascular, neurologic, and tendon functions are intact
- 2 Neu--sensory and motor functions of median ulnar and radial nerves
Tendons--
 - a Extensions of finger
 - b Superficial and deep finger flexors
 - c Wrist extensors and flexors

F Hand

1. Neurologic and tendon functions must be checked.
2. Digital nerve injuries if proximal to dip joint in adults can be repaired.
- 3 Tendons--repaired immediately--Delayed repair
- 4 Digital nerve block at level of metacarpals
- 5 Finger tip avulsions
 - a. Call hand surgeon if:
 1. greater than 1 cm. area
 2. bone is exposed
 3. nail bed is injured
 4. if in doubt
 - b Trend toward conservative management

VII: Special Lacerations

A. Flaps

Proximal vs. distally based

Length vs. width

B 3 corner laceration

C Circular lacerations--Dog ears

VII Infection Prophylaxis

A tetanus

1. If never immunized or incomplete--Tet. tox. 0.5cc hyper tet. 250 U
2. If fully immunized---greater than 5 years Tet. tox.
3. If fully immunized---less than 5 years 0
4. If fully immunized---greater than 5 years and highly contaminated consider Tet. Tox 0.5 and hyper tet. 250 U

B. Antibiotics

1. Generally not necessary
2. If contaminated or puncture wound consider prophylaxis--cover for staph
3. Bites---controversial, no consensus
 - a. No sutures vs. loose suturing
 - b. Generally antibiotics given
 1. Human--staph agent
 2. Animal--coverage for staph and pasteurilla