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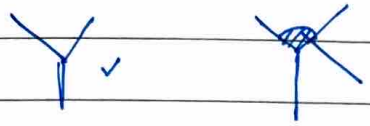
Suturing Technique

Suture ends cut 3mm long & placed 3mm apart

- Interrupted.
  - 2mm either side
  - 3mm apart
  - better than subcuticular



- Continous key pattern
  - Easy. Loose skin of UL
  - 6-0 5-0
  - » Easily removed in lcut
  - better Nervous pt

- Vertical Mattress
  - closing skin ↓ elasticity
  - slight eversion ✓
  - closing posttraeicular graft.
  - Temporofrontal pedicle flap

- Subcuticular Stitch
  - ≈ Interrupted suture
  - ✓ lacrimal sac operations in ♀

- Inverted knot suture.
  - free graft placed.

- figure of eight
  - Deep wound by interrupted suture.

Flaps

Types of flap

- Flap
  - Local flap
    - Rotational
    - Transposition → Z-plasty
    - Advancement
    - Island.
  - ~~Extended~~ flap Expanded.
  - Free flap
- Graft
  - Free graft
    - Split skin.
      - Thiersch
      - 0.20 - 0.35
      - Dermatome
    - Full Thickness
      - Wolfe-Krause
      - 0.80 - 1mm
      - Scalpel
  - Pedicle graft
    - Hair bearing
    - Mucous Memb.
  - Mot. graft
    - Other
      - Bone, cartilage, fat
      - Padgett
      - 0.6 - 0.8
      - Dermatome →
      - Blair Beaver
      - 0.4 - 0.6 mm
      - ← Dermatome

Flap.

Bearing own blood supply

↓ contraction

Best results (local flap)

Skin resemble quality & colour

Graft

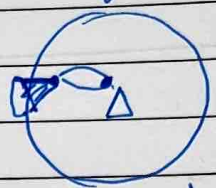
↓ eq.

TSPW

Local flap

Source – cheek, glabella, forehead

Zygomatic cheek flap



Lat canthus to auricle = defect of Length of PF

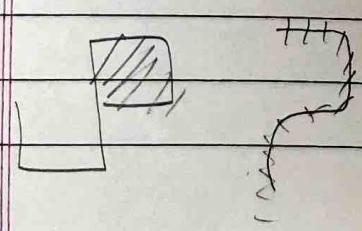
Ix
- Skin defect
- Mustarde operation of LL reconstruction
  - cheek flap + free graft of Nasal mucosa + Cartilage.

Donor site – left for 1° healing if tension then split skin graft

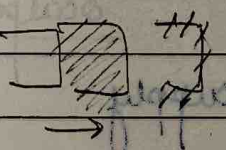
Transposition flap.
- eliminate fold or scar contracture
- Alter position of eyelashes / eyebrows

↓

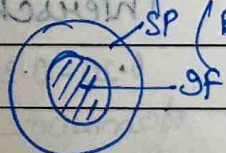
Z plasty – 2 flap.
- Release contracture
- Lengthening & changing direction of scars.



Advancement flap.
- Tissue from 1 side to other



Island flap.
- raised on pedicle



glabella to inner Canthal area.

Contracted Socket

Small defect.
↓
Buccal Mucosa.

Large defect - > 2×2 cm
↓
Large local flap
Split skin graft (SSG)

Free graft
↓
Skin

Split skin.

Take of graft ✓

✓ Take or any surf.
Survive inf (× Hemolytic steep)
✓ If for rapid healing of.
Large Wound.
✓ Cells that produce granulation.
(×)
Pigmented.
Contract
× durable as full
× area of granulation like
Base bone, tendon, cartilage.
Open joint.

Full thickness.

↓ Shrink Post op
✓ Colour match
✓ durable

, Donor site × readily available

Donor

Upper Arm
Thigh.

Post auricular area
Loose skin of UL

STSG

- Preparation of donor site
  - Medial aspect of upper arm, thigh
- Tech of cutting graft – jelly, skin board
  - Sg knife
    - Watson
    - // to skin, steady to & fro
  - Electric dermatome
    - Davis
- Dressing the donor site
  - Tulle gras → Melolin → Bandage
- Recepient site
- fixation of graft – Silk sutures, Tulle gras
- Post op Care – Look for hematoma, seroma

FTG

- donor site
- fixation of graft → Silk
  - → Ends loose to be sterile
  - proflavin wool
  - → Anchoring stitch to base/bed
    - ✓ Direct contact
    - ✓ Loss of graft by shearing, staining

Flaps

Hair bearing

- Outdoor pt
- Cosmetic

∴ Eyebrow use

Eyebrow containing hair follicles & sup. fat

disappointing.

Local scalp flap containing hair

» reliable

1st >1 operation.

Temporal Island flap for reconstruction of eyebrow

Shd reach eyebrow sout tension

Sup. temporal A & V dissected out

Mucous Membrane.

Conjunctiva.

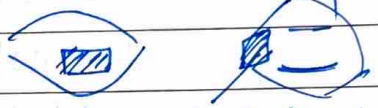
Small conj def.

× Harm to lacrimal ducts on temporal side

Buccal Mucosa/ Nasal

- injury
- Burns.
- Cong. Abn
- After excision of Neoplasm

(×) Look sed thick Uncomfortable



avoid parotid duct.

remove submucosal fat before graft^n

Fat

Gille's method reconstructing depressed scar

(×) shrink to ½

Calcified.

∴ unsatisfactory for contour

Cartilage.

- Eyelid
- Socket
- Orbital Margin

Tarsus.

↓

Alside Nasal Septum

Orbital Margin

Rib.

Bone grafts.

Orbit »

(✓) → Iliac Crest (IC)

» Outer table of skull.

✓ Periosteal layer retained

sc-Cortical bone

» for orbital floor # repair

Fascia.

(✓) → Fascia lata.

Extensor tendon of little toe.

→ UL ptosis

→ LL palsy in facial palsy

→ Canthal lig reconstr.

→ depressed # of zygoma

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Pedicle graft

Skin (Epidermis + Dermis)
+
S.C fat
+
Bos

- Staged reconstruction

Temporofrontal region.

✓ near to area of reconstr
- Hairless/Hair bearing
- good colour match.

Expanded flaps

↓ skin ∴ stretched using tissue expanders

× by inexperienced ~~dr~~

Mol graft

contour defect

(x) ↓ survival
fibrotic

better if ⊆ B's & N's.

free flap.

Large defect in Orbit after Tumour resection

↓

flap ⊆ B.S (A / V)

Free graft sites for

Ant Lamellae

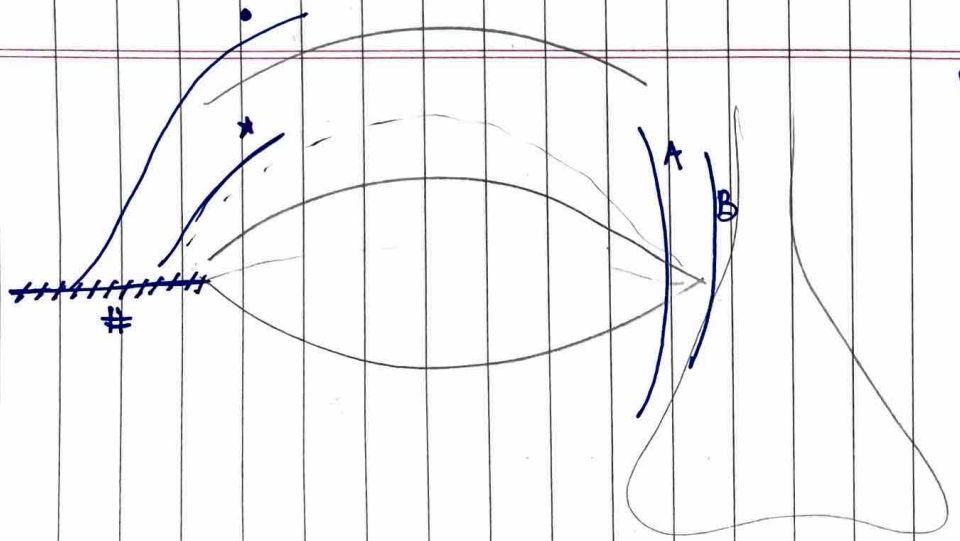
Postauricular
Supraclavicular.
Medial side of upper arm
groin
Nasolabial fold.
Contralateral UL skin.

Post lamellae

- Free Transconjunctival graft
- Sclera graft
- Oral mucosa.
- Fascia Lata.
- Auricular Cartilage
- Palatal. Mucoperichondrium
- Nasal mucosa & septal cartilage
- Free Conjunctival autograft from contralateral eye

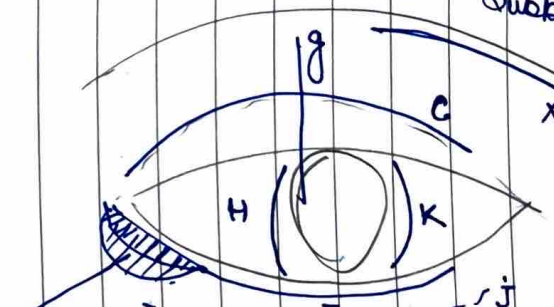
A Transcaruncular MO (Baylis)

B Reanbeth-Knaid Medial O.
Lynch



• Classic Stallard Wright Lat Orbitotomy
* Eyelid Crease Lat O.
# Lat Canthotomy & Cantholysis

C Upper Eyelid Crease AO
D Vertical eyelid Split
H Med] Bulbar O.
K Lat] conj
X – Subbrow I



I – Subciliary
J – Transconj
J + Swinging (LC cut)

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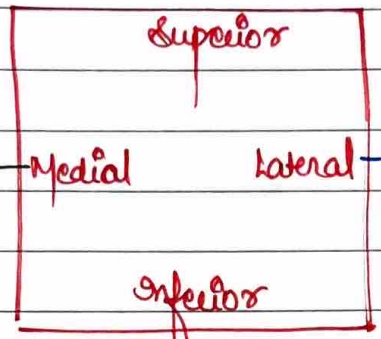
Approaches Used in Orbital Surgery

- Lacrimal gland lesion
- Superior Orbital lesion
  - Hemangioma
  - Abscess
  - Dermoid Cyst

Eyelid Crease Incision — Superolateral Sub brow & Coronal approach

Vertical lid split — Transcut Transcony



Subperiostal approach
- Mucocele — Lynch Tech
- Subperiosteal abscess
- Sinus lesions invading orbit
- ON decompression via. sphenoid sinus

Subconjunctival Extraconal approach.
Caruncular or Baylis Incision
- MR exposure
- SO/Trochlea exposure
- Medial Wall/floor decompression

SubCony Intraconal approach

Lesion in Ant Mid Cone.
Ant ON lesions

Lesions of Lat & post orbit
- LG tumour
- ON Tumour
- Orbital Apex lesion

J shaped Stallard Wright Skin

- Subciliary
- Subtarsal
- InfraOrbital
- Patterson – Ethmoidectomy

Subcut

Needed

TransConjunctival Approach ≤ Canthotomy / Canthotomy + Inferior cantholysis
- Lacrimal duct exposure
- Inf Extraconal lesions
- Orbital floor fractures
- Avoidance of Risk of Eyelid retraction or Lateral Canthal rounding

Preseptal / Postseptal

Eyelid approach
- Extensive Orbital floor #
- Naso Ethmoid #
- Severe Cony disease precluding Cony approach

Removal of Inferior Orbital rim — Tessier
- Lesions involving orbital apex or Inf orbital fissure.

3 fat bags in UL
2 in UL

ORBITOTOMY

COMMON INDICATIONS

1 Year- Dermoid, Haemangioma, Retinoblasoma.
1-5 Years- Dermoid, Retinioblastoma, Rhabdomyosarcoma
5-10 Years- Pseudotumour, Dermoid, Optic nerve glioma, RMS, Lymphangioma, Lymphoma
10-30 Years- Peripheral Nerve Sheath tumour (schwanoma), Dysthyroid Ophthalmopathy, Pseudotumour
30-70 Years- Lacrimal gland tumours (Picomorphic adenoma, adenoid cystic carcinoma), Cavernous haemangioma, Dysthyroid orbitopathy, Pseudotumour, Meningioma,
>70 Years- Melanoma, Metastatic orbital tumours, Basal Cell carcinoma, Mucocele.

Surgical Approaches to Orbit

1. Stallord Wright incision
2. Byron Smith Lid splitting incision
3. Benedict's incision
4. Berkes- Kronlein Incision

→ For superior/lateral orbitotomy

5. Lynch incision
6. Gull wing incision

→ For medical orbitotomy

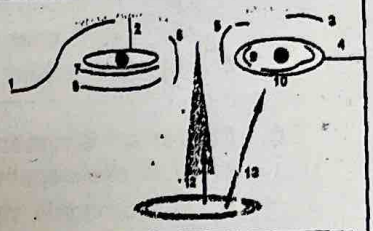
7. Subcilliary incision
8. Infraorbital incision

→ For inferior orbitotomy

9. Transconjuctival incision for medial/ lateral orbitotomy
10. Forneal approach to inferior orbitotomy

→ For transconjunctival orbitotomy

11. Neurosurgical approach for superior/ posterior/ lesion at orbital apex
12. Transnasal Endoscopic approach for medial posterior lesions
13. Transantral approach for inferior lesion/ blow out fractures



STEPS OF LATERAL ORBITOTOMY

1. General anesthesia
2. Stallard Wright Incision (Anterolateral approach)
3. Soft tissue dissection and periosteum incision parallel to the lateral orbital rim
4. Periosteum elevation and relaxation incision
5. Separation of temporalis muscle from the lateral orbital wall
6. 2 parallel osteotomies in the lateral orbital wall
   - Superior just superior to the zygomaticotemporal suture
   - Inferior just superior to the inferior orbital rim
7. Globe retracted by traction on lateral rectus muscle and periorbita incised above or below the LR
8. Bluent lissention to delinerie the mass
9. Removal of mass with cryoprobe slowly (by Rock & Roll movement) separating all adhesions
10. During entire procedure assess pupillary reactions meticulously.
11. After achieving good hemostasis reposition the bony flap & suture peuorteam loosly
12. Close skin with interrupted 6-0 Mersilk suture

COMPLICATIONS

- Profuse bleeding
- Ptosis
- Diplopia
- Ophthalmoplegia
- Optic neuropathy
- Vascular occulusion
- CSF leak
- Hypoesthesia
- Incomplete removal
  Recurrence

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Chemical injuries of Eye

- Alkali
  - » penetration
  - NH_3
  - Lye
  - KOH
  - $Mg(OH)_2$
  - $Ca(OH)_2$
  - ↓
  - lipophilic
  - saponify fatty acids of CM.
  - destroy collagen & proteoglycans in stroma
  - ↓
  - » Penetrate eye.
- Acid.
  - Confined to Ocular Surface
  - HCl
  - HF
  - CH_3COOH
  - H_2SO_4
  - H_2SO_3
  - ↓
  - denature & ppt protein.
  - coagulate surface layers
  - & penetrate eye.

Pathophysiological Mech

- Regeneration of OS epi & its state of differentiation
- Stromal Matrix remodelling including repair & degradation.
  - ↓
  - MMP – Rate limiting cleavage of collagen molecules
  - deg of BM collagen ← MMPs
  - MMP-1
    - ↓
    - Keratocyte derived Collagenase type I
  - MMP-8
    - ↓
    - PMN
- Inflammation.

Chemical injuries of Eye

- Alkali
  - » penetration
  - NH_3
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  - HF
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  - HCl
  - H_2SO_3
  - ↓
  - denature & ppt protein.
  - coagulate surface layers
  - x penetrate eye.

Pathophysiological Mech

- Regeneration of OS epi & its state of differentiation
- Stromal Matrix remodelling including repair & degradation.
  - MMP – Rate limiting cleavage of collagen molecules
  - deg of BM collagen ← MMP9
  - MMP-1
  - MMP-3
- inflammation.

Chemical injuries of Eye

- Alkali
  - » penetration
  - NH_3
  - Lye
  - KOH
  - $Mg(OH)_2$
  - $Ca(OH)_2$
  - ↓
  - lipophilic
  - saponify fatty acids of CM.
  - destroy collagen & proteoglycans in stroma
  - ↓
  - » Penetrate eye.
- Acid.
  - Confined to Ocular surface
  - H_2SO_4
  - HF
  - CH_3COOH
  - HCl
  - H_2SO_3
  - ↓
  - denature & ppt protein.
  - coagulate surface layers & penetrate eye.

Pathophysiological Mech

- Regeneration of OS epi & its state of differentiation
- Stromal Matrix remodelling including repair & degradation.
  - ↓
  - MMP – Rate limiting cleavage of collagen molecules
  - deg of BM collagen ← MMP9
  - MMP-1
    - ↓
    - Keratocyte derived Collagenase type I
  - MMP-8
    - ↓
    - PMN
- Inflammation.

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Sterile Corneal Ulcer.
PED, Conjunctivalization

Phases

Mc Culley

Immediate

depth of penetration
- Corneal clarity
- IO inflammation
- IOP.
- Less clarity

LSC damage
- Vascular Isch
- Necrosis of limbal & bulbar conj

Acute
0-7d
grade I → heal
II → Repithi
III, IV → x Epi.

Early repair
7-21
Epi defects

Late repair
>21 days

Type I.
Normal epithelial recovery

Healing pattern

II
delayed differentiation

Type III
fibrovascular pannus
preservation of source of proximal conj epithelium

IV
Sterile Corneal Ulceration.

Symblepharon.

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Classification

(a) Hughes

	I	II	III	IV
LSC loss	× or little	Subtotal	Total	Total
Ischaemia	× "	< ½ limbus	½ .	> ½ .
Conj Epi			preserved	Lost .

(b) Lopez Hall.

grade .	Prognosis	Limbal Isch .	Corneal Involvement
I	good	None	Epithelial damage
II	good	< 1/3	Haze at Pris detail visible
III	guarded	1/3 – 1/2 .	Total epithelial Loss ± haze
IV	Poor	> 1/2 .	Cornea opaque ± Pris & pupil obscured.

— stain ± fluorescein .

(c) Dua's classification.

grade :	Prognosis	Limbal Involvement .	Conjunctival Involvement	Analogue Scale .
I	V good	0	0 % .	0 %
II	good	< 3	< 30 % .	1 - 30 % .
III	good	3 - 6	30 - 50 % .	31 - 50 % .
IV	good - guarded	6 - 9	50 - 75 % .	51 - 75 % .
V	guarded - poor .	9 - 12 .	> 75 - < 100 % .	75 % . - 99.9 %
VI	V. poor .	> 12 .	100 %	> 100 % .

Inflammat^{n} hampers epithelization.

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Rx

Medical

Promote Epi wound healing & differentiation

a) Tear substitutes
b) Occlusive therapy
c) BCL
d) Autologous serum.
e) Retinoic Acid
   - goblet cell dysfxn.
   - Transdifferentiation

Support repair & minimize ulceration.

a) Ascorbate – C. Epi.
b) Collagenase inh.
   - NAC
   - EDTA

Tetracycline – chelation of Zinc at active site of collagerase enz.

TIMP – Thiols.

Control inflammation

a) CS
   - Lesion of Epi defect
   - ↓ 7-14 d. collagenase activity start
b) Progestational Steroids
   - MPA 1%
   - ×NSAIDS
   - Ulcerate

Surgical.

- Tenoplasty
- Tissue adhesive <1mm perforation
- AMT — Down — Onlay — Epi beneath
  - Up — Inlay — over

MOA
- → BM for Epi migration & adhesion
  - Mech → ↓ inflamm from C. steonta
- → Biochem – suppress proinflam cytokine
- ↓ Corneal Angiogenesis
- ↓ Corneal scar formation

- LSCT → CLAU → self
  - ↓ CLAG – Relative

On. Triple Immunosuppressive Rx (Prednisolone, Cyclo A, Azathioprine)

- Mucosal Memb Transplant
- PK.
- Keratoprosthesis.

Special Therapy

Acute Phase

Topical Cs
- Na Ascorbate 10%.
- Na Citrate.

Tetracycline Oint 1% QID.

Topical cycloplegics

Vit C 2g QID.

Tab Doxycycline 100mg BD.

- Grade II, III → AMT.
- IV → Teron.

Early phase

Povidone 1%

Vit C → T / Oral.

Na citrate.

Doxycycline

Late repair

- LSCT
- Tectonic procedure

Late Rehab

- OS Decoste
- LSC transplant.

(I, II, III) Medical Mx

Prednisolone

Tab Doxy

Vigamox

Cycloplegic

Glaucoma

Tab. Vit C 500mg TDS

(IV → VI)

AMT.

↓

glass rod lubrication to prevent symblepharon.

Tear substitute → To wash away cytokines.

↳ in Viral Conjunctivitis

Maisol 0.7% QID → preservative

x » 4 times.

∴ preservative free : > 4 Times.

Xrays in Ophthalmology

1) Caldwell Projection → Occipito frontal — frontal.
nose & forehead touching film.

2) Water's View → Occipitomental (Nose chin position)
Mouth open
Maxillary ✓ Sphenoid

3) Towne's View — AP view. @ 30° tilt from above & front
Petrous pyramids

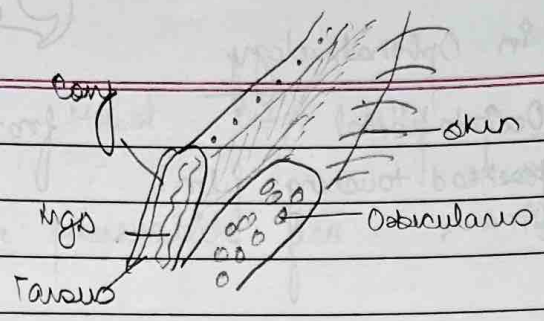
4) Lateral View & PA view — Looking straight
" Up
" Down
Pituitary. Tumours

5) Submento Vertex View / Basal View → Sphenoid

6) Rhese View
Ruggieo's View
] Optic foramen. → 40° to Midsagittal plane.
nose, chin, zygoma
Enlargement of Optic Canal

7) Sweet's Localizer

8) Limbal ring — 12mm diameter. — 2 lat view → ahead
↘ up



Lid defect

Full thickness Margin involving

Only Ant lamellae defect

- 1° closure
- Healing by 2° intention
- Skin graft
- flaps — discuss

Small 25-50%.

Medium 50-75%.

Large >75%.

Direct closure
Lateral Canthotysis/ Canthotomy

Tenzel. – LL
Mc Gregor – UL+LL flap

UL

LL

Cutler Beard
Mustard Lid switch
Glabellar flap
Reverse Hughe's

Ant lamellae

Myo Cutaneous Adv flap.
(Mustard cheek
Rotational
Nasolabial
Med/Lat forehead
flap)

Post lamellae

- Hughe's
- Free Muco perichondrial

Lid Repair

Lamellae { Ant – skin + Orbicularis
Post – Tarsus + Conj.

Mech of inj :- contusion → Abrasion → Avulsion → Puncture → Lacerat"

UL | LL
Larger
supported by large tarsal plate.
Palpebral position ⊆ Lev Apon.

Timing
Focus ← Mechanism.
Locat" of injury.

↓

+ Look for Lacrimal drainage

Eyelid Margin Laceration.

To avoid – Lid notching
Margin malposition

Tarsal edges trimmed
1st suture at plane of MG
2mm from wound edge
2mm deep.
} good margin eversion

Tarsus closed

Lash line & grey line

Ant lamellae.

1° Closure (PRO)

½ Thickness eyelid injuries

Large laceration ⊥ to relaxed skin tension lines

Suture 6-0, 7-0 absorbable suture

If orbicularis involve – repair

LPs involved – repair

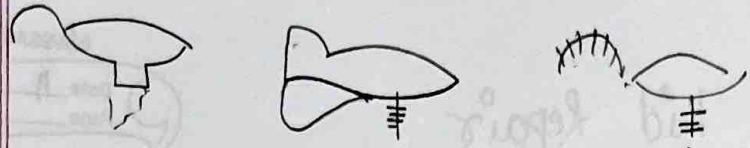
Non Marginal eyelid laceration → Horizontal – Look for LPs
Vertical – Heal ⊆ out repair

Based on involvement of lamellae

Ant lamellae
defect is ant to septum
↓
granulation

Extensive exposure of fat & Post lamellae
↓
skin grafts
Local advancement flaps

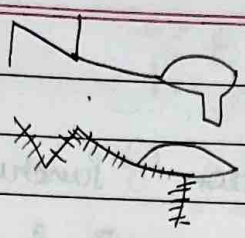
Post lamellae
but can be approximated
↓
Direct Tarsal alignment ⊆ undue tension.



full thickness eyelid injury

↓

Tissue Loss



Mc gregor

0-25% lid defect

1° repair

freshen up edges

Create 2 ⊥ Tarsal to Tarsal wound edges

↓

Square off Tarsal edges

↓

full thickness lid margin repair

Pentagon made

25-60%

Release & advancement of lateral tissues

Lat Canthotomy

Cantholysis

↳ semicircular manner

L Tenzel flap

To supplement post lamellae

L Periosteal flap

UL – Mustarde lid switch technique

Mc gregor flap = UL + LL

Split at end of Tenzel

>60%

Cutler Beard Techn

Lower Lid

(K)

Upper Lid.

Large, centrally located defects

Sparing ↓ lid margins

M&L Transconjunctival flap

Hughe's flap

↓

2 stage

Shallow

Transposition TC flap by Hewes et al

↓

1 stage

Vertical deep full thickness

↓

Mustarde cheek flap

↓

1 stage

Ant & Post Lamellae

↓

Myocutaneous Advancement flap of Subcutaneal Ocularis oculi fascia

(K) Deep Medial Canthal & Lower eyelid defects

L Medially based UL myocutaneous & median forehead transpositional flap.

~~Mustarde lid switch technique~~

Upper lid
- Excess horizontal tension – Ptosis
- Vertical – Lagophthalmos

full thickness defect of 2/3 length of UL margin
↓
Horizontal advancement of Upper Eyelid Hanscom flap
⊆ Ant lamellae – full thickness skin graft

100% eyelid margin
↓
Cutler Beard Bridge flap

Inspection tips → Anaesthetize ↷ gently pull apart margins
↓
Look for FoB → Inspect Eyelid margin → Inspect MC for canalicular injury → If LG injury look for NCT injury → If Orbital fat seen (sign of Septum violation)
LPS injury suspicion → Horizontal (Ptosis) → Look for ° of edema.

℞ Can be postponed ← extensive vascularity ← Unique characteristic of eyelid & facial soft tissue.

- Globe Mx ↷ Eyelid Mx
- Planning ℞ → Protect the globe ↷ Anaesthetize ↷ Sterilize ℞ field ↷ Inspect tissue loss

Mustarde lid switch Tech

Broad shallow defect of Upper EL

2 stage

Stage 1 Transfer of pedicle from LL to UL

6mm can be taken from LL (≤ out need to reconstruct) containing marginal artery

width of flap 7-8mm. Donor site — Middle portion of lid ≤ longest lash line

⇓ 2-3 wk later

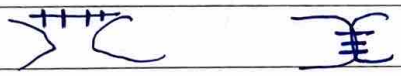
Stage 2 Pedicle flap seperated.

Marginal Eyelid Repair

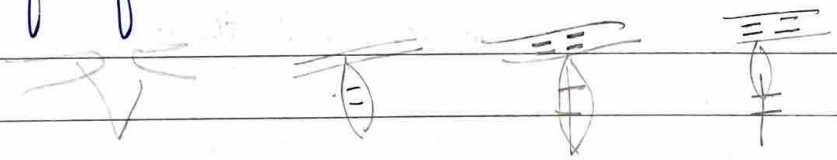
1° closure

goals — Realign Margin → Restore str integrity of tarsus → Avoid eyelid notching → ↓ skin & deep tissue scarring → Protect the eye.

Sx repair clean the wound., freshen the wound. Expose 3mm plate on both sides of wound. → Approximate tarsus first in horizontal fashion



Leave sutures untied → Now reapproximate ~~tarsus~~ Eyelid. for far near near tech.



Epithelial Tumour

- Squamous papilloma
- N. Sebaceous of Jadassohn.
- Cutaneous Horn.
- Seborrheic Keratosis
- Inverted follicular Keratosis
- Pseudoepitheliomatous Hyperplasia.
- Keratoacanthoma.
- Actinic Keratosis
- Epidermal inclusion Cyst
- Pilar Cyst.
- Epidermoid & Dermoid Cyst
- Nevus Verruca.

Adnexal Tumour

- Benign lesion of Sebaceous origin
  - Milia.
  - Acquired Sebaceous gland hyperplasia.
  - Sebaceous adenoma
- Vascular Tx
  - Capillary Hemangioma.
  - Cavernous H.
  - Lymphangioma.
  - N. Flammeus
  - Pyogenic granuloma.

Eccrine Origin

- Eccrine hidrocystoma
- Syringoma.
- Chondroid syringoma.
- Apocrine spiroma.

Neural Origin

- Neurofibroma.

Xanthomatous

- Xanthelesma.
- fibrous Histiocytoma.
- Juvenile Xanthogranuloma.

Apocrine Origin

A. hidrocystoma

- Cylindroma.

Pigmented Lesion of Melanocytic origin.

- freckles
- Lentigo simplex.
- Solar Lentigo
- Melanocytic Nevi
- Dermal Melanocytic Nevus
- N. of Ota
- Balloon Cell N
- Blue N
- Spindle & Epithelioid cell N.

Hair follicle Origin

Benign cystic lesions

- Trichoepithelioma
- Trichofolliculoma
- Trichilemmoma
- Pilomatrixoma.

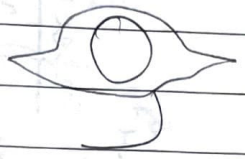
Inflammatory

- Chalazion
- Hordeolum.

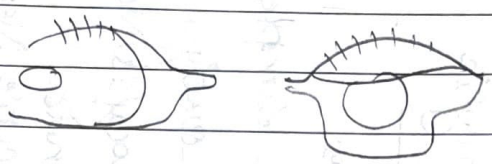
Infectious

- Molluscum Contagiosum
- Verruca Vulgaris

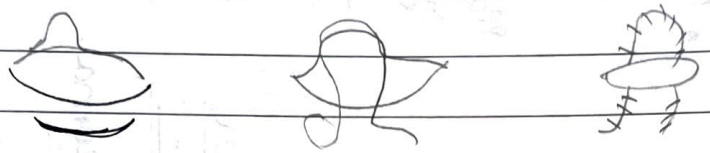
Mustard lid switch



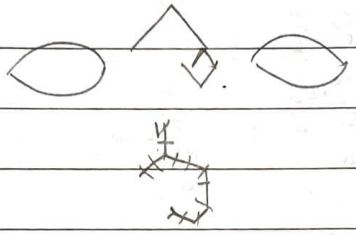
Only procedure that provide lashes to the defect



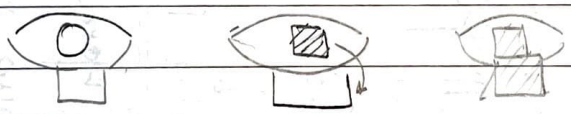
Cutler beard



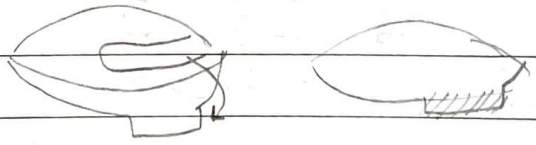
Glabella



Hughes

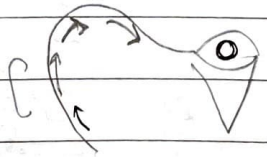


Hewes et al



Mustard cheek flap

↓ LL flap



Canaliculi

Canalicular Dephunation

Botox — 2.5-5U
x Massage lid

Conjunctivo DCR

Canaliculo DCR

Retrograde Intubation DCR

↓

Epiphora as ⊆ B/L Canalicular blocks & rare Congenital Canalicular Agenesis

↓

Lester jones Pyrex glass — Capillary act"

↓

Distal Canaliculi or Common Canaliculi obstruction ⊆ at least 8mm of cat C. patent

↓

Mid or Proximal Canalicular Obstruction

↓

Pseudopuncta created.

Date
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~~Lacrimal Obstruction~~

Epiphora

Proximal Lacrimal System Obstructions

- Punctal Agenesis — Conjunctivo DCR ≤ (Lester Jones; Gladstone Pulteeman tube)
- Punctal Membrane | Incomplete Punctal Canalization
  - Simple Membranotomy ≤ punctum dilator
- P. Stenosis

(Puncta)

Traumatic & Atraumatic

Traumatic → P. Snip procedures

Atraumatic → Mini Monoka stent

Canaliculi Obstr

a) C. Intubination — Success ∝ Distal

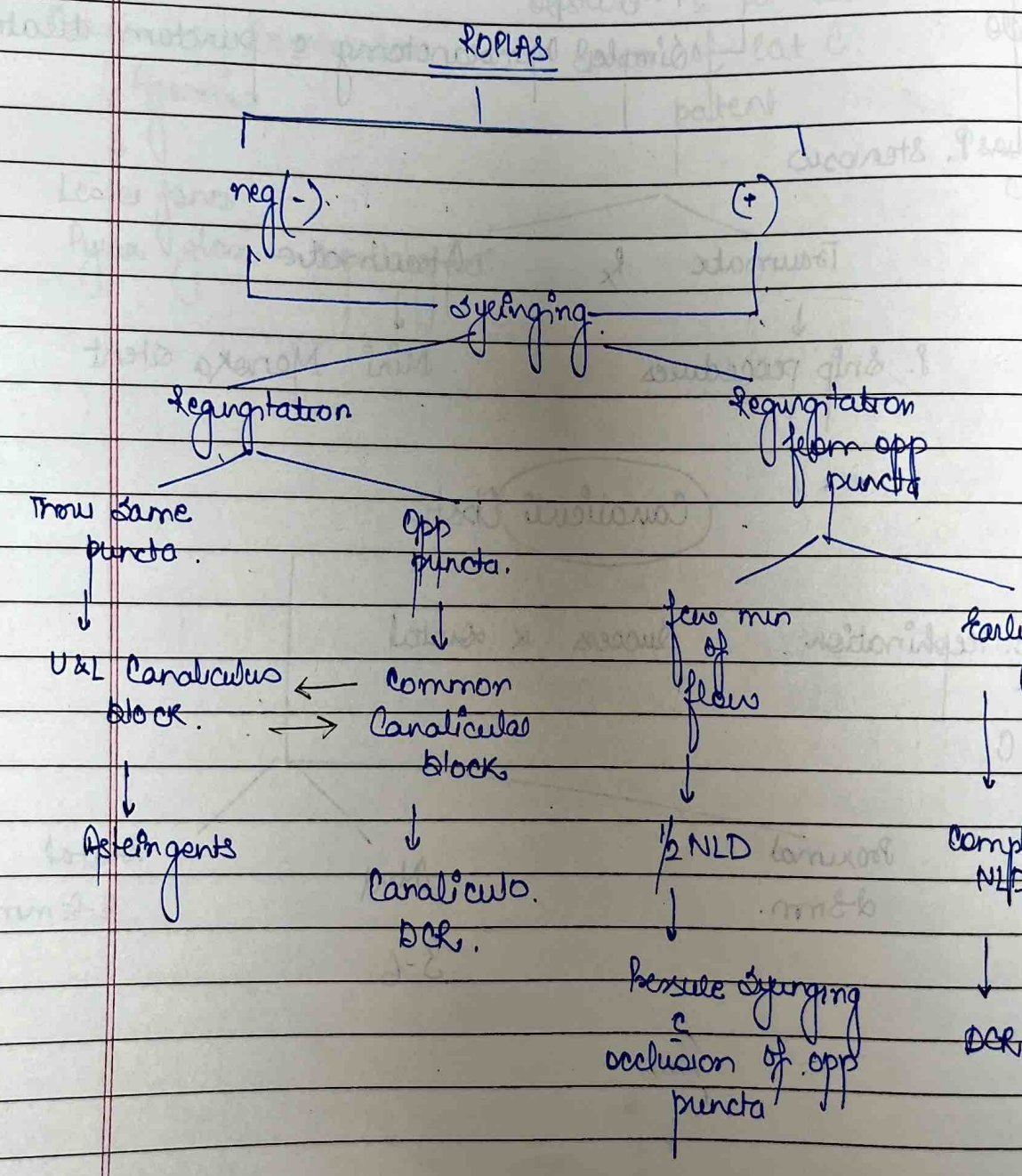
b) C

Proximal 2-3mm. | Mid 3-6. | Distal 6-8 mm.

a. Eversion of Lower punctum.
b. Occlusion of Puncta
c. Dc " of Canaliculus
- Congenital Anomalies of b & c
- Lacrimal obstruction.

Lacrimal Obstruction

Level determine



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Etio

- Anatomical
  - Chronic inflammation
  - Stenosis
  - Retention of mucoid secretions & tears
  - Dacryocystitis
  - Mucocoele
    - ↓
    - PROPLAS
      - Mucoid material
        - ↓
        - Mucoid material
        - ↓
        - Clear fluid
        - ↓
        - Jones neg
        - ⇓
        - Mucocele
        - ⇓
        - Mass visible on Medial Canthus
      - Syringing
        - ↓
        - Mucosal stenosis
        - +
        - Encysted mucocele
      - ✕
        - Rule out → fungal / Neoplastic growth
- fxn
  - No obstr ⟹ Still epiphora
    - ⇓
    - Punctal phimosis
    - stenosis at any pt
    - failure of L. pump.
      - ↓
      - Jone I neg
      - +ve Jone II.
      - + Scintigraphy
- Pain ± Nasal discharge + Intermittent Nasal bleed
  - ⇓
  - Neoplasm of Antrum / Eth

Congenital

Acquired.
- Dacrocystectomy
- Lacrimal intubation
- DCR

Congenital NLDO

Rx

Ab & Massage of contents → 6 mth → Probing ↓ GA

3yr → DCR.

Obstruction

Congenital
- NLDO
- Congenital dacryocoele.

Acquired
- Conjunctivochalasis
- 1° punctal stenosis
- 2° " "
- Canalicular obstruction
- NLDO
  - Idiopathic
  - Nasal-orbital trauma
  - granulomatous disease
  - infiltration by Nasopharyngeal Tx
- Dacryolithiasis

Ix → Acquired NLDO
Congenital NLDO refractory to Probing & Silicon intubation

DCR

Skin Incision Sparing DCR / Intra. Endonasal / Endo Canalicular

Conventional — ~~Endo Nasal~~.

8mm of lateral part of Canaliculus

✓ remaining

Canalicular DCR. (A)

Conjunctivo DCR. (B)

Lester Jones Tube

Facial Trauma
LS. Neoplasm

Conventional / Exteenal ✓✓

Toti

Excellent visibility, ↑ success rate
✓ Scar.
Short operating time.
ability to detect Lacrimal disease — Dx
Cost effective (X)
Scar formation.
+/- Silicon Tube (+)

Intra ~~Endo~~ nasal
Caldwell

× Scar.
Preservation of Canthal anatomy
Excellent hemostasis
OPD basis Rx, Quick Rehab.
Poor Monocular view
Bleeding
Not if Nasal infection
Puf & post to Ext. adj thin bone

Osteotomy
Ix

Symptomatic epiphora ± NLDO Complex.
Ac/Chr Dacrocystitis
IOFB removal after Incisional Dx in NL Sac
Operative part in repair of CC stenosis/Laceration (A)
Preliminary part in Jone Tube (B)
Incomplete NLDO.

⊙ No webbing of cutaneous incision

DCR steps

GA / LA

↓

Ipsilateral fossa packed c guage

↓

Dilate Canaliculi, Irrigate Sac c Warm Saline

↓

Stretch skin of Outer Canthus

↓

Curved Incision 2mm abv MPL.

3mm to nasal side of Inner Canthus

Curve 4mm downwards

4mm.

Int to MCL ⊙

11mm M to MC

Straight 2.5cm long Incision

toward alae of Nose

Outward along line of Ant lacrimal crest to spot 2mm below Inferior Orbital Margin

↓

Orbicularis is split → MCL dissected

↓ Care of Angular Vein

↓ L. fascia

Skin retracted using lacrimal retractor

↓

Angular Vessel

Periosteum over L. crest incised

Separated from fossa to expose bone ⟹ Remove Sac in Dacryocystectomy till here.

↓

Remove bony crest using guage & punch

↓

Nasal mucosa reached & gap enlarged

↓

to make Anastomosis of Sac & N. Mucosa possible

↓

Sac opened through periosteum

Nasal Wall & entrance inspected of common C. for patency

Two flaps of Nasal mucosa dissected (visible through bony window — H shaped.

↓

Sutured to Ant & Post wall of sac

↓

Silicone tube passed through both puncta down to ant & post walls of sac

↓

Orbicularis

Rest sutured in 3 layers. — skin.

Intranasal

Mitomycin C application

laser used → $\times O_2$ then used

20g retrograde light pipe inserted through dilated superior Canaliculus → advanced into sac → intended ostium site

Ostium — placed posteriorly & inferiorly

Endocanalicular

Laser fibre passed thro U & L Canaliculus.

Steps of NLD Massage

finger insinuate Medial Canthus
occludes both puncta
↓
lies squarely over NCT.
direct pressure over tendon & gentle rotatory movem

→ Reincke
Thorton
Verous, Mucosa membrane graft

Tetracaine 2%

Date

Conjunctivo DCR / Jone's Tube (Pyrex glass)

Ix

↓

Initial steps of DCR.

↓

Posterior Mucosal flaps sutured

↓

Attention to excised Caruncle

↓

A needle is inserted from a pt 2mm behind medial commissure to merge just behind ant mucosal flap.

and be ant to body of ethmoid

Enlarge using Von Graefe knife

↓

Polythene tube inserted 18mm Long

M → trimmed short of Nasal septum

L → sutured to inner Canthus

⇓

DCR Completed.

⇒ few days later — replaced by glass Capillary tube — 2mm. 15-16 mm

M → Expanded to 2.5mm

L → ↓ Cuff 3-4mm dia

6mth later ⇒ Mucous block clear ↓ LA.

X → Children

Canaliculo DCR

Dissecting out of common canaliculus

↓

U & L

↓

Remove fibrosis in region of MPL.

↓

Anastomose common canaliculus ⊆ Sac

& complete DCR

↓

Intubate Canaliculi ⊆ lacrimal stents

& place Gl tubing in Nasal Cavity.

classmate
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Dacryocystectomy

- Elderly pt c/o chronic dacryocystitis without epiphora.
- Pt c/o Lacrimal sac tumour

Goals

1° — Removal of LS / LS ~~Fx~~

2° — Prevent further episodes of dacryocystitis

Ix

- Suspected/ Confirmed LG Fx
- Chronic Dacryocystitis following failed DCR (D)
- A. c/out a history of Epiphora
- A. in setting of DED.

Tech — Fillip incision ✓
Ant ends of MCL cut
May use Visco for visualizatn of Sac. (bt x in Tubrnae)
Cut → HPE
Irrigatn c/o A.B.
Confirm by parsing probe.
Seal upper end of NLD
close as opened.

failed Conventional Probing or Persistent CNLDO.

Symptoms of CNLDO occur in 6 wk of 1° probing

Rx option →

- Nasal endoscopy guided lacrimal probing ± inferior turbinate medialisation
- Balloon catheter dacryoplasty / dilation of NLD
  BCD
- Lacrimal intubation ⊆ Silicon stents → >48mth age
  kept 3 mth.
- DCR → External or Endonasal.

Ix of BCD → Failed probing at any stage.
↳ Failed Silicon intubation at any age
1° procedure in children in Tmonthy Cl

Stents — Mastelka
Nino Monocal
(Crawford)

TEAR SHEET No.2: EXENTERATION OF EYE

Subtypes	Indications	Contents Removed	Contents Preserved	Final Appearance	Complications
1. Anterior Exenteration	1. Conjunctival Malignancy	Globe, posterior lamella of Eyelids, all of conjunctival sac.	Periorbital, Posterior orbital contents	A shallow socket lined with skin	1. Delayed healing 2. Hematoma behind the flaps 3. Immobile, ill fitting prosthesis
2. Subtotal Exenteration Sparing the lids	1. Primary orbital malignancy without involving lids 2. Secondary malignancy, spread from globe or conjunctiva, not involving lids	The contents of orbit including periosteum of orbital wall.	Some or all of the skin and orbicularis muscle of eye lids.	A deep orbit with residual lid skin and orbicularis sutured together.	1. Granulation and delayed healing of wound. 2. Hematoma behind the flaps 3. Ill fitting, immobile prosthesis. 4. Ptosis, entropion, ectropion of lids.
3. Total Radical Exenteration including the lids	1. Primary orbital malignancy 2. Secondary orbital malignancy spreading from lids, conjunctiva, globe, PNS. 3. Mucormycosis of orbit 4. Advanced stage of Pseudotumour of orbit for relief of pain	The contents of orbits, periosteum of orbital wall, lids, sometimes combine with radical cranio-facial surgery or radical sinus surgery	Orbital bare bones with or without a primary split skin graft.	When healing is completed, a spectacle mounted prosthesis (or) prosthesis fixed with titanium pegs placed in the orbital rim.	1. CSF leak 2. Fistula into PNS 3. Delayed healing by granulation tissue 4. Hematoma formation 5. Keratinization of skin graft 6. Malodorous socket. 7. Infection 8. Recurrence of malignancy 9. Poor cosmetic appearance.
4. En Bloc Orbitectomy or Super Exenteration	1. Primary or secondary malignancy or orbit involving the adjacent bones. 2. Multidisciplinary procedure involving orbital surgeon, Neurosurgeon, facio-maxillary reconstructive surgeon	Fronto-temporal-sphenoidal craniectomy	Subfrontal dura reflected and mobilized posteriorly, frontal bone is replaced, anastomosis of superficial temporal artery to a myocutaneous vascular flap.	Primary bony reconstruction using posterior plate of frontal craniotomy, or rib graft. Orbitectomy cavity can be filled with a delto-pectoral myocutanceous vascular flap. A spectacle mounted prosthesis.	1. All of the above 2. Exposure of intracranial contents 3. Extremely poor cosmetic appearance.

Enucleation, Evisceration, Exenteration.

Definition

Evisceration
Surgical removal of entire contents of globe leaving a scleral shell.

Enucleation
Sx removal of entire globe.

Exenteration
R. of entire orbit including — globe, eyelids & O. contents

Indication

Evisceration
Panophthalmitis
←
←
Painful blind eye.

Enucleation
Eye donation.
IO Tx
Tx c risk of SO
Phthis bulbi
Mucoophthalmis.
Trauma.

Exenteration
Cutaneous tx c orbital invasion.
- LG malignancy
- Extensive conj M
- Mucormycosis
- Chronic O. pain
- O. deformities
- Malignant Contracted socket.

1) Tx for Surgery
2) Pre Op Counselling → Removal of Wrong Eye.
3) Sx technique → Anesthesia.
4) Post Op Mx
5) Complication of Sx

of req — full enucleation

ON → Metzenbaum Scissor.

Tech

Enucleation.

- Simple sphere implant
  - → 10 ocks & hammock effect
  - → I. behind post. Tenon's fascia.
- Sclera scraped HP for improved motility
  - → HP get well vasculonged
  - → 2° drilled, fitted & motility peg
  - → coupled & Ocular prosthesis to ↑ motility.

fascia add 1-1.5mm.

Vol — 7.9 ml

Prosthesis ↓ → 4.2ml

Implant = AL-2mm. in kids

Evisceration.

70% ethanol applied to cleanse interior.
↓
denatures remaining uveal tissue
↓
Size of I → 14-16mm.
of » → Radial.
relaxing sclerotomy incision

Largest implant 18mm.

Modified Evisceration
↓
full excision
3/4 sclera removed
1/4 sclera left.
↓
Pseudomonas Inf.

Exenteration.

- Lid involving
  - → Lid sparing
    - → Subtotal
      - → 4mm away from lid Margin
    - → Total
      - → At Orbital Margin.
- Radical → Maxilla is cut, Mandibulectomy done.

↓

Use Orbital prosthesis
Spectacle mounted
Dental frame
Magnetic

Excess Bld loss, CSF leak, infection.

Complications

Post op inf

Extension of implant
- Scleral shell shrink
- Poor wound healing of s. edges
- Improper selection of implant.

Post op
- O. Implant extension
- Vol loss of Anoph socket
- LL Laxity & poor prosthesis support.
- UI. migration
- UL ptosis
- Chronic Conjunctivitis
- Mucoid discharge.

Implant

- **Alloplastic**
  - PMMA
- **Neuses to maximize Ocular prosthesis motility**
  - Synthetic Porous.
    - Hydroxypatite
    - ↑ density porous polyethylene
    - Al_2O_3.
  - 2nd stage drilling of implant & placement of motility peg needed.
  - → 500μ pores acts a Haversian system
  - → Have to make radial sclerotomy incisions.
- **Autologous tissue. Orbital I.**
  - Dermis fat.
  - Ipsilateral temporalis muscle flap
  - LD myocutaneous free flap.
  - Osteointegrated implant tech.

Non integrated buried

- Spherical
  - Silicon
- Conical
  - PMMA

Quasi integrated

- Rod elevation Ant to fit & prosthesis
  - IOWA
  - Universal
  - Allen.

Integrated

- Coralline HP
- ↑ density porous Polyethylene. (MEDPORE)
- Al_2O_3

Def of Contracted Socket → Shrinkage & shortening of all or a part of orbital tissues causing a decrease in depth of fornices & orbital vol ultimately leading to inability to retain prosthesis

Enucleation Tech

Disinsert Rust.

Cut ON flush ≤ Sclera.

i.e Only small part is cut

Myocony Tech

↓

15-20 mm ON is cut

↓

Eg. Retinoblastoma or

10 Tx.

Choroidal Melanoma

↓

Extended Enucleation

↓

Advanced OSSN cases.

Later on.

Implant mobility is better

Contracted Socket

Age of Onset

History
- Repeated extrusion
- Preceding Sx.
- Progressn

Unable to retain prosthesis / repeated extrusion of P
Significant asymmetry compared to other eye
H/O underdeveloped socket in childhood.

factors responsible for Contraction of Anophthalmic Socket
- Poor Surgical tech of 1° Sx
- fibrosis resulting 4m multiple Sx
- Implant related complications – migration, exposure
- Socket left ⊆ out prosthesis for long time
- Using inappropriately made / ill fitting prosthesis
- Trauma.
- Cicatising Conj disease
- Chronic Inflammation
- Chemical Inj
- Radiation
- Panophthalmitis

Clinical features → shallowing of fornices
Irregular fibrosis
Atrophy of orbital fat
Volume redistribution ⊆ in Orbit

⇓

hollow or deep superior sulcus
Enophthalmos
Inability of socket to retain prosthesis

Eyegrowth — fastest 1yr
70% — 4y.
90% — 7yr
Completed — 14yr

Exam

Def of Suface → Volume loss
→ Shortening of palpebral aperture.

a) Size of palpebral fissure → Horizontal Ht
→ Vertical Ht
→ Ptosis

b) Tone of Orbicularis
Lower lid laxity
Ectropion

c) Depth of Fornices — Deep ... Inf »

d) Surface — Dry / Moist
Vascularized
Healthy or pale.

e) Vol def → Assessment of Enophthalmos
Deepening of Sup. Sulcus
+nce of Ptosis

f) Presence of obvious Cicatricial bands

g) EOM fxn

h) Presence of conf factors — Concurrent Orbital #
Bony Contractures

i) Eyelids — Notches
Closure

All classification tell's surface loss.

Classification

a) Gopal Krishna's

Grade 0
Conj - Healthy.
Fornices - Well formed deep

I
Shallow loose fornix
↓
Preventing retention of artificial eye

II
Loss of U & L fornices

III
L, M, U, L fornices

IV
Loss of all fornices
↓ palpebral aperture in horizontal & vertical dimensions

V
Recurrence of Contraction of Socket after repeated trial of reconstruction.

classmate
Date
Page

Tarlik

1

- Min / x Conn
- Inability to retain P for long
  - Horizontal lid laxity
  - Prolapse & retractn of Inf fornix
- Large & Ant- displaced Implant

2

- Mild Contracture of Inf & Sup fornix
- Inability to wear Prosthesis
- Cosmetic disfig due to rolling in of U & LL margins

3

- » advanced scarring
- Cicatrisatn in entire U & L. fornices.
- Wearing of Prosthesis impossible

4

- Severe phimosis of palpebral fissures (H)
- Recurrent Cases & Irradiated Sockets included (V).

Other

- Mild
  - Shallowing of fornix > LL
- Moderate
  - +/- Mod ↓ in area
- Severe
  - Loss of orbital volume

Malig

~~Aim~~

Causes of Contracted Socket

a) Congenital — Microophthalmos
Congenital Anophthalmos

b) Enucleation without Implant - Sup or enucleation
» Children

c) Delay in use of Conformer → As Conforma keeps fornices stretched & prevent fornical shortening
Adequate size. & multiple hole for drainage of secretions & flushing

d) Trauma, Acid / Alkali burns
e) Radiotherapy → Post Rb.
f) Infection → sloughing of fornices & Conj

Prevention of Contracted Socket →
During Sx → hold tenon & conjunctiva & Care sutures seperately
↓
Conformer to be placed after Sx
replaced by prosthetic eye.
↓
Radiotherapy — 2nd be used & fractionation of dose

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% ∝ Severity of Cicatrisation.

Tx for Sx → Sockets unable to hold prosthesis due to excessive lid laxity.
Eg. horizontal lid tightening
⊆/⊆ out fornix formation sutures

Types of Socket

Anophthalmic
Muco-ophthalmic

a) Mild contracted socket

Deepening inf fornix + fornix formation sutures.

2-3 sutures passed thru inf fornix + periosteum

↓

brough out thru LL

↓

passed thru rubber peg to prevent cheese wiring

↓

Conformer placed

↓

Remove after 2-3 wk.

4-0 silk

Fornix formation sutures → Non abs double arm sutures passed thru deep fornices & exteriorised ov skin side along ⊆ sup & inf. Orbital Margins /rims

↓

kept for 2wk

↓

Adequate size conformer to ensure. socket retains necessary space

LL - 3 sutures UL - 6 sutures

Shortening of Post lamellae → Entropion

↓

Require lengthening of post lamellae ⊆ help of dural or cartilage graft + fornix formation.

↓

conformer — 2wk.

↓

Tarsorrhaphy done — 1wk

Surg ✗
Vol ✓

Vasc → Ang ✗
MMG

Moderate Contracted Socket

grafts

- Mucosa
- split skin
- dermis fat grafts

Socket — healthy & Vascularized for grafts to take up.

Mucous Memb graft

- Buccal Cavity ✓
- Rectum
- Vagina.

Procedure — incise the centre

↓

Bands & granulation removed

↓

Pass fornix formation sutures

- Sup
- Inf

1-2 | 2-3

Measure Central defect — 1L - 3 sutures

Mucosa - 20-25% (+)

- ✗ Surg
- Vol
- ✓ Ang — MMG
- ✗ 2° Orbital implant

Tarsorrhaphy done — MK

Moderately Contracted Socket

Mx ⊆ graft

Need – healthy, Vascularized socket for graft uptake.

Severely Contracted Socket

Vasc
Avasc.

Req both area & Vol replacement
↓ ↓
Dermis. fat

Procedure → ⇒ Mucous memb grafting, EOM looked for.

a) Retrieval – graft taken 4m hip. 3cm ASIS – gluteal tuber
↓
Scrape off epidermis
↓
Take elliptical & circular graft 15-20% ⊕
depth :- 25-30 mm
donor sites sutured in 2 layers.

b) Suturing of graft → in centre of socket to mucosal edge, where possible attatch muscles
↓
Tighten fornicial suture.
Conformer applied.

Extreme Contracture – Radial forearm free flaps
&xVx

a
↓
Dermis fat graft
↓
get's absorb → again Vol loss

b
2° implant + MMG
↓
Preferred.

C. Avasc Socket

Need to be Vascularized.

» Irradiated socket

Temporalis fascia used brought into socket thru lat canthus by forming pedicle flap

↓

fornices formed using Mucous Memb graft

↓

After grafting — Conformer applied 4-6 wk.

↓

H_2O ing & discharge ↓

↓

Prosthetic eye.

Radial forearm free flap

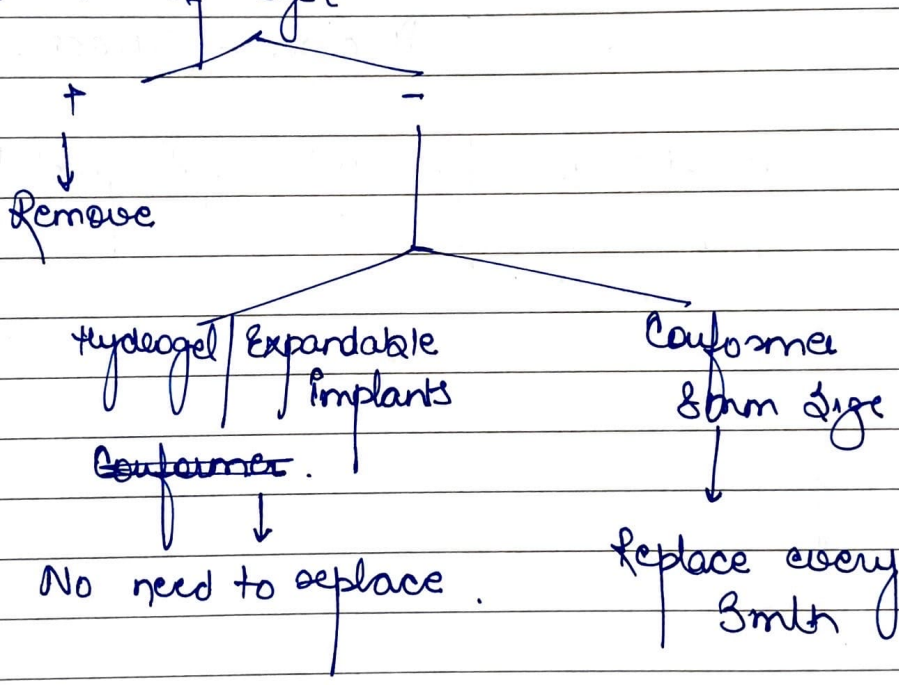
Temporalis fascia

Resistant cases — Dry Patched surf. — Spectacle mounted or Stick on Ocular prosthesis + powered lenses — To magnify muco-ophthalmic socket from mucus — To change appearance of malpositioned socket

Complication of flap → Poor Vascularization / graft ischaemia
Loss of graft due to Necrosis
Cyst formation in socket
Hair growth & discharge in socket
Erratic growth of fat graft
Donor site complications

Mx of ⊕ Micro-ophthalmic Socket.
Contracture seen in socket
Socket formation occurs till 4-7yr.

Do CT Scan. → of Cyst



Recent

- Engineered Conjunctac
  - Synthetic polymers
    - PLGA — Poly lactide co glycolide
    - PCL — Poly ε Caprolactone

Artificial Collagen matrices — PCC Plastic Compressed Collagen

Decellularized tissues / Acellular

Human — Alloderm

Porcine — Permacol

- 3D printing for Customized printed prosthetics

Oculoplasty

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1st sitting — Implant — To prevent Socket Contracture.

2nd " Prosthesis / Scleral shell
- Medical grade plastic acrylic
- Cryolite glass

Explain 3 terms → Enucleation
Evisceration
Exenteration

Implant

Bone, Sponge, fat, precious metals

↓

Mules sphere.

Types
- Expandaste — Orbit Wall
- Homologous — DFG. Fascia lata Sclera.

Shape
- Spherical
- Oval

Shock
- Custom.

Porous (Integrated)
- Quasi
- Non Porous (Non Integrated)

\+ . Peg −

Characteristic of Ideal Implant

- Mimic normal globe.
- Replace sufficient vol of ot allows for prosthesis of adequate ACD
- ↓ rate of exposure, extrusion, infection, inflammation
- Non Antigenic, bio inert
- Provide socket motility transmitted to prosthesis
- Completely buried, simple in construction
- Lt wt, centered in Mal cone
- Anchored to Orbital tissue to ↓ Extrusion & migration
- Directly integrate & prosthesis
- Affordable & easily available

else. Exposure can occur with all implants.

Non Integrated

→ x unique apparatus for EOM attachment
→ x ingrowth
→ No direct attatchment to Ocular prosthesis.

↓

covered by donor sclera. / Polyester guaze] improve implant motility

↓

x direct coupling b/t implant & artificial eye.

→ Acrylic (PMMA)
→ glass
→ Silicon spheres

PMMA

Transparent thermoplastic.
good ° of compatibility ≅ human tissue
x glass
(*) Wrapping material — PTO.

(x) — Chronic inflammation
- infection - 4m exposed implant material
✓ cheap
↓ complicat°
Mat can be reapped

Integrated

- fibrovascular ingrowth throughout implant
- Insertion of pegs / post. » eye motility

↓

Quasi° Integrated - Ant fit

Hydroxyapatite → Need drilling for peg
Al_2O_3
Polyethylene
Porous PMMA — by hand drill

x → Expense & availability

(*) Decentration/ Migration ↓.

(x) — Costly.

Orbital Implants

Hydroxyapatite. ($CaPO_3$ inorganic salt)

Spherical

Made up Hydroxyapatite.

↓

PEG + Bovine

↓ Inflammation

Needs to be covered ∴ Exogenous material

- Soleraa
- Vicryl Mesh
- PET

MCOI

Used for → Post op Anoph Sobut at risk for development of

Socket Abn
Enophth
Retraction of Upper eyelid
Deepening of Superior Sulcus
Backward tilt of Prosthesis
Restricting of lower eyelid

Bioceramic.

Al_2O_3.

↓ friction.

Durability, Stability & Inertness

Spherical / Oval / Egg

Anophthalmic Socket

Conical shape ↔ Spherical implant

↓ risk of sulcus deformity

↑ Vol ⇒ Mvt cone

Surgeon can place anywhere mfl ∴ Impl after reduma

To anticipate for peg — 6mm dia flattened surface

Interconnecting channel — allow ingrowth of Fibroblast CT.

Polyethylene.

Firm, Malleable.

allows direct suturing of mvt

↓ Fibrating, abrasive

↑ Vascularized.

↓ titanium motility

Eg COI — Conical Orbital I
MCOI — Multipurpose COI (Porex)

COI

- flat anterior surf.
- Sup projection
- Preformed channels for rectus Mvt so Vicryl suture can be passed

Slots / recessed — OR.

Protrusion — full sup fornix

Complete Implant Vasc → ↓ risk of Infection, Extrusion

Synthetic Implants

Synthetic grade HA

Highly porous
fully interconnected.
Biocompatible ceramic material

Permanent x resorb.
Can be drilled ⊆ motility peg

Ocupose porous OI (Ceramsys)

Polyethylene (Medpore)

✓ BioComp
Porous
Interconecting
Omnidirectional pore
Ste ⊆ allows fibroVasc growth

Mel can be attached ⊆ out Wrapping

Al_2O_3 Implant

Porous
Insert easily to Socket
x cling to surrounding tissue
↑ connectivity b/t pores
↑ Vasc
Easily drilled ⊆ out crumbling
Bio Ceramic OI.

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Expandable Implants

Expand in Vivo.
Stimulate O. growth

Eg — Silicon balloon
Hydrogel (SETE)
Orbital Expanders

Ix — Vol deficit
Cong. Anophthalmos.
.. Micro-ophthalmos.

SETE (Self expanding Tissue expanders)
└ Made of Osmotically active hydrogel
Controlled expansion rate
& *

↓ Hemispherical socket expanders
Bigger & Effective eye prosthesis can be put

↓ Orbital expanders 1-5ml
- Correct sup sulcus deformity
- Stimulates growing of middle face
- guarantees symmetry of face — Unil. Anophthalmos.

↓ Pin SETEs
Injected into orbit to fill in Vol
↓
even if implant + Pt c/ Microphthalmos

Implant size estimation

Avg globe vol = 7.2ml
Prosthesis vol = 2.5ml

Vol of eye removed = Implant + Wrap.

AL of Normal eye.

Wrapping material → Ease insertion of rough surf implant
- Serve as protective barrier against extrusion.
- Enable attatchment of mat in Non Integrated Implants
- Do not allow fibroVasc Ingrowth ∴ migrate.

Semi Integrated

allow attatchment of EOM in tunnels on their ant surface for better motility
- Allens
- Castroviejo.
- IOWA
- Universal

✓
- good motility
- Inexpensive
- ✓ PMMA

X
- Irregular ant surf → causing cong & tenon to be pinched
- Discomfort
- Special customised prosthesis needed to fit its shape.

Implant

Over size.

Small size

Customized Ocular Prosthesis (COP) ↓ size

∴ Migrate inside the eye.

Heavy COP ⇓ Sagging

Implant size = 2/3 vol. ≈ 20ml

COP = 4-5 mm

Evisceration ↳ 18-20mm

Enucleation ↳ 20-22mm.

M/x of implant exposure

2-4mm defect

Scleral patch graft

Mucous Membrane graft

3-4mm

Reimplant

Bigger size

Inadequate closure

Poor surgical closure.

How to close sclera

~~Enucleation~~ — Ant tenon

Evisceration — Conj.

Enucleation — Post tenon. — Mul an

Ant tenon. — Sx to

Conjunctiva

3 layer closure

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0. flow repair implant

- Autogenic
- Allogenic
- Alloplastic.

- Biologic materials
- Manufactured materials

Autograft

Bone
Cartilage

Iliac bone
Rib grafts
Calvarian bone grafts

✓ rigidity
Molding capacity
Vascularity
Biocompatibility
↓ Immune activity

fav for Orbital floor reconstruction.
↳ Ease of access
Malleability
Reliable support

Allografts

human dura matter
Lyophilized Cartilage
Barked bone
fascia lata.
Heterogenic Bovine bone graft

× ↑ risk of dis transmission

Xenografts

Lyophilized
↓
Absorbable gelatin film
↓
Denatured porcine collagen
0.075mm
↓
appropriate for small linear #
< 5mm

chang
cay!

Manufactured material.

Resorbable.

Non Resorbable

✓ > Control.
predictable absorption kinetics
Spares Operative time
Allows 1° reconstruct"
* donor site morbidity
* req rigid fixation
Temp support.

Allogenic titanium

✓ Repair of large Orbital floor defects & correction of globe malposition

✓ — Availability
Bio Compatibility
Ease of intraOp contouring
Rigid fixat"

Gelatin film

denatured collagen

↓ Implant migrat"
↓ Inflamm response
✓ healing

Polyglycolic Acid

× Larger defects

Polydioxanone.

Silicon sheets
Nylon, Teflon
Sepafilm.

Bioactive glass

Osteo dest Conductive
Bacteriostatic
Rigid.

Repair of Orbital floor #

× Irregular edges may cover prolapsed Orbital fat

Porous polyethylene
0.44 1.5 mm sheets

- Open pore str — Vascr Native tissue growth
- Easily Contoured & sutured
- Barrier surf option to prevent tissue in growth

Medpor Titan

✓ Greater shape, retention when bent
flexibility

Oculofacial prosthesis

PMMA, Silicon.

Eye patches, prosthesis fastened to spectacle frame

Extension Arm denture

Magnet Implants

Adhesive

Osseo integrated implants

Conformer

Conventional

A - Vex

P - Anc.

2 min holes

Width T>N.

Notch in SupQuad for teochea

for Anophthalmic Socket

A - Vex

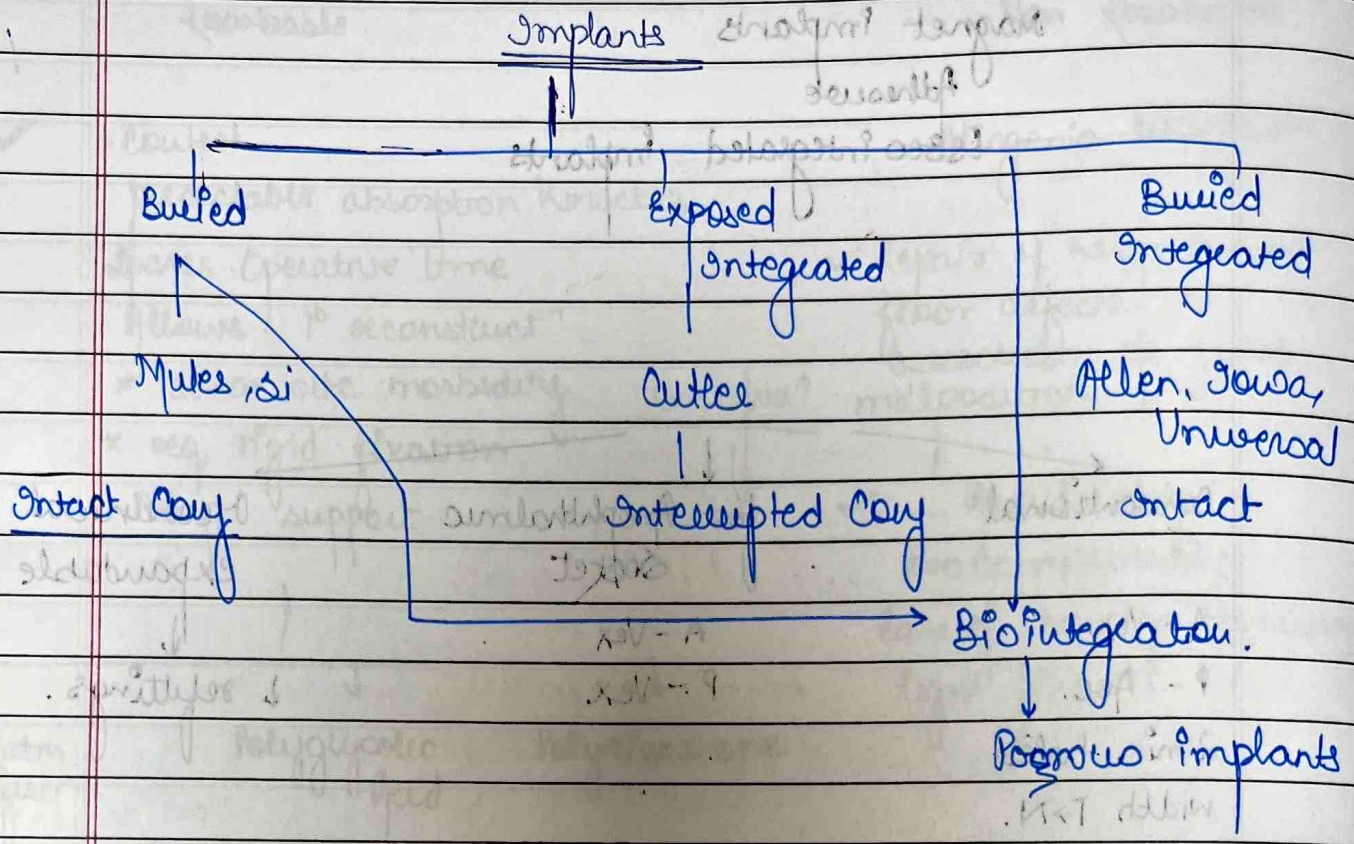
P - Vex.

Mechanical expandable

↓ refittings.

AAO Integration — Natural fit of Prosthesis & Implant

Att of BOM. to Implant, is not Integration



Eyelid Malignancy

- Basal Cell Ca
- Squamous Cell Ca
- Sebaceous Cell Ca
- Malignant Melanoma
- Kapobi Sarcoma
- Merkel Cell Tx.

Basal Cell Ca of Lid

Malignant tx from basal layer of epidermis

Epidemiology 85-90% of Malignant eyelid Tx
99% white
95% 40 - 79 yrs age Avg = 60 yrs
→ in fair skinned ppl

UV rays → RF → Scars
→ Genetic
→ Ionizing Radiation exposure

Mech Arises from pluripotent stem cells in epidermis
↓
Proliferates, Amplifies, differentiate
↑ tx cell motility & collagenase Content

Ocular Manifestation → 50-60% affects lower eyelid

Medial Canthus — 25-30% of time

UL → 15% → Medial Canthus → 25-30%

LL → 50-60% → lateral Canthus → 5%

Types of SCC

- Superficial
- Fibroepithelioma
- Linear Basal cell Naevus
- Syn follicular .. .. ..

Nodular Ulcerative

M.C

Pink/Pearly pappule ⊆ overlying telangiectatic vessel

↓

As nodule grow in size

↓

Central Ulceration occur surrounded by rolled borders

↓

Rodent Ulcer

Pigmented

M.C pigmented Malig

Brown, black

⇒ Malignant Melanoma

Morphea or Sclerosing

flat, indurated yellow pink plaque ⊆ ill defined borders

⇒ Blepharitis

Aggressive & invade dermis

>> Medial Canthus region & PNS & Orbit

Superficial BCC → Erythematous, scaling patch ⊆ raised pearly border

↓

Pedunculated, Sessile, Smooth pink nodule

⇒ Trunk region

Diagnosis ⇒ Appearance

Histopath Exam of Biopsy Specimen.

Skin

- Malignant lesion
- PreMalignant lesion
- Benign Adenexal tx & Cysts
- Inflammatory Conditions
- Infective

Systemic Ass

BC Naevus Syndrome (Gorlin-Goltz Syndrome) — AD

- Multiple BCC affecting face, trunk & extremities
- Cysts of Jaw
- Skeletal Abnormality (Bifid Ribs)
- Neurological Abn
- Endocrine disorders

- Gorlin Goltz Syndrome
- Bazex's Syndrome
- Unil Basal Cell Naevus
- Rombo Syndrome

Associations

- Albinism
- Xeroderma Pigmentosum
- Nevus Sebaceus

Pathology

Diff

- Adenoid
- Metatypical
- Baso.
- differentiate toward glandular etc & Mucinous steoma.

Undiff

- Nests, lobules
- Cords of Tx cells ⊆ peripheal palisading of cells & steomal retraction
- Morphea = steands of proliferating Malignant BC in fibrous steoma

Rx → Surgery

Surgery

Mohs' micrographic

- Highest cure Rate ⊆ effective preservat" of tissue
- morphea, Multicentric BCC
- limited If extended to O. fat

Excisional Bx

⊆ frozen Section Control

- no frozen
- Recurrence 50%

Tx Excision
↓ 2-3d
Eyelid Reconstruction —— ∝ location
Size of defect

Radiation
↓
» Adv & recurrent lesions
dose - 4000-7000 cGy
12% recurrence
Radiation Complication
↳ Skin Atrophy / Necrosis
Madarosis, Cicatricial Entropion
Dry Eye Syndrome

Cryo Rx
↓
BCC outside peri-orbital area
↓
& eyelid notching
Malpositions
(X) >1cm dia
MC lesions
Morphea like lesions
Recurrent BCC.

Chemo & PDT
5FU.
Cis platin
Doxorubicin
Bleomycin
Interferon

Complete Rx Excision is Cure.

Orbital Imaging Tech

- Xray
- CT
- MRI
  - B.V
  - Nerves
  - CT Septae
- Orbital echography
  - A Scan
  - B Scan

Normal Orbital Anatomy

- Axial plane
  - Axial Section through
    - Lowest Orbit
    - Inferior Orbit
    - Midorbit
    - Superior Orbit
    - Orbital Roof
- Coronal plane
  - Anterior Most Orbit
  - Anterior Orbit
  - Central Orbit
  - Anterior apex Syn
  - Post Orbital apex

	Lower Post	Inferior	Mid Orbit	Sup Orbit	O. floor
			globe seen in Equatorial sect^n	Orbital Contour is narrower	Levator Mol is seen
(M)	Ant lacrimal crest	- - -	Anteriorly = lens oval density	globe represented abv level of Lens	Trochlea — (AM)
(L)	Lateral rim of zygomatic bone	(PL) Inferior Orbital fissure Behind IR	On MRI — Ciliary body seen on either side of Lens	(M) → SO thru trochlea	
(P)	Cranial base	Orbital Space → PP fossa	ON seen. Lat to M — SOV seen Near apex → LtoM 2nd part of OA.	SOV Lg appears	
(A)		(AM) Lacrimal Sac fossa.			
(U)		Post to globe → Inferior Rectus	Along Wall → LR, MR		
(D)	Maxillary Sinus	MRI — T_1 — Vitreous dark T_2 — Bright	Highest — SO seen		
			Midline Ethmoid Sinus Harmina. Ethmoid air cells		

Depending on level of cut cavity

Empty — Round density

IO mid & IR may be

Anterior Post Orbit

Through level of eyelids

frontal sinus

Cornea

Lens.

Ant Sclera

(SM) → Trochlea
- Tendon of SO mal

(Inf) — Linear shadow

Anterior Orbit

globe near Equator

apex undulates against overlying frontal ~~bones~~ lobes

Midline — Crista galli
Cribriform
Roof of Ethmoid

Below — Maxillary Sinus

Centre full ⊆ Orbital space

SO
(S) — SR. & LPS abv
(M) — MR.
(B) — IR
(L) — LR.
(SM) — SO

Central Orbit

behind globe

ON cut

MRI →

4 mal against respective walls

SOV

Ant Orbital Apex

Orbit narrows to triangular Section

(IL) — IOF
↓
Infero temp fossa

(S) SOV
SR

OA cross L–M

Post Orbital Apex

Reduced to small round space
↓
Open inf to PP fossa

↙ Body of sphenoid
gw of sphenoid

(SL) NCF
↓ SOF

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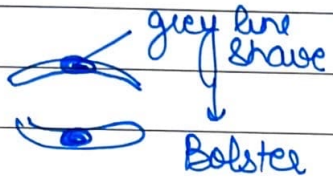
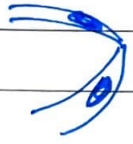
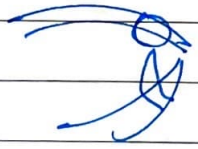
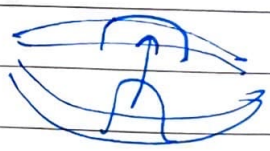
Tarsorrhaphy

- Complete
  - Lateral
  - Medial
  - Paracentral
    - Temp.
      - Inter Marginal Sutures
      - Week's T
      - Glue
    - Permanent.
      - Stamler & T&C.
      - Cole.
      - Tarsal sliding flap
      - Post lamellar tarsorrhaphy
        - Modified Hughes
- Partial









Eyelid Retraction

Normal position

History
- Time of Onset
- Progression

Exam
- PFH
- ° of Lagophthalmos
- Lid lag / on downgaze
- LPS Fxn
- Exophthalmometry
- * *
- Move^n of Mouth
- FDT

Ancillary test
- USG
- Thyroid
- TRH

Pseudoretraction

Bailey Scheme

Neurogenic
- Dorsal midbrain
- Aberrant Reg
- MJH.
- Orbital floor #

Pseudoretract^n

Myogenic
- Graves
- L.O. paresis
- L. Muller m. fibrosis
- Excessive Symp innervat^n
- Abn adhesion b/t LPS & adj tissue
- fixation duress

Mechanist.
- Grave.
- Severe Myopia
- Buphthalmos.
- Craniosynosto

Muscle
- ON hypoplasia
- Down
- Muco-oph

Mx

Mx

Rx GBS & Myasthenia
CS for Atopic dermatitis
Aparaldendure drop shop
on graves — ↑ dose C.S
Radiotx

Sx

UL

LL

Levator Aponeurosis recession
c excision of Muller Msl
- Transconjunctival Mullerectomy
- Graded full thickness eyelid blepharectomy

a) Repair of Canthal tendon laxity
- lateral tarsal strip/ sling
- Orbicularis msl transposition

(b)
- Ant lamellar Contract°
split & FT skin grafts

(c) on case of ptosis
fillers — Auricular cartilage
Fascia lata.
Autologous tensus
Hard palate.

Congenital Eyelid Anomalies

Lid fold — Cryptophthalmos
Microblepharon & Ablepharon
Colobomas

Eyelid Margin → Ankyloblepharon
" filiforme Adnatum
Euryblepharon
Epicanthal folds
Epiblepharon
Congenital Entropion
Congenital Ectropion

Tissues → Blepharophimosis Syndrome

Canthal tendons — Telecanthus
Medial Canthal dystopia

Congenital Anomalies of Lacrimal drainage system

- Congenital NLDO
  - Imperforate Hasner Valve
- Dacryostenosis
- Anomalies of Sac
  - Congenital fistula of Lacrimal Sac
  - Diverticulum
- Anomalies of puncta
  - Congenital ateesia
  - Supernumerary / double puncta
  - Congenital slits of puncta
- Anomalies of Canaliculi
  - Ateesia / failure of canalization of L. Canaliculi

3 main clinical situations

- Congenital obstructions
  - a)
    - Punctal
    - Canalicular
    - Common Canalicular
      - Proximal
  - b) Hasner Valve
  - c) Jxn of Sac & duct
  - d) Lower / dacryostenosis
  - e) Generalized stenosis

  → distal Lacrimal obstruction
- Amniotocele
- Cong. Lacrimal fistula
- Lacrimal Anlage ducts

Congenital Eyelid Anomalies

Anatomy — Interaction b/t Mesoderm & Ectoderm tissues
UL → Appearance of lid fold at 7th wk of gestat^{n}
UL → fusion of Med & Lat aspect of frontonasal processes
LL → Maxillary processes.

Cryptophthalmos

Unusual condition in which globe & deeper ocular tissue covered by sheet of skin that extend from brow to cheek.
ass c Fraser Syndrome

Complete — def of Vit A & retinoids
Partial — ↓ ℞

Microblepharon

shortening of lid in vertical direction
defective migration of neural crest cells, resulting in echo-Mes
Induction defect
Inverted duplicat^{n} of Chr 12, Trisomy 21

Orbital expander — Rotational flaps.

Colobomas

½ or full thickness defect of lid margin

UL — Inner & Middle 1/3.
LL — Middle & Lateral 1/3

× Ass
✓ Systemic Ass

ass c. AD. — Mandibulofacial dystosis (Treacher Collins

Pseudo Coloboma ⟶ lateral deformities in LL without an actual marginal defect

Dx ∝ Size & Cornea

- Small (<30%) → Direct layer Closure
- Moderate 40-50% → Pentagonal lid defect → Cantholysis / Tenzel flap
- Larger >50%

Ankyloblepharon

Congenital fusion of U & LL.

Lateral Canthus »

AEC Syndrome — Ankyloblepharon, Ectodermal defects, cleft lip & palate.

Lat — Medial

Lat Canthoplasty.

A. filiforme Adnatum — Isolated strands of extensile tissue passing b/t UL & LL margins.

Euryblepharon

Primary symmetric enlargement of horizontal palpebral fissure

Observe

Epicanthal folds

Vertical skin folds in medial canthal area, can cover caruncular ste. 4 types. palpebralis — M.C.

Mild — Severe

Mild → Spaetho's double Z plasty

Severe → Y to V, Mustard Tech, Multiple Z plasties

Mustard → double opposing Z plasty to Y to V procedure

Also in + with transnasal wiring for associated telecanthus in BPES.

Epiblepharon

Medial redundancy of eyelid skin causing eyelashes to assume a vertical orientation.

℞ — Quickert Rathbun eyelid. Crease sutures.

Epi	Cong Entropion
Improves	Rotates ⊆ turns
Oriented Vertically	cilia towards globe

- Congenital entropion
- Ectropion.
- BPES.
- Telecanthus — diff from. Hypertelorism.
- Medial Canthal dystopia

℞ transnasal wiring to shorten distance b/t Canthi

Waardenburg Syndrome
- Median displaced Telecanthus, Lat of puncti.
- Prominence of Root of Nose, hyperplasia of med part of brow, heterochromia irids, medial white forelock & deafness.

Injectable skin fillers

Dynamic → Repeated contractuee due to underlying mvt of facial exp → Botox Inj

Static → Intrinsic changes in components of dermal ground substance of skin & ~~extrinsic~~ exogenous changes → fuller agents.

Botox Inj & fuller agents → for deeper & non resolving

Types

- collagen fuller
  - Zydeem, Zyplast
  - Cosmoderm, Cosmoplast
- Hyaluronic Acid.
  - Restylane
  - Hyaform

Selection guide for Injectable fuller

Horizontal forehead lines.	Glabellar. ~~furrow~~ frown line	Tear Trough deformity	Periocular lines
Zydeem I or 2 →		Perlane →	
Cosmoderm I or 2 →		Hyaform Plus →	
Restylane →		Restylane SubQ	H. Fineline
Hyalform →			Restylane. Touch.

Collagen

Zyderm & Zyplast – sterile, purified fibrillar suspensions of bovine dermal collagen.
95-98% Type I collagen
suspended in PO_4^{3-} buffered physiologic saline 0.3%
lidocaine

Zyderm
1 — 3.5%.
2 — 6.5%.

Zyplast
↓
3.5% collagen ← crosslinked by 0.0075%
glutaraldehyde
↓
» reactant to proteolytic degradation
↓ immunogenic
» deeper defect than Zyderm

C/I

HST to bovine products
Cs use
Immunosuppressive Rx
H/O of AI disease
Beg
Age < 18 yrs
+ve skin test rxn to test dose.

Always do skin test.

Cosmoderm & Cosmoplast → Allogenic soluble collagen derived from human fibroblast cell cultures

× immunologic rxn & no skin testing

Zyderm 1 – Cosmoderm 1
2 – 2
Zyplast – Cosmoplast.

Zyderm/Cosmod 1	Zyderm/Cosmod 2	Zyplast/cosmoplast
	viscous nature ∴ × for delicate skin ↳ lumping, whitish discolouration	deep reticular dermis
superficial facial wrinkles superficially in papillary dermis		» pronounced contour problems → » force being exerted (lips)
Smoothening - glabellar furrow lines → Horizontal forehead " → Crow's feet		Vascular compromise upon injection into glabellar area ∴ × adv.
30-35% collagen + Saline + lignocaine	2*	

- Correction is temporary
- Requires periodic re injections
- Touch up treatment req.

× Massage after Inj.

Hyaluronic Acid

Naturally occuring GAG — major component of all C.T

$+H_2O \Rightarrow$ Vol ✓

Amt ↓ ≤ age Loss → ↓ dermal hydration
↑ skin wrinkling & folding

× Immunologic rxn ∴ » alternative to collagen

Restylane

20mg/mL

Perlane, R. Touch, R. SubQ
Inj at diff layer in skin
Diff is size of gel particle

- R. Lac → Mid dermis
- R. Touch • 2 Lac gel particles/mL → Superficial dermis to correct wrinkles
- #Perlane 4000 gel → deeper dermal & subcut inj to augment deep fold & sculpt cheek areas → 9-12 mths

• Hylaform

6mg/mL

4m. Rooster Comb

#H. Plus Thick
H Fineline • Thin

Duration of effect < R

• Less Viscous Injected upper dermis
• Mid dermis
Deeper dermis

Linear threading tech
✓ Massage.

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Treatment Tech.

Anaesthesia → Lignocaine. / EMLA cream

Injection →

- GZ Deen
  - Sexual puncture
  - bevel of 30g — 1mm in diameter ∴ useful guide
  - // to skin surf
  - Stabilize skin area by holding taut
  - yellow blanch → wheal appear → Adequate Overcorrectn
  - Middermis level
  - if
    - Sup. → Over correctn
    - Deep → x lasting correctn
- 1 — 30-32g
  - 200% overcorrectn
  - 100% → periorbital lines
- 2 — 30g
  - 110-120% to avoid persistent whiteness at injection site

2mm below skin surf

Syringe — 45-90° ∠.

Adv Rxn

- Non HST
- HST Rxn
  - Allogenic Collagen
    - Hyaluronic
  - Bovine.
    - local
      - Prolonged erythema
      - Edema.
      - Itching
      - 3-4 mths
      - NSAIDs ℞
      - Painful Swollen Cysts.
    - systemic

- Transient Erythema
- Reactivat^{n} of Herpetic eruptions
- Vascular Compromise
  - localized tissue Necrosis
  - distal embolic events
  - » Viscous Agents.
    - Injected deeper near B.S.
    - slow synthesis

Scab formation → Shallow scar

* glabellar area » Vascular compromise because of lack of collateral circulat^{n} when branches of supratrochlear artery are temp. occluded.

Tech of Inj — Serial puncture
linear Crosshatching
fanning Tech

BOTOX

Intro
B. Neurotoxin
MOA.
C/I & precautions
Adv Rxn
Commercially available
Dilution protocols

Cosmetic applications of B. Toxin

Action on dynamic, active, kinetic lines involved in facial expression.

- Glabellar folds
- Forehead lines
- Lat Orbicularis Oculi Rhytids.
- Smile lines.
- Transverse forehead lines

↓

Wrinkles

due to breakdown & remodelling of collagen in deeper dermis & SC tissue

» Young individual ✓ dynamic lines (setting in)
not static lines
30-50 yrs of age

Static lines

chemical peel
laser skin resurfacing

Dermal fillers

Glabellar Furrows

1st region FDA approved.

Central furrow depressors

↓

Procerus, Depressor Supercilii, Corrugator Mols

3mm lat to MC of eye

Corrugator Complex
4-5U
12U

Procerus
2-6U Botox
6-12U Dysport

lat aspect of Corrugator
2-4U
6-12U

Medial aspect of pupil

14-30U Botox.
42-60U Dysport

Transverse forehead lines

Individualized approach

frontalis mol

Midway b/t brow ridge & hairline

♂ → inject lat aspect of frontalis mol in men

* in ♀ → to prevent brow ptosis.

4-5U
12-15U

slightly below equator to facilitate diffusion into medial portions of frontalis mol.

↓

Uniform distribution

4-5 mm below skin surf to get true IM injection

x in periosteum — painful

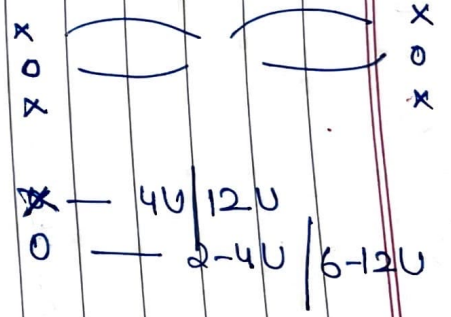
⅔ of Orbicularis Hybrids or 'Crow's feet'

3 mile lines / Crow's feet

3 injside.

LC angle — same horizontal plane

3mm sup or inf to horizontal plane.



Blepharoplasty

explain ste of UL & LL.

Eyelid crease — upper limit of septal fibres from Aponeurosis inserting onto Orbicularis interpuscular septum & skin

- Marks position where septum inserts into aponeurosis
  - lowest extent of pre-aponeurotic fat pad.

↓

In Asiatic → Crease is lower because of ↓ insertion of septum into aponeurosis & thus lower extension of fat.

PreOp

- History & psychological exam
- Physical exam →
  - forehead → level & shape of hairline
    - Quality of skin of forehead
    - Position & shape of brow
  - Mid layer — frown lines
  - Bony orbit evaluation — laterally at Orbital rim
    - Position of globe in rel to orbit

Prominent globe ⊆ recessed zygoma — LL malposition.

Exam inf orbital rim

check for festoons

Position of lacrimal glands

BeOp note — No make up

Proper draping

Mark the skin

Ideal brow position ⊆ pt supine

Special Tech

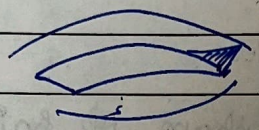
UL

LL

- Skin
- Transcon approach

UL

- Lid crease marked 8-10 mm considering race
- excessive skin removal medially
  - Hood formation
    - glabella lift done
    - small ∆ flap +



explain go till fat — Cauterge
put sutures from Orbicularis to LPS → Crease line
- Close

LL

- Skin
  - Allows modificat^{n} of interaction b/w mal & skin planes
    - Makes lid tightening & Canthal repositioning easier.
- Transcon
  - fat prolapse +nt
    - Surgical access ± out Visible scar & avoid risk of lid malposition.

Skin approach → Mark skin 3mm below lash line 4mm Inf punctum to LC Angle

↓

If excess skin removed.
Orbicularis mal tightened

↓

Incision extended laterally & downward toward canthus for short distance.

↓

Tease out fat. Seperately from medial lid → to protect IO.

↓

- Sagging lat L. lid → Suture through Lateral Canthus & attaching it to periosteum
- Horizontal lid laxity + → Tarsal strip procedure
- Older lid → Closure of orbicularis as sliding flap

TransConj Approach → lid everted.

Lat fat difficult to expose ∴ buttonhole.

↓

Two approach allows early identificat" of lat fat pad before any bleeding occurs

CO_2 laser

Post OP

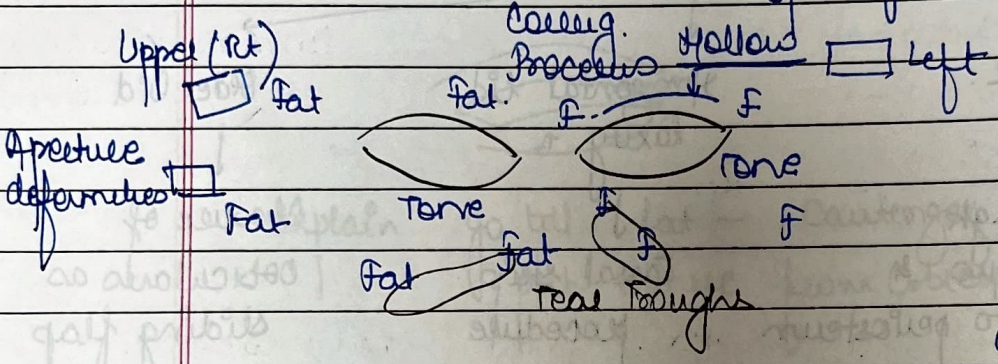
Pressure Bandage
Cold pack.
Look for Complication

Complication → • Orbital Hmrg & blindness
• Infections
• Telengiectasia, chemosis, mulia & suture teacts.
• Ptosis
• Lagophthalmos | LL retraction | Ectropion | Lateral | Canthal deformities
•

Worksheet

Exophthalmos
Lid Retraction

Bcaw ptosis
Type left



Festoons | Malar Tag
Epicanthal folds
Malar complex
Thickness
Retraction? ptosis?
Canthopexy — Skin Mrsl
Type of flap.
Encroaching
Arteolar
Crease retraction

Dx plan

Coronal
Corrugator
Procerus
Incision locat"
Orbital rims
Forehead excision
Upper Blepharoplasty
Medial Epicanthoplasty
Transcon fat
Low skin excision
Canthopexy
Tear Trough implant
Malar Implant

Browplasty

Anatomy layers — skin → dermis → Superf galea → frontalis mst → deep galea → periosteum

forehead skin thicker than eyelid skin
Paired frontalis — originate Ant to coronal suture line.

Lat — zone of fixation ← Superficial galea.
← Sup temporal fascia.
← periosteum of frontal bone

Eyebrow fat pad — 2-2.5cm abv orbital rim.

Approaches

- Dissect
  - Mid frontal.
  - Bicoronal Brow lift
  - Endoscopic
- Transblepharoplasty Brow fixation

Bicoronal forehead lift → Max. effect of brow elevation ⊆ well camouflaged incision site

Ix — Significant Static ptosis
x frontal baldness
Normal to low hairline
dissection plane
SubCut — Subgaleal

(X) → Invasive &x
↑ risk of Hematoma & Nerve Injury.

Midfrontal Brow lift →
Bicoronal > Midfrontal > Direct

✓ ↓ risk of hematoma
↓ Nerve damage
Coor Supercilli / procerus – direct resectn
Keep horizontal furrows

Ix — Along furrow line { entire length of forehead / staggered centrally
— Two seperate fusiform excision

✗ Resultant scar line

Direct Brow lift

✓ ↓ invasive Sx dissection
↓ damage to facial N
↓ risk of hematoma
Bushy Brow c. mild brow ptosis
Unil B ptosis

Modfication — Nose temporal skin excision.

• Endoscopic Brow lift

• Transblepharoplasty Brow fixation
for minimal brow ptosis
L Brow elevated through Blepharoplasty incision by suturing sub brow dermis / highest on. frontalis mol.

Complication — Excessive Cutaneous Scar & alopecia
Paresthesia & Hematoma
Overcorrection
Undercorrection

Acquired LL Entropion

↓

Conj scarring

- → ↓ Involutional → ↓ Length of ⅌ req
  - Temp → ↓ Sutures
  - Perm → ↓ Horizontal Lid lax
    - Excess → ↓ Quickest procedure
    - No → ↓ Wel's operation
- \+ → ↓ Cicatricial → ↓ Ld retraction below limbus
  - <1.5mm → ↓ Tarsal ⌗
  - >1.5mm → ↓ Post lamellar graft

Kemp & Collin's grading of Entropion

Min | Moderate | Severe

- Apparent migrat" of MG ✓
- Conjunctivalizat" of lid margin ✓
- Lash globe contact on Upgaze ✓

Severe: gross lid distortion; Metaplastic lashes; Trnce of keratin plaques

↓

Thickening of Tarsal plate

↓

Lid retract" → causing incomplete closure

↓

VUL & LL

↓

Back page

↓

UL

↓

Lid closure

↓

Possible → Keratinizat" of Marginal TarsoConj

- → Lashes abrading Cornea
  - ↓ Apt lamella deposition
  - ↑ Tarsus thicken
- + → Rotation of terminal Tarsus
  - ↑ Tarsus Wedge resection
  - ↓ Lid split / MMG

No → Corneal graft

- Post lamell
- Tarsal

Entropion

Def Rolling inwards of lid margin.
Produced by disparity in length & tone between the ant skin muscle and posterior fibrocollagenous laminae of the eyelid.

Classification

Involutional | Cicatricial | Spastic | Congenital

Involutional

Instability of lid str c age
Weakness of post retractors c laxity of aponeurosis, lat canthal lig

Loss of post support → Atrophy of Orbital fat → Enophthalmos

Orbicularis

Pretarsal | Preseptal

Preseptal
↓
tenous att
tendency to override pre-tarsal Orbicularis
↓
∴ border of tarsal plate rotated forward.

Rx

Address
↓
- re-att of retractors to tarsal plate
- shortening of horizontal width of tarsal plate
- forming cicatrix b/t pre-tarsal & pre-septal orbicularis

Aim
↓
To restore horizontal & vertical tightness of the lid.

Cicatricial

Cicatricial contract^{r} of palpebral conj

↓

Rel shortening of inner Tarsoconj lamina of lid

Inversion of lid margin

↓

» severe form in Trachoma → Tarsal plate is bent & distorted due to atrophic & hypoplastic changes

Etio

- Trachoma
- Trauma
- Chemical burn
- SJS
- OCP.

Spastic » LL

In response to ocular irritation such as Inflammation & trauma

↓

due to spasm of Orbicularis

↓

Inf lid Aponeurosis maintain Orbicularis mal such that it presses against lower tarsus & prevents an. entropion by contraction of Capsulo palpebral head of IR.

↓

Aponeurosis degenerate, strong contraction tends to ↓ lid margin

↓

(+)

- Age related deg of tarsal mal of Muller
- Tight Bandaging
- Narrowness of palpebral aperture

/ Rx Hotz Procedure

Congenital

dysgenesis of LL retractors, Develop^n anomaly of Tarsal plate

BeDp Eval & Dx Approach

Assessment of

1 Preseptal Orbicularis Mal Over-ride
2 Marked Orbital fat prolapse

Pt asked to Squeeze
Hump seen in LL

Disinsertion of retractor

White band in Inf fornix
x LL retract^n on depressing

1 | 3 Capsulopalpebral fascial laxity
4 Horizontal eyelid laxity
5 Post lamellar support
6 Relative enophthalmos

↳ Higher eyelid resting position in 1° gaze
↳ ↑ passive vertical eyelid distraction
↳ ↑ depth of Inf Cul fornix.
↳ + of white Infratarsal band.

Exophthalmometry

Passive horizontal eyelid distraction

→ Rt of Tarsal plate
→ + of Cicatrizing Conj. disease

* Look for keratopathy

DoD

Eyelid Retraction

Epiblepharon
- x Ocular c/o
- Resolve c normal vertical growth of facial bone
- Conservative Mx
- Look upward
  Epiblepharon resolves

Distichiasis
↓
Accessory row

Trichiasis
↓
Misdirected.

Congenital
↓
Horizontal tarsal Kink Syndrome

Rx

Sx

Alternative → Ud taping & Lubricant

Quickert Rathbun Sutures

Eyelid margin rotation & lamellar migration

Rx by well spaced & tightly tied full thickness sutures

Botulinum Toxin

Chemodenervation of Orbicularis MSL

→ Preseptal overide

Sx

Gen Tech

- Correction of Capsulopalpebral fascia dysfxn
- Reduction of horizontal LL laxity
- Debulking of significant LL fat
- Prevention of Preseptal orbicularis mvt shifting
- Reconstruction of Post eyelid lamellar fossa/show

Name of Specific Tech

Retractor Reattachment

↳ Tuck" of Retractor

Lateral Tarsal strip procedure

↳ Bick. procedure

Hard palate mucosal graft

↳ Bureau operat" / Transverse Tarsotomy

Complication → Over Correction
Hematoma
Eyelid Retraction
Ptosis.

Exposure keratopathy
Granuloma formation
Symblepharon

Involutional

- Horizontal LL laxity (+)

Bick procedure modified by Reeh

(M) L inverted house shape shortening

→ At the end, two 4-0 silk suture tied to fix tarsal edge to lat canthal tissue

- Severe Entropion

Tucking of inferior lid retractors (Jones, Reeh & Hobig)

5mm below.

Separate Retarsal 4m pre-septal Lower border of tarsus identified. Septum is stepped 4m tarsus Att of pre-septal mal stepped

a) fat removed. Orbicularis resected

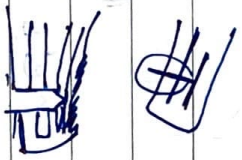
b) Suture → Tuck 9n/ lid retractor slip knot

Capsulopalpebral fascia is advanced upward & seatt

Cicatricial

- Lengthening of post-lid lamina to restore normal direction of lashes
- Tarsal Rotation
- Fox modification of the Streatfield Snellen procedure

Skin incision 3mm 4m lash line

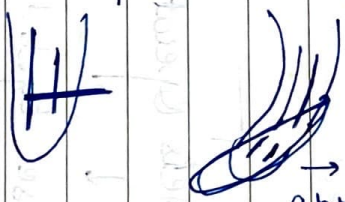


3mm wedge of Tarsus pared off

- Burrows Operation or Tarsal #

More severe entropion or where tarsus is not thickened.

Horizontal incision along sulcus subtarsalis 2-3mm abv posterior border of intermarginal strip



Not through skin

→ In modification apply suture.

- Very extensive Scarring —

MMC.

Chondromucosal graft

Post lamellar grafting

Spastic

Lubricant

Antibiotics

Botulinum — Retarsal Orbicularis

Incision m/x

Epilation

Electrocautery

Electrolysis

Cryo Rx

Eye lash Muco teephinat"

Radio freq ablation

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Diff b/t Epiblepharon & Cong. Entropion.

Ep — Congenital — Mx of distichiasis & Trichiasis

Congenital
↓
Hyaluronic acid fillers
Hotz procedure

Spastic
↓
~~Hotz procedure~~
Bo hox
Quickert procedure

Cicatricial
↓
As given back.

Involutional

Conservative
↓
Sutures

LTS
(Bick's procedure)

Jones Procedure #
↓
Recurrence after Quickert

Weis Operat^{n}
↓
Transverse Eyelid split —
+
Everting suture
↓
in pt c little horizontal laxity

Quickert Procedure ##
Weis + Horizontal Eyelid Shortening
↓
✓ →
Spastic flaccid pt

a) Ix → CT / MRI / colour dopplex
b) diff b/t Epidermal & Cong dermoid
c) diff b/t Ant or deep dermoid

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dumbell shaped dermoid.

Dermoid Cyst

Subcutaneous | Superficial | Deep lesions Orbital

Choristomas .. 2° to entrapment of skin along embryonic closure lines . Lined ⊆ epi filled ⊆ keratinized material form . slow enlarging , non tender masses lat upper eyelid & brow region.

Att to underlying bony suture + → frontozygomatic suture.

Histo → Lined by stratified sq keratinizing epi . dermoid also has adnexal elements in cyst wall + hair follicle seb & eccrine glands

Bedp Orbital Imaging — if entire cyst not palpated & orbital extension suspected

Rx — Complete cyst excision to avoid cyst rupture → 2° f/b granulomatous inflamm.

Excellent prog

Sup → SN, ST Quad

USG — Well defined
Med to high int reflectivity
Irregular Acoustic sh

Deep → ass ⊆ Bony suture
slow growing mass
- Proptosis
- Motility restriction
- ↓ vision

Spont rupture — Orbital inflammat"
Area of Calcificat"

Epidermal | Cong.

Epidermal → Ant | Deep

↓ to absent internal reflectivity
↑ echoes if filled ⊆ keratin debris & fat

Mucocele

1° obstruction of paranasal sinus follow trauma, sinusitis, Tx

↓

Expand in Orbit

↓

Cystic mass filled ⊆ Mucus. bounded by eggshell layer of bone

N.C involved – frontal, ethmoid

Symptoms → Headache, exophthalmos, palpable fluctuant mass in sup. & MM orbit

Imaging – Opacified sinus, loss of septae & a bony dehiscence.

Echography – well defined mass ⊆ sharp surf spikes & ↓ internal reflectivity

Pathology – Pseudostratified, ciliated col epi ⊆ goblet cell

Rx – Sx excision ⊆ restorat° of sinus drainage

Pyogenic granuloma

Acq Vascular lesion to involve eyelids

After trauma or Sx. Ass c Chalazion

fast- growing fleshy red to pink mass which readily bleed c minor contact

D°D Kaposi Sarcoma
IntraVasc Papillary Endothelial hyperplasia
Eg. papilloma

Micro — Granulat° tissue containing fibroblast & B.V
c acute & chronic non granulomatous inflam cells

× Pyogenic × granulomatous

Rx — Sx excision at base
short course of steroid

Inflammatory Vascular Response to tissue that usually occurs after previous Insult.

Vascular Malformation of Orbit

- Hemangio pericytoma
- Lymphatic Malformation
- Venous
  - O. varices
- AV Malfom

Non Capsulated — Hemangio-endothelioma

Capillary Hemangioma

Congenital hamartoma of tightly packed capillaries
≤ in 6mth of life | ♀ > ♂ 3:2.
♀ ≤ Chorionic Villus Sampling
Unil', visible on surf, deep in Orbit, SN Quad UL,
fluctuant mass — Involve overlying skin as reddish lesion
Rapid growth → slow spont involution

- Superficial: 'Strawberry' nevus; red, raised, nodular mass confined to dermis; single, multiple
- Subcut: Bluish purple spongy Mass; blanches on pressure
- Deep: Lids & post to Orbital Septum; SN Quad

Ptosis, Astig, Amblyopia

Proptosis, displacement of globe pulsation, ↑ size ≤ Valsalva
2° Amblyopia.
large lesion — May sequester platelet

Observat^ → Involut^ +

Intralesional Tri° + 40mg/mL
Beta 6mg/mL
Systemic Cs → (1-2mg/kg/day pred)
Radio Rx

Ix → Intra/extra
Mod-Intense enhancement
T_1 - hypo T_2 - hyper

Resolve 30% → 3yrs
60% 4yrs
75% 7yrs.

Echo — ↓ outlined
Irregular shape
↑ internal reflectivity
Irregular Acoustic str

<2mm — laser
small — Rx
Systemic β blockers

Prolifeat^ of Capillary Endo Cells

Local Radi Rx

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Q.04 Naevus flammens – flatter, darker, ✱ blanch on Bx

Visceral Hemangioma + Thrombocytopenia (Hmgic diasthesis)

⇓

- Kasabach Merritt Syndrome

Orbital has predilection for head & Neck region.

Ix for Dx → Amblyopia, Compressive Optic Neuropathy
ptosis ± globe exposure

- Maffucci
- PHACES Syndrome

capsulated

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Cavernous Hemangioma

Benign, Non Infiltrative, Slow progressing tx of large endothelial lined channels

~~Chorionic Villus sampling~~

Cong. Symptomatic in Adults

Intraconal » temporal Quad. Intraosseus.

Very large → Choroidal folds & ↓ vision
Enlarge during preg.

Imag" → Oval to round ± minimal enhancement
Molding of bone, internal calcificat" occurs
Isointense - T_1 Hyperintense T_2.
Phlebolitho +

Echo — Well Circumscribed, Round to Oval

Path — Encapsulated nodular mass.
dilated ± Vasc spaces
lined by flattened endothelial cell.
Septae contain SMC.

Rx — Surgical
x Radio Rx.

Excellent Prognosis

Systemic — GI Hemangioma — Blue Rubber Bleb Naevus Syndr

Chalazion

focal inflammatory lesion of eyelid that results from obstr of Sebaceous gland either Meibomian & Zeiss

↓

Extravasated lipid material → chr lipogranulomatous inflammation

Eyelid edema — erythema → Nodule

Pain ✗ Pent — Present in the lid

Large lid — Astigmatism

ass c Blepharitis & Rosacea

Mistaken for Malignancies

Recurrence — Exclude Sebaceous gland Ca

HPE — lipogranulomatous inflamm

Rx — ∝ Stage of lesion

Acute → Hot Compress
- Localizat"
- Drainage

Chronic → Chronic → Intralesional Cs. → Rx → Vertical TransCong ~~lesions~~ Incisions

Ext Hordeolum (Stye)

Acute purulent inflammation of the eyelid inf of follicle of cilium & adj glands of Zeis or Moll.

Pain, edema, erythema of eyelid

↓

Cellulitis may develop

Int Hordeolum

Obst & infection of Meibomian gland
Painful edema, erythema
↓
inflammatory abscess on post conj surf of the tarsus
↓
Cellulitis may develop.

Staph »
occur in association c Blepharitis
HPE — Abscess or focal collection of PMN leukocytes & necrotic tissue

Systemic AB if significant cellulitis occur.
I & D
Hot Compressions.

Eyelid

Date
Page

	Squamous Cell Ca.	Sebaceous Cell Ca	Malig
Introduction	Sq. layer of epidermis <BCC. Ca Eyelids » potential for Metastatic spread.	» Malig. Arise 4m MG & glands of Zeiss. Sebaceous gld of Caeuncle & Eyebrow ↑ recurr ↑ metastatic. » mortality	Invasive malig Conjunc ↓ Lentigo Melano Melanoma
Epidemiology & Pathogenesis	Elderly, fair skin LL> BCC > SCC LL > BCC UL LL	3rd M.C. ♀>. All races 6-7 decade	1% R.F → Cong changing Sun Expo Sunburn
	UV radiat", Smoking, Arsenic HPV, PUVA	Ass ⊆ Muir Torre Syndrome ✓ GIT	Neoplastic Intraepid derived fr
	AR — Xeroderma Pigmentosa Oculocut Albinism Scarring		Non Invasive Invasive
Ocular Manifestation	Erythematous, Indurated Hyperkeratotic plaque or Nodule ⊆ Irregular margin » ulceration. Eyelid margin, MC. Lymphatic Spread & Perineural invasion +	UL. Firm yellow nodule a chalazion plaque like thickening of tarsal plate ⊆ destruct of MG orifices. Masquerade Syndrome. Nests of Malig cells Multispread to other eyelid Canalicular → LG → Nasal	1) — fat nod besides of long heavy ass ⊆ Vas Sprout segs LL. 2) Small less Irregular C. rapid gr Invasive by nodul 3) Markedly amelanotic ass ulcer 4) Areal LN- ductal
	Map Bx Conj Bx.		

ancies

classmate 66
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Melanoma	Kaposi Sarcoma	Merkel Cell Tumour
proliferation of melanocytes	Cut & Mucosal surf of eyelids » AIDS pt	Cut. Neuro Endocrine Ca Nonendemic, Non keratinocytic epithelial clear cells of Neural crest origin ↓ » Recurrence by lymphatic spread.
↓ Nodular / Acral Lentiginous ↓ MoC		
x dysplastic Nevi cut Moles ue. Severe	Endothelial cell ane. Characteristic may be. lymphatic or Viral origin	Elderly ♀ =0→ . Head & Neck region . UL » Neuro Secretory granules +
ransformat" of mal melanocytes Neural Crest. growth phase →		
le ± Irregular Variable Pigment ital growth phase le growth & sion Unexposed	Vascular, Purple, red nodule on Cut aspect of eyelids & Caruncle & on Conj may Involve. LG.	Solitary, Vascularized, Non Tender, Red, Violaceous Nodules UL Tx → Ptosis
Mild elevat", borders. » gression to. phase Characte & Induration pigmented or Nodule ↑ Size & bleed palm, sole, phalanges		

Rx	5% Imiquimod topical Vismodegib — 150mg OD ↳ Hedgehod Sig pathway Inhibit		
	Squamous	Sebaceous	Malignant Melano
Diagnosis / Dds	clinical appearance Bx for Histo Conf. SCC, SCC1, 2, Fungal Inf	full thickness wedge. Biopsy. Multicentric spread: Multiple Bx. 4m. Bulbar, palpebral Conj. fresh specimen for lipid stain. SCC, SDC, Papilloma Blepharitis, Chalazion	clinical suspicion, conf HPE. Cavernous Hemangioma Naevus cell Syst Ass — dysplas Syndrome — large, Moles appear
Pathology	Polygonal Cell c/s abundant eosinophilic cytoplasm, Hyperchr Nuclei, Dyskeratosis, Mitotic figures.	Dysplasia, Anaplasia Intraepi spread to conj + ↳ SCC in situ Pleomorphic cell. arranged in lobules Oil Red O → stain. 4 types — Lobular, Comedo Ca. Papillary, mixed.	1) Hyper pigmentation in of atypical M. 2) — Atypical melanocyt levels of epidermis 3) Pagetoid spread into
Treatment	Make Dx by Incisional Bx » aggressive bt ↓ metastasize Bx, Irradiation, Cryo Mx.	Awareness of Mang. Early Confirm Bx. Wide excision c/s uscopic monitoring of margins Moh's used bt x useful as BCC, SCC SCCs of Multicentric & pagetoid spread. Rx c/s Large spread exanteration RLN spread — Radical neck dissection Irradiation later	Wide Bx excision c/s Ic Regional LN dissection Rx show evidence of Metastatic evaluation Cryo useful
Course & Outcome	Wide local Bx excision c/s Moh's technique ∞. under frozen section control & curative deep. Orbital invasion ↓ exenteration for cure.	↑ Mortality. Last Page Rx	Prognosis ∝ depth of Level 1 → Rx confined 2 → beyond papillary 3 — till P. de 4 — penetrate 5 Invasion Level 1,2 — 100% survival 4 — 65%. 5 — 15%. Worst — Nodular fav — Lentigo

	Kaposi sarcoma	Merkel cell Tx
a omed ⊆ excisional biopsy.	Setting of IC host	Amelanotic Glomus, Lymphoma Seb cell Fungal Inf.
	lymphoma, Malig Melanoma Chalazion, F.B granuloma	
Naevus Syndrome, BK Mole Atypical, Cut. Naevus hood		
Epidermis — diffuse hyperplasia occurs in nest- or singly all Epidermis	Tx cells ⊆ scant cyto numerous mitotic fig invade dermis arranged in sheets Hair follicles involved	← → slit like vascular channels lined by endothelial cells & surrounded by Malig appearing spindle shaped. Mesenchymal cells
of skin margins for Tx > 1.5mm depth Vascular & lymphatic spread recommended	Wide excision ⊆ frozen Section control of margins It evaluated for evidence of Metastasis	Reduce Ocular Irri, mass effect, disfigurement Cryo, Radiat" & Sx; Excision, Intralesional Chemo ✓
invasion & thickness of Tx to Epi ⊆ Intact BM BM ⊆ early invasion of dermis & reaches interface Reticular D of subcutaneous tissues	Local, multiple recurr	

Half & Half & Half again. (Pg 48 Mahajan)

Ly lesions

- Inflammatory processes → Lymphoma, Inflam disease
- Structural Disorder → Cyst
- Epithelial Neoplasm → 20-25%

Evaluation & determine cause
Mass effect - Down & in globe
Pain, eyelid edema, Conj chemosis & injection.

	Pleiomorphic Adenoma	Adenocystic Ca.
Keypt	- Orbital lobe ».	25% epithelial Tx of Lg
	- composed of Epi & Mesenchymal elements ← derived 4m Epi.	4th decade of life » ♀
	- 3-5% all orbital Tx, 25% Lacrim mass lesion. 50% Lg Tx	short durat^{n} of symptoms 6-12 m
	- 2-5 decade of life	
	- 1.5:1 ♂ : ♀	
Orbital Imaging	Painless Exophthalmos. Axial downward displacement of globe, diplopia, ocular stride, fullness of UL., slow progress	Painful — Perineural spread of Tx.
C/F.	Well circumscribed, Oval, Encap lesion ⊙Remodling of bone + No bone destruction occurs. Cystic Tx contain calcificat^{n}	Poorly demarcated, irregular lesion. Bony destruction. common, foci of Calcificat Hyperintense to mbl.
	T_1 — HypoI T_2 — HyperI	

Diff b/t Pleio & ADCC

	Pleiomorphic Adenoma	Adenoid cystic Ca.
Echo	Round to Oval shaped ⊆ well defined spikes ⊆ med to high reflectivity. Regular Acoustic ste. Moderate sound attenuation	diffuse infiltrative lesion ⊆ indistinct borders ⊆ med - high internal reflectivity. Sound attenuat^{n} — Moderate - steong
Path	Encapsulated Tx that demonstrate ducts, cords, Sq. pearls, chondroid tissue.	Solid cords of Malig epithelial cells are seen. Swiss cheese appearance, hyalinization of cylinders of CT.
Rx	Excised completely ⊆ intact capsule. Sx — Recurrence ⊆ infiltrat^{n} Stallard Wright Incision - AO. good prognosis	Radical en bloc excision or Exanteration ⊆ wide margins including bone. Adjunctive Radio Rx High Mortality

Other Names — Oncocytoma
Hauthin's Tx
Malignant Mixed Tx
Mucoepidermoid Ca
Ca. Sarcoma.

1/2 → 1/2 — 1/2

1/2 ↓ Inflammatory

1/2 ↓ Neoplastic

1/2 ↓ Agressive (ADCC) variety

Sebaceous Cell Ca Rx

Nodular Sebaceous Ca ⊆ out Pagetoid Involve^{n}

→ Full thickness Eyelid resection ⊆ frozen section control of margins

→ ~~Excision of~~ Moh's micrographic tech

⊆ Pagetoid spread.

↳ Excision of Nodular lesion ⊆ Conj & SPK/Cyto of lesion

↳ MMC 0.4%

Bulbar Conj +

↓

× Reconst

∴ Exenteration

UL + LL - Conj

↓

Remove Both eyelids & reconstruct

Concomitant Involve^{n} of eyelid & Conj

↓

Exenteration

Orbital dis. ⊆ × Met.

↓

O. Excisat^{n}

⊆ lymphatic Met

↓

Mass Resect^{n}

Radical Neck dissect^{n}

Post Op radiation