# Scalp Reconstruction

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## Scalp Anatomy

- Layers
  - Hair bearing skin
  - Subcutaneous
  - Frontalis/Occipitalis/Galea
  - Subgaleal fascia
  - Periosteum
  - Bone inner and outer table
  - Dura and venous sinuses

#### Reconstructive Ladder

- Healing by secondary intention
- Direct closure
- Grafts split and full thickness
- Flaps
  - ♦ Local
  - Regional
  - ♦ Free
- Tissue expansion

## Aims of Reconstruction

- Why?
  - Healing primary healing
  - Function hair growth, skull protection.
  - ♦ Form appearance, shape
  - Prevention of Complications exposed bone, infection, haematoma, CSF leaks etc

#### Principles

- Simplest technique that provides for the aims.
- Match scalp thickness with reconstruction
- Respect hairlines if possible
- Be consistent with the patients overall health and well being

## Approach to Reconstruction

- What is missing? What problems will this loss cause?
- What am I trying to achieve by reconstructing?
  What will provide the best outcome for this patient?
- What reconstruction will provide the best solution to this problem?
  - Must have a wide reconstructive armamentarium

What is the time frame. Do I have time for tissue expansion. Is the patient accepting of this.

## SSG vs FTSG

#### **Pros**

### Easy take

SSG

Large area available

#### ♦ FTSG

- More durable
- Better colour match
- Better contour

#### Cons

- Thin fragile covering
- Poor contour
- Donor site
- More difficult take
- Limited donor area
- Limited size graft



## Local Flap vs graft

Pro Con

#### 

- Good contour
- Hair bearing
- Heals well
- Will cover bone
- More durable

- ♦ Technically more difficult
- Limited size of hole able to be closed with no secondary graft

#### Graft

- Easier technically
- Will cover larger areas

- No hair growth
- Poor contour
- Donor site
- Less durable



## Local flap reconstruction



- Single stage
- Avoiding a secondary donor site graft where possible
- ♦ Form
  - Restore normal hair position if possible
  - ♦ Contour

#### Local Flap Reconstruction

### Principles

- Careful design to avoid errors resulting in the need to graft
- Suture galea where possible multi layer closure
- Avoid/reduce dog ears by design and careful flap inset
- Bevel cuts in hair bearing skin to preserve hair follicles

## Rotation Flap



- True rotation
- The larger the defect the larger the flap
- Sufficient scalp laxity
- Beware thin hair and scarred scalps
- Ensure the base of flap as no scars across base



# Design variations





Double opposing scalp rotation flap

# Staggered scalp rotation flap



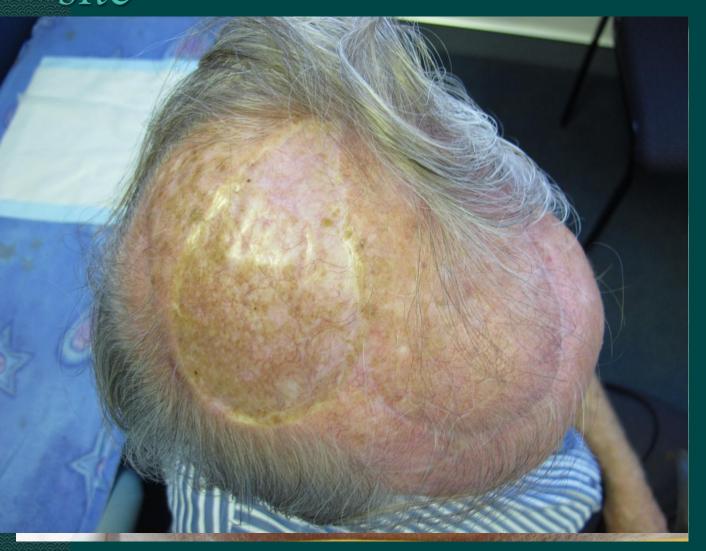


#### Scalp Rotation flap and Burrows triangle



Outer
excision is
much smaller
and always
tighter

# Transposition flap and graft donor site



- Make sure the flap reaches
- Make the flap larger (esp. wider) than you think
- Minimizeyou dog ear

## Tissue expansion

- Excellent technique for non acute coverage.
  - Localized alopecia, Sebaceous naevus etc
- Technique
  - Size of expander
    - As large as possible
  - Rate of expansion.
    - As fast as tolerated, and not to cause alopecia or necrosis.
  - Location of incisions and port.





#### Skull Defects – Aims of Reconstruction

Is skull replacement necessary? Is it in the patients best interest?

Skull Replacement

- Aims
  - Form restore contour
  - Function strength
  - Longevity of reconstruction
  - Minimize side effects/ complications

#### Skull Reconstruction – Principles

- ♦ Replace like with like i.e. bone or similar to bone
  - Problems are strength (of bone substitutes), availability of bone, donor area for bone
- Replace shape and immobilise plate
- Provide vascularised cover Flaps –local or free
- Techniques
  - I use Methyl Methacrylate cement with Gentamycin.
  - Generally free flap coverage.

## Dural Defects

- Aims
  - Seal the dura to prevent a CSF leak where possible
  - Beware the Sagittal Sinus
- Principles
  - Careful suturing
  - Careful positioning of the craniotomies so there is a dural edge to suture to.

Have a good neurosurgeon who you work well with, who does good work and listens.

## Radiotherapy

- Causes a progressive atrophy of all tissue and bone.
- Need to tailor reconstruction to allow for changes with radiotherapy.
- Need to plan that further reconstruction may be necessary many years later.

# Timesh plate and incipient exposure





#### Summary

- Remember the aims and principles.
- Enjoy the challenge of reconstructing an endless variety of defects.
- Think creatively.