Care of the Patient after Resection of Oral Cancer and Reconstruction with Free Flap Transfer

Microvascular free tissue transfer has become the 'Gold Standard' for reconstruction after ablative treatment for head and neck cancers. Resection and reconstruction can be challenging because of the advanced stage of the disease at presentation, the anatomical site, the general medical condition of the patient and the overall aim to restore function and aesthetics.

Once the cancer has been removed from the oral cavity, tissue with its own blood supply is taken from a distant donor site elsewhere on the body and used to fill the defect created. To achieve this successfully the accompanying artery and vein supplying this free tissue must be anastomosed to a suitable arterial and venous supply within the neck.

The flap is closely monitored in the post-operative period for the first signs of vascular compromise so that a clinical decision to surgically re-explore the flap can be made without delay.

It may be necessary to return the patient to theatre in the immediate and early post-operative period if salvage of a compromised free flap is required. This may occur at any time and can overstretch available resources. Once tissue ischaemia occurs, there is a finite amount of time after which the microvasculature is irreversibly damaged and the 'no re-flow' phenomenon takes place.

The consequences of losing a free flap are, at best, a prolonged hospital stay and delayed recovery and, at worst, significant patient morbidity and even mortality.

Aims

- Early extubation / self ventilation (often already undertaken in theatre)
- Effective analgesia with ability to deep breathe, cough and cooperate with physiotherapy
- Prompt diagnosis and management of problems: flap failure, respiratory failure, complications of prolonged surgery & anaesthesia
- Effective management of neck breather and tracheostomy

Admission

- Ensure a tracheostomy box with spare inner tube accompanies the patient; a tracheostomy sign should be completed and placed at the head of the bedspace
- Manage the patient in a warm environment (patient should be in a side room where possible), aiming for a normal body temperature and keep the flap warm
- Routine clerk in of patient
- Complete generic ICU admission check-list
- Send ICU admission bloods and check baseline ABG from arterial line
- Prescribe post-op drugs (outlined later in guideline) in addition to patient's usual medication (where appropriate)
- Fluid management: prescribe maintenance fluids (and any boluses as clinically indicated), taking care to avoid excess fluid [which can compromise flap]
- Maintain Hb >8g/dl in most patients (some may have higher transfusion triggers e.g. if evidence of ongoing myocardial ischaemia): administer one unit red cells at a time before rechecking Hb to avoid over-transfusion
- Target Mean Arterial Blood Pressure 65-80mmHg unless otherwise specified (it is safer to use vasopressor infusions rather than boluses as high dose vasopressors will decrease blood flow to flap; if hypotensive, consider underlying causes, in particular blood loss)
- Commence PCA if not already started in Recovery; some patient may have a continuous background infusion prescribed for use while in Critical Care
- If NG inserted in theatre, confirm this is safe to use as per 'Checking the Position of Naso-gastric Tubes' guideline on Critical Care section of intranet

Postoperative Care

- Routine daily bloods
- CXR only if clinically indicated (infection and atelectasis common)
- Daily physiotherapy
- Flap Care – see below
- Wound Care – see below
- Tracheostomy Care – see below
- PEG Care – see below
- Commence PEG or NG feeding 12-24 hours post-op using PEG/NG protocol unless indicated otherwise by surgical team
- Ensure strict mouth care as patient will be more prone to a dry mouth and oral thrush (ice should not be used)
- Optimise patient comfort – consider aids such as V pillows for neck support
- Promote patient communication using aids such as note pads, white boards and mobile phone texting.

Flap Care

Factors which may compromise the free flap:

Arterial Factors	Venous Factors
Arterial thrombosis	Venous Thrombosis
Hypovolaemia and low flow states	Haematoma
Technical	Technical
Infection (later)	Mechanical obstruction
	Inadequate venous drainage

Close monitoring of the flap for the first signs of compromise is imperative

- Successful free flap salvage is most likely within the first 72 hours
- Flap observation should be performed **HOURLY** for the first 48 hours and then every 4 hours for the next 7 days; unless there is concern when this should be every 30 minutes
- Flap observation should be carried out gently with the aid of good light and suction to ensure the flap is clean and all of the flap is visualized, assessing for:
  1. Changes in **colour** of the flap
  2. Abnormal **capillary refill time**
  3. Changes in **volume** of the flap
  4. **Warmth** of flap (how does the flap feel on gentle touch?; it should be warm)

- Clinical assessment is the gold standard for flap observation**.** The implantable Doppler is usually placed on the artery; occasionally there may an additional venous Doppler also; Doppler is only an adjunct to clinical assessment.

- **COLOUR:** The colour of the free flap should match the skin contralateral to the donor site. Remember this may be very pale.
  - Venous engorgement is suspected when a flap changes from pale pink to blue-purple. Colour change is not always uniform throughout the flap: some parts can appear normal while one area may seem discoloured.
  - Although venous compromise of a free flap may manifest suddenly as an abrupt colour change, it is usually an insidious process lasting for 1-2 hours, causing clinical uncertainty and frustration. It can be difficult to observe flap colour if there is any bruising, which may occur when the flap is raised, inset or subject to hourly scraping with a tongue depressor. It is generally possible to distinguish venous engorgement from bruising as bruised tissue does not blanche when pressed.

- **CAPILLARY REFILL TIME:** Check capillary refill of the flap.
  - In a well-perfused flap, capillary refill should take 1-3 secs. Inadequate arterial flow results in prolonged capillary refill time, usually >5 secs. Venous outflow obstruction results in brisk capillary refill, usually <1sec. A very engorged flap may not visibly blanche due to instantaneous refill.

Any changes in colour, capillary refill or volume of the flap should be recorded and the OMFS second on-call (OMFS on-call registrar via switchboard) informed **immediately**.

Tracheostomy Care

- A tracheostomy sign should be at the head of the bedspace and the tracheostomy box stored within the space around the bed (with appropriate signage)
- Nurse in semi-recumbent position – avoid excessive neck extension to minimise tension on wound
- Clean skin and rim of tracheostomy with sterile swabs dampened with sterile saline
- Remove any debris/ crusts gently using forceps
- Ensure warmed and humidified oxygen to soften crusting / plugs and promote expulsion of these
- Encourage the patient to gently cough regularly
- Use of regular saline nebs, which need prescribed
- Suction may be used but care must be taken not to push any debris into the lungs and care also not to damage the tracheal wall; fine suction catheters should be used rather than Yankeur as the catheter is softer
- Tracheostomy box must be at patient's bedside at all times, including during transfer

Wound Care

- Observe neck wound for any swelling or evidence of haematoma
- Daily drainage should be recorded accurately
- Neck drains remain in situ for a minimum of 72 hours; drains are only removed following instruction from the OMFS team
- Any loss of suction to drain bottles should be addressed accordingly
- Any sudden increase in drainage or large volume drainage sound be reported to the OMFS second on call immediately

PEG Care

Please follow the guidelines as laid out in the NHS Lothian Protocol for the Care of Percutaneous Endoscopic Gastrostomy (PEG) Tube

Drugs

- If PEG tube in place – nil administered for 4 hours; prescribe 50mls of sterile water as flush before and after administration of feed and medication
- All patients should have gastric protection:
    - If on proton pump inhibitor before surgery – prescribe IV pantoprazole 40mg OD initially; convert to NG or PEG lansoprazole once NG or PEG tube is in use
    - If not on proton pump inhibitor before surgery – prescribe IV raniditine 50mg TDS (BD if renal failure) initially; convert to NG or PEG ranitidine once NG or PEG tube is in use
- Dalteparin 5000 units S/C 4 hours after leaving theatre for most patients as long as no evidence of significant bleeding (these patients are at high risk of VTE due to cancer and long surgery); followed by regular once-daily dosing usually at 10pm; *some patients may have alternative VTE prophylaxis plans but these will be handed over post-operatively after discussion with the OMFS team (for example, it may be decided that the dose is altered in patients with very low or very high BMI)*
- Patients should have Flowtrons on both legs (as long as no contraindication such as significant peripheral vascular disease or recent/current DVT)
- If there is an epidural for a fibula flap it will be managed by Medical staff

- Local anaesthetic infusions are occasionally used for donor site wound infiltration & will be managed by the Medical staff. The Haggis usually infuses 0.5% L-bupivacaine at 5ml/hr and stays in for 48-72hrs. Any queries should be referred to the pain team or on-call anaesthetist out-of-hours.
- IV dexamethasone 6.6mg – usually 3 doses (includes the dose(s) given in theatre)
- Antibiotics – Patients receive intravenous antibiotics for a minimum of 72 hours post-surgery while the neck drains remain. Thereafter, antibiotics will be at the request of the OMFS consultant or as per clinical requirement. Details are available on the Antimicrobial section of the Intranet.
- Chloramphenicol ointment should be applied to the clip line for a maximum of 7 days

Discharge

- Transfer to Level 1 (ward 19A) or ward 18 at St. Johns Hospital when patient stable
- Remove invasive monitoring lines before transfer
- Ensure tracheostomy box and signage is transferred with the patient
- Collate results in notes
- Complete discharge letter on TRAK; please include the cumulative fluid balance as the OMFS find this helpful with ongoing care in Level 1 area
- Complete Ward Watcher (including APACHE from first 24 hours) prior to transfer

Contact numbers

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OMFS Consultants:	*Martin Paley; Ed Larkin; Jim Morrison; Tom Handley via Switchboard*	
OMFS on-call Registrar:	*via Switchboard*	
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References

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