The OMFS Survival Guide

Care of the Free Flap Patient

Aims & Objectives

- To give a brief overview of peri-operative care of inpatients
- To learn how to implement pre- and post-operative treatment plans for free flap patients
- To understand which cases may need further investigation/ management

Clerking the Major Patient

- **Diagnosis and treatment plan** (usually found on a clinic letter). This is important as you need to mark “NO NEEDLES” on the flap donor site to ensure no venepuncture or cannulation is done to protect the vessels
- **CT and OPG**: check these are on the system, may be required intra-operatively
- **Recent bloods**- FBC, U&Es, LFTs, Coag screen, G&C, any others as appropriate to past medical history
- **Recent ECG & Echo**: To assess cardiac function prior to GA
- **Lung function tests:** Depending on pt’s PMH may be required as part of pre-op assessment. Speak to anaesthetist if these have not been done and the patient has a chronic respiratory condition
- **VTE prophylaxis, regular medications**
- **Covid & MRSA Swab**
- **Consent form**- should be done and pt consented by reg/cons
- **WHO surgical safety site checklist**
- **Check pts concerns** and ask senior to speak with pt if appropriate. Advise pt and relatives they will be consented in the morning and will be going in early. Family will be contacted post-op.

Types of Free Flap

- Can be soft tissue only (e.g. radial forearm free flap, antero-lateral thigh flap)
- Mixture of muscle/bone/skin (e.g. fibula free flap, scapula flap)
- The type of free flap will depend on what tissue and size of flap is required to reconstruct

Free Flap Monitoring

- For first 72 hours should be checked hourly by ICU/HDU nurses, SHO to go every 2-4 hours (depending on local policy)

- Once pt on the ward flap checks every 3-4 hours by the SHO (however check your local policy)
- Usually after 7 days- checked twice daily on the ward round
- **Parameters to check:**
    - Colour (pink, white, bruised etc)
    - Texture (soft, firm, flaccid)
    - Temperature (warm, cold etc)
    - CRT- should be 2-3 seconds
    - Doppler sounds
- Should know what the flap looks like at baseline- some are paler due to donor site and pts natural skin tone. DO NOT RELY ON DOPPPLER ALONE!
- If concerned over change in the above parameters should speak to a registrar- evidence shows the flap has the best chance of salvage if taken back within 6 hours of failure.

Signs of Arterial Failure
- Arterial failure means blood is not getting to the flap
- The first sign is often the Doppler signal will go
- On examination, the flap will start to look paler (as less blood flowing in) and CRT will become longer

Signs of Venous Congestion
- Usually in the main anastomosis, but can sometimes be in the microcirculation of the flap.
- One of the first signs is the CRT will become shorter as the blood is collecting in the flap
- The flap may become more firm/swollen, over a few hours some bruising will appear and the flap may turn blue

If the flap fails:
- Ensure registrar and consultant are aware and coming into hospital
- Stop the NG feed
- Inform anaesthetist and theatre
- List patient for theatre
- Ensure valid group & save sample
- Consent- if pt sedated will need consent form 4

General Assessment of the Patient

Airway
- If tracheostomy in situ, have a look and make sure there is a dressing around the plastic flange (to help prevent pressure sores).
- See if there's any bleeding, gunk etc around the tracheostomy, or if the pt is coughing up sputum/blood.
- Make sure there is an inner tube (this often can get blocked and is easy to remove and clean instead of the whole tube)
- Check if the cuff is inflated or not (the cuff is taken down when the surgical team are trialling to see if the patient has an upper airway and can breathe

past the tube- this is usually a few days after surgery. Otherwise, the cuff should be inflated)
- Look at saturations, how much oxygen patient is requiring
- Feel the neck for any firmness or swelling. Monitor for any developing haematoma (especially in first 72 hours)

Breathing
- Patients respiratory rate and saturations should be continuously monitored in ICU/HDU- can suction tracheostomy to clear secretions and ask the nurse how much pt is requiring suctioning
- If patient requiring oxygen, write down how much and monitor the trend
- If pt developing breathlessness, struggling to maintain sats alert a senior- risk of pneumonia or PE is high with our patients

Circulation
- Heart rate and BP should be monitored continuously in HDU/ICU
- We usually like a mean arterial pressure (MAP- this is the pressure required for end organ perfusion) above 75mmHg, this is only measurable via an arterial line so you'll only see this in ICU
- If BP low- first ask nurses to increase giving water flushes through the NG tube. If very/persistently low, may need IV fluids
- If patient persistently tachycardic- get an ECG done
- Bloods- FBC to monitor Hb and inflammatory cells, U&Es to monitor electrolytes (as these can become abnormal with major surgery, fluids, etc) and kidney function, bone profile (to monitor the calcium and phosphate), CRP for inflammation
- Pt usually catheterised initially- check the colour of urine and how much is coming out over 24 hours

Disability
- Check pt is alert- difficult if they are unable to speak due to tracheostomy. Can ask them to follow basic commands "squeeze my hand" etc
- Check blood glucose if pt drowsy or unwell- can do a finger- prick test
- Check pupils are equal and reactive

Exposure and Everything Else
- Check drain output- usually bottle drains, they are removed with <30mls output in 24 hours (drain output should be recorded by nurses on a specific chart)
- Check calves- pt should have TEDs on if no history of peripheral vascular disease. Make sure prophylactic LMWH prescribed (or whatever is used at your unit)
- Abdomen- pt may have PEG/RIG, have a look around the site for any signs of infection
- Check when pt opened bowels, opioids can cause constipation and it is important they are on laxatives alongside this

Other Complications

- **Flap and Donor Site:** Bleeding, infection, pain, flap failure, dehiscence of the flap
- **Neck:** Salivary leaks, seroma, infection, dehiscence, haematoma (if pt develops an expanding haematoma due to bleed post-operatively, may need to remove neck clips for free drainage and take back to theatre)
- **Exacerbation of pre-existing medical issues:** COPD, heart failure, alcohol withdrawal, diabetic complications
- **Hospital- Acquired Pathologies**: PE, DVT, hospital-acquired pneumonia, sepsis, acute kidney injury, delirium, Covid

Further Reading

Care of the Free Flap Patient:
https://clinicaltoolkit.scot.nhs.uk/sjh-theatres-and-anaesthetics/local-guidelines-sops-contacts/plastic-surgery-anaesthetic-guidelines/care-of-the-patient-after-resection-of-oral-cancer-and-reconstruction-with-free-flap-transfer/

Aintree Flap Monitoring Guideline:
http://www.bfirst.org.uk/wp-content/uploads/2018/07/Micro-vascular20Free20Flap20Monitoring20Guideline.pdf

Tracheostomy Assessment & Handling Emergencies:
https://www.tracheostomy.org.uk/storage/files/Patent%20Airway%20Algorithm.pdf