

# Irish Microsurgery Special Interest Group



## Guidelines for Microsurgery During the COVID-19 Pandemic

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**The COVID-19 pandemic is a dynamic and evolving situation and, hence, these guidelines are subject to regular review and revision**

Currently there have been no unified protocols or guidelines on how to proceed with microsurgical free tissue transfer during the COVID-19 pandemic. Surgery has been largely curtailed to urgent and emergent cases as resources are reallocated to contend with the COVID-19 workload. There will, however, remain a number of patients who will require surgery during the pandemic and a very small proportion of these patients may need to undergo free tissue transfer as part of their management. It is recognised that patients undergoing prolonged procedures are more likely to have worse outcomes should they develop symptomatic infection in the postoperative period (1). It is also recognised that surgeons, anaesthetists and theatre staff are at particular risk while performing operations (2,3). This is especially true in prolonged procedures and those involving the head and neck region where there is potential exposure to high viral titres should the patient be COVID positive. It is imperative, therefore, that we as microsurgeons adopt strict safety precautions when performing free flap surgery to protect our colleagues, our patients and ourselves during the COVID-19 pandemic.

These guidelines were drawn up by the Irish Microsurgical Special Interest Group following literature review and peer consensus opinion.

### **General Microsurgery Recommendations:**

- **Free flap surgery should be avoided if possible during the peak of the COVID pandemic**
- Cases should be discussed at MDTs and all other treatment modalities explored including delaying reconstruction (eg. breast), primary radiotherapy or neoadjuvant treatments.
- If surgical resection and reconstruction is required, it should be planned to provide the most efficient operation and reconstruction, minimising risk for return to theatre and facilitating expedited discharge from hospital.
- Locoregional flaps should be the preferred reconstructive option if available and adequately addressing reconstructive needs.
- Free flaps, when required, should be chosen based on efficiency of harvest, reliability of vasculature and ability to address reconstructive needs.
- It is recommended that osseous and osseocutaneous free flaps should be avoided as powered devices (drills, oscillating saws) generate aerosolised virus and are considered higher risk (4).
- Performing microvascular anastomosis in full Personal Protective Equipment (PPE) is particularly challenging primarily due to protective headwear/eyewear restricting the field of vision through the operative microscope.

### **Elective Operative Planning:**

- All free flap cases should be planned with immediate consultation with all invested parties (surgeons, anaesthetists, theatre staff, ward staff).
- Patients should self-isolate for 14 days prior to planned procedure, if possible (may not be possible in trauma situation).
- If patient is positive *or* has any COVID related symptoms, the case should be deferred, if possible, until patient is COVID-19 negative and has resolution of symptoms.
- Free Flap Surgery in COVID positive patients is not recommended and should only proceed after careful MDT discussion considering risks to patient and risk to healthcare team.
- If patient is COVID negative the case should proceed wearing full PPE. False negative test rates of up to 30% mean all patients should be treated as suspected COVID positive (5).

### **Operation:**

- Operations should be performed in a designated COVID free, negative pressure theatre environment (6).
- Number of staff in theatre should be minimised as much as possible, especially at intubation and extubation, and all staff should wear full PPE.
- High air exchange cycle rates (>25cycles/hr) should be maintained in theatre (7).
- Following intubation, a period of 15mins should be allowed for gas exchange in the operating theatre prior to entry of surgical teams.
- All procedures should be consultant led and performed in FULL PPE (see below for specific procedure recommendations).
- Diathermy should be set to the lowest effective settings to minimise aerosolisation, and plume extractors should be utilised with monopolar diathermy (4).
- Patients should be nursed in a, presumed, COVID negative ward postoperatively, ideally in an isolated room.

## **Specific Free Flap Protocols:**

### **Head & Neck**

- Head and Neck free flap procedures are deemed very high risk due to the high viral titres potentially located in nasal, oral mucosa and within the pharynx.
- Recommended Full PPE in Head and Neck microsurgical procedures includes Powered Air Purifying Respirators (PAPR) system or fitted N95 respirator masks with tight fitting eye protection goggles (8).
- It is recognised that using the microscope in PPE, especially PAPR, can be challenging which underlines the need to harvest flaps with large diameter vessels.
- Postoperative flap checks should be recognised as high risk and curtailed to one check at 2 hours post-op and then a daily consultant flap check.
- Full PPE should be worn to include FFP3 masks/N95 masks, gown, protective eyewear and double gloves during postoperative flap checks.

### **Lower Limb**

- In a trauma setting, patients may not be able to self-isolate but COVID testing should be performed preoperatively.
- If COVID positive, or patient has COVID like symptoms of infection, then surgery should be deferred, if possible, until COVID negative and symptom free.
- If power devices are being utilised it is advisable to minimise staff within theatre and allow time for air cycling before re-entering theatre.
- Full PPE should be worn to include FFP3 mask or fitted N95 respirator, tight fitting protective eyewear, gown, head cover and double gloves if COVID test negative/asymptomatic.
- If surgery cannot be deferred in COVID positive/symptomatic then PAPR or fitted N95 respirator masks with tight fitting eye protection goggles should be used.
- Flap monitoring as per operating microsurgeon, to be minimised

## Breast

- Recommended that all free autologous breast reconstructions should be delayed until after COVID-19 peak.
- Immediate implant based reconstructions may be considered in a select cohort of patients.

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