Agreed AGIP Guidelines for Oesophageal High Resolution Manometry:

I do not foresee any individuals, particularly those in research or clinical practices specialising in oesophagology deciding to leave behind high-resolution manometry (HRM) to return to conventional manometry – Professor Pandolfino (2010) Gastroenterology Hepatology, October; 6(10): p632–634

Patient Selection and Preparation in Advance of Procedure:

- Patients should ideally undergo an endoscopy prior to referral for oesophageal manometry, especially if presenting with dysphagia. All patients with dysphagia should have had an endoscopy to rule out carcinoma or structural abnormalities (e.g. stricture, oesophageal diverticulum, pharyngeal pouch or varices) as well as biopsies to exclude eosinophilic oesophagitis as the cause of symptoms. Fluoroscopy with video recording reported by an experienced GI radiologist can provide complementary information and might also detect abnormalities (e.g. motility disorders, Shatzki rings) not appreciated by endoscopy
- Patients should be informed of the date of their tests well in advance, to allow for any anti-secretory, prokinetic or opiate containing drugs which can affect the test results to be discontinued (as per local patient information leaflet)
- A light meal is permitted up to 4 hours before the test. Patients are not usually starved overnight (to prevent problems with diabetes, and changes in LOS due to MMC); however if achalasia is suspected, a more prolonged fast is advisable

Patient Preparation on Attendance:

- Check patient details prior to starting the procedure
- Take a history from the patient. Assess and document any relevant symptoms, confirm and document that all relevant medication (if necessary) have been stopped and document all other ongoing medicines
- Explain in detail the procedure to the patient to allow full co-operation during the test. Written patient consent must be obtained prior to the start of the procedure. Inform the patient that they can withdraw consent at any time during the procedure
- Patients must be given an opportunity to have any questions or concerns they may have answered to their satisfaction before the procedure starts
- Check for any anaesthetic sensitivity or if alcohol is inappropriate for religious reasons (if local anaesthesia is to be used)

Equipment Preparation:

- It is important to ensure that the oesophageal catheter manufacturer has approved the chosen disinfectant as being compatible for use in decontaminating the catheter
- The oesophageal catheter must have previously been cleaned in line with local protocols
- Calibrate and zero the catheter as per manufacture guidelines

Performance of the Procedure:

- The member of staff performing the procedure must be either fully trained and accredited in this procedure or supervised by a fully trained and accredited practitioner
- Staff should wear appropriate protective clothing
- Explain each step of the procedure to the patient to ensure compliance
- Apply local anaesthesia to the nose and or throat (if required) and allow time to take effect. If anaesthetic spray is used, make sure that the patient holds his/her breath and does not inhale during application

- Apply lubrication gel to the tip of the catheter to improve patient comfort, being careful not to cover the sensors
- Insert the catheter into the nares and gently advance the catheter through the nasal cavity to the back of the throat (approx 15cm). On the report remember to mention the position of the patient during the procedure (i.e. supine, semi supine or sitting)
- Ask the patient to tilt their head slightly down towards the chest and to start taking very small continuous sips of water through a straw to help the natural progression of the catheter and reduce retching/vomiting
- Gradually intubate until the visual display indicates the correct positioning of the catheter; ideally with both the UOS and at least 3 cm beyond the LOS in view (occasionally not possible on tall patients). Secure the catheter in place with hypoallergenic tape
- Allow adequate time for the patient and equipment to stabilise before proceeding (commonly **at least** 3 minutes). The test requires the patient to be as settled as possible without continually swallowing, coughing or otherwise
- Document on the trace the depth of the catheter by referring to its markings at the start of recording
- Take a landmark assessment of LOS and UOS resting pressures. The landmark setting of 20-30 seconds is most representative when the patient has acclimated and, although normally defaulted by the software to the beginning, this might in fact take place *after* the 10 water swallows. Enough 'quiet time' in the trace should be permitted later on in the study in case the landmark needs to be shifted forward if required. During this time, the patient should be asked not to hold his/her breath, rather to breath normally, rhythmically and comfortably
- Give the patient 5ml of room temperature water from a syringe. Mark (with event marker) precisely when the patient swallows, ask the patient not to swallow again, talk, cough, retch, move or belch and wait for 20-30 seconds from the onset of the last swallow before administering the next 5ml bolus. It is important that the after-contraction of the last swallow does not overlap with the start of the next swallow. Repeat this process to ensure 10 individual swallows are assessed
- 'Adjunctive testing' is then encouraged as it reproduces normal behaviour and is more likely to trigger relevant symptoms. This could be any (or all) of the following: drinking larger volumes of water (either 200ml Rapid Drink Challenge (RDC) and/or 5 x 2ml Multiple Rapid Swallow (MRS)), swallowing 5 x single solid bolus (of bread or similar) and/or consuming a meal (standardised or culprit meal brought in by the patient). These tests are performed in the upright seated position. It is important to record enough 'quiet time' in advance of adjunctive testing or any shift in position for another landmark setting. Details of this methodology can be found in the literature although the AGIP committee will be happy to provide advice on request
- End recording as per manufacturer's protocol
- Ask the patient to blow air through the nose into a tissue and gently but quickly remove the catheter
- If a solid-state catheter is used, hold it still for a few seconds, ensuring sensors are not touching anything to allow for thermal compensation
- Disconnect the catheter and save the recording

Post Procedure:

- If using a reusable HRM catheter (solid state or water perfused) a trained, competent member of staff needs to immediately clean it as per the manufacture's protocol. The relevant details should then be entered into the appropriate cleaning log. If a single use water-perfused catheter has been used, then place it into the appropriate coloured bag for disposal
- The patient may go home or progress onto a 24 hour pH (+/-impedance) study as required

Reporting:

- Document in the report if symptoms occurred during the study especially if the symptom was associated with any dysmotility. It is also important to document if symptoms did not correspond with any dysmotility, if that is the case
- Analysis of the recording and subsequent reporting should be in line with the most recent 'Chicago Classification' (currently Version 3.0). Published system-specific normal values should always be used; however emphasis on 'function' rather than simply what lies outwith the normal range is crucial as well as to recognise that there is plenty of variation with regard to how to translate the findings. Recommendations for therapy should be provided with caution if the reporter is not a clinician who is personally familiar with therapeutic consequences

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