Procedure-Based Assessment Validation: Supratentorial craniotomy (to be used for training assessor)

Specialty: Neurosurgery	Procedure: Supratentorial craniotomy

Trainees should carry out the procedure, explaining what they intend to do throughout. If the trainee is in danger of harming the patient at any point s/he must be warned or stopped by the trainer immediately.

Competencies and Definitions		**Positive Behaviors** (doing what should be done)	**Negative Behaviors** (doing what shouldn't be done)	**Negative – Passive Behaviors** (not doing what should be done)
I. Consent				
C1	Demonstrates sound knowledge of indications and contraindications including alternatives to surgery	Explains using examples relevant to the patient: • Principle benefit of operation • Subsequent improvement of function • Limitations of surgery • Consequences of not having surgery	Expresses unrealistic views of the improvement in function expected following the procedure	Fails to point out the limitations of the operation
C2	Demonstrates awareness of sequelae of operative or non-operative management	Describes consequences, agrees expectations and checks patient understanding	Is over confident in describing consequences, reinforces patient's unrealistic expectations	Fails to mention key inevitable consequences
C3	Demonstrates sound knowledge of complications of surgery	Explains in priority order the complications likely to occur in terms of commonality and in terms of seriousness (e.g. bleeding, neurological deficit)	Spends time explaining rare complications and fails to mentions commoner ones (e.g. cerebellar deficit)	Misses out one or more major complication(s) when explaining to trainer or patient (e.g. seizure)
C4	Explains the perioperative process to the patient and/or relatives or carers and checks understanding	Describes what will happen throughout the management of the condition, indicating clear post-operative milestones, giving a rough idea of time involved and specifying who will do what.	Uses technical terms, explains too quickly and does not check understanding (e.g. pseudomeningocele)	Misses out common events, particularly those likely to happen in the early post-operative period (e.g. CNS infection)

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		Questions the patient to check that their expectations are realistic and they have understood fully (e.g. expected length of stay and the course of management: ICU to general ward)		
C5	Explains likely outcome and time to recovery and checks understanding	Expresses sensible prognosis and clear has knowledge of the current outcome data (e.g. prognosis from local data)	Expresses over optimistic outcomes and glosses over realistic difficulties (e.g. comparable to literature's standard)	Fails to check that the patient has understood by actively listening to the patient's reiteration of what is being said to them (e.g. inadequate question time for patients)
II. Pre-operative planning				
PL1	Demonstrates recognition of anatomical and pathological abnormalities (and relevant co-morbidities) and selects appropriate operative strategies/techniques to deal with these e.g. nutritional status	Articulates the realistic clinical findings against any investigative findings and achieves a balance between the two (e.g. ECOG for cancer, K-score for tumour, MRS for stroke)	Describes an operative plan without the full use of the clinical and investigative material (e.g. operate on a patient with short life expectancy)	Fails to take into account specific medical conditions that might limits the technical choices (e.g. renal failure with bleeding tendency)
PL2	Demonstrates ability to make reasoned choice of appropriate equipment, materials or devices (if any) taking into account appropriate investigations e.g. X-rays	Draws, writes or iterates pre-operative plan (e.g. prepare stereotaxy)		Fails to check the notes for relevant or unexpected findings. Does not take into account investigative findings when planning or selecting the equipment (e.g. does not platelet for patients on Aspirin)
PL3	Checks materials, equipment and device requirements with	Either personally visits or rings up the operating theatre	Delegates the task to a more junior team member with no	Fails to communicate with the theatre staff

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	operating room staff	to check on equipment availability (e.g. USG)	plans to check the instruction has been carried out	
PL4	Ensures the operative site is marked where applicable	Personally marks the site	Delegates the task of marking the site to a junior doctor or nurse	Fails to check that the site has been marked
PL5	Checks patient records, personally reviews investigations	Ensures that the relevant information such as investigative findings are present, checks wristband	During the procedure asks theatre staff to look something up in the notes	Fails to check notes to ensure all information is available that is needed
III. Pre-operative preparation				
PR1	Checks in theatre that consent has been obtained	Checks the consent form in the notes	Leaves the consent checking to nurses or junior medical staff	Makes no effort to check consent form in the notes
PR2	Gives effective briefing to theatre team	Checks with nurse that they have all equipment needed ready to hand and discuss planned actions (eg. do a timeout with the entire team)	Complains when something is not available during the procedure. Asks for something which results in theater staff going on a hunt for it	Makes no attempt to discuss operation with team
PR3	Ensures proper and safe position of the patient on the operative table	Prior to scrubbing supervises the position of the patient	Delegates the task to a theatre orderly and does not check	Concentrates on the process of scrubbing up while the patient is being transferred onto the operating table
PR4	Ensures proper and safe position of the patient's head	Ensures the head of the patient is safely placed on headrest / Mayfield head clamp. Positions the patient's head (e.g. Operative field at the highest point) according to the planned surgical approach	Leaves the headrest or Mayfield head clamp unlocked. Position of the head incompatible with the surgical approach planned	Fails to check the patient's head position

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		taking into consideration of clinical conditions and anatomical variation		
PR5	Ensures proper and safe positioning of headpins in cases where Mayfield head clamp is being used	Informs anesthetist about putting on head clamp. Makes sure the headpins do not slip, or causing any impingement onto the scalp, or being placed onto the temporalis muscle	Places headpins at insecure positions or may cause muscle bleeding	Fails to inform anesthetist about putting on head clamp or to check the position of headpins
PR6	Checks the positioning of all the body parts of the patient	Checks: • Neck position for airway, venous drainage of the brain and brachial plexuses • All pressure points packing e.g. elbows and ankles	Delegates the task to a theatre nurse or orderly and does not check	Fails to check the positioning of the patient's at risk area
PR7	Demonstrates careful skin preparation	Supervises painting of the operative field, ensures the material covers the whole surface (e.g. adequate contact time of antiseptic)	Paints (or supervises) the operative field leaving gaps or inadequate coverage	Delegates painting to an unsupervised member of the team or fails to check that the area has been adequately painted
PR8	Demonstrates careful draping of the patient's operative field	Drapes (or supervises draping of) the operative filed to adequately expose site ensuring only prepared site is exposed	Exposes an inadequate area for the incision/access	Fails to secure drapes adequately
PR9	Ensures general equipment and materials are deployed safely (e.g. catheter, diathermy)	Checks with the anesthetic nurse that the diathermy has been placed well away from any existing metal implants	Delegates the task unsupervised to the anesthetic nurse or orderly	Fails to check metal contact of the patient to prevent burn injury

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PR10	Ensures appropriate drugs administered	Checks notes, liaises with anesthetic team to ensure prescribed drugs (e.g. Mannitol) administered	Assumes drugs have been administered without checking	Fails to check with anesthetic team that drugs have been administered
PR11	Arranges for and deploys specialist supporting equipment (e.g. Image intensifier) effectively	Briefs and discusses with the team where equipment is to be placed relative to the operative field	Takes no regard of where equipment is placed such as diathermy scabbard and/or places it in a position where the devices can't be used safely	Ignores the set up procedure in the immediate pre-operative period and has a conversation with a third party
IV. Exposure and closure				
E1	Demonstrates knowledge of optimum skin incision	Verbally states or marks with a pen the anatomical landmarks prior to making the incision	Makes an incision that is clearly too small or too large	Does not extend an incision when struggling for access
E2	Plans the appropriate craniotomy / burr hole(s)	Designs the craniotomy / burr hole(s) (e.g. burr hole away from sinus) according to investigations findings and clinical situation	Makes the craniotomy / burr hole(s) that provides not adequate exposure on intracranial structures	Does not extend the craniotomy / burr hole(s) when clinical and investigation (e.g. stereotaxy, intra-op USG) finding confirmed inadequate exposure
E3	Achieves an adequate exposure through purposeful dissection of dura. Identifies and protects all surrounding structures	Gives a running commentary to the trainer of the structures encountered / anticipated to be encountered. Implements measures to protect surrounding structures which are at risk of damage during dissection and retraction	Describes the structure encountered in the dissection in the wrong location. Damages surrounding structures during the dissection inadvertently. Exposes structures which are clearly unnecessarily or inadequately exposed	Tries to maintain the standard approach despite the fact that access is proving difficult. Fails to recognize and adjust to anatomical variation

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E4	Closes the dura sensibly and carefully	Sutures dura carefully with protection to underlying brain. Achieves watertight closure when CSF leakage is a risk. Applies suitable dural substitute where appropriate	Damages underlying brain or surrounding venous channels during closure of the dura	Fails to identify risk of CSF leakage. Does not adopt appropriate procedures or apply dural substitute as required
E5	Completes a sound wound repair where appropriate	Closes each layer without tension	Ties very tight sutures, clearly strangulating soft tissue	Leaves too large a gap between sutures so that structures are not properly opposed
E6	Protects the wound with dressings, splints and drains where appropriate	Personally supervises the application of the wound dressing	Walks away from the operating table without briefing the assistant or the nurse on what they require to cover the wound	Fails to specify required dressing
V. Intra-operative technique				
IT1	Follows an agreed, logical sequence or protocol for the procedure	Justifies actions at any point in procedure (e.g. devascularize or debulking the lesion)	Spends a lot of time removing superfluous tissue	Fails to formulate an alternative plan when difficulty is encountered
IT2	Consistently handles tissue well with minimal damage	Personally places self retaining retractors and checks whether the skin is under tension	Pull and tears tissue. Allows the wound edges to become dry	Fails to recognize tissue damage
IT3	Controls bleeding promptly by an appropriate method	Responds calmly by applying pressure initially, briefs the team about what will need to be done – e.g. asks assistant to be ready for diathermy	Grabs in non-systematic manner at soft tissue and indiscriminately applies diathermy. Continues with a dissection despite welling up of blood in the field	Fails to act calmly. Fails to brief team. Fails to control blood flow

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IT4	Demonstrates a sound technique of knots and sutures / staples	Draws soft tissue together without tension and forms proper reef knots	Pulls tissues tight so that the tissues blanche and wound gapping	Fails to use the correct method or technique
IT5	Uses instruments appropriately and safely	Asks for instruments in a timely manner anticipating what is needed	Uses an instrument for a purpose it is not intended. Takes whatever is given to them then complains	Fails to ask for correct instruments at the correct time
IT6	Proceeds at appropriate pace with economy of movement	Let the nurse know what is to be done or needed next (e.g. bring in microscope and micro-instrument ready etc..)	Stops and starts, picking things up and then putting them down without using them. Spends a long time on a task not appropriate to the pace	Spends a long time on a task not appropriate to the pace
IT7	Anticipates and responds appropriately to variation e.g. anatomy	When encountering something unexpected stops and verbalizes concerns with the team e.g. management of cerebral herniation	Persists in a task that is proving difficult and has to be stopped	Fails to recognize anatomical variation and has to be stopped
IT8	Deals calmly and effectively with unexpected events / complications	Verbalizes that there is a problem and briefs the team on what needs to happen next	Verbalizes negative concerns and issues conflicting instructions. Tries to continue inappropriately (has to be stopped)	Fails to brief the assistant adequately
IT9	Uses assistant(s) to the best advantage at all times	Briefs assistants and places them and the instruments where they are needed	Accepts whatever assistant does irrespective of whether or not appropriate	Fails to brief the assistant and expresses irritation when positions are not what are required
IT10	Communicates clearly and consistently with the scrub team	Sets positive tone with appropriate greeting. Asks for instruments clearly. Informs as to next steps. Asks for	Uses rough or inappropriate tone of voice or words. Uses slang or local description so instruments	Gives no greeting, does not ask for anything (but expects to be given it)

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		instruments by correct name		
IT11	Communicates clearly and consistently with the anesthetist	Sets positive tone with appropriate greeting. Sets clear goals and expectations	Proceeds with next step of procedure without anesthetic advice (where required)	Fails to inform anesthetist of key phase requiring anesthetic cooperation
IT12	Elevates scalp flap and protects important anatomical structures	Turns the scalp flap in planes that can protect important anatomical structures e.g. plan incision on hair bearing area	Dissects in the wrong plane and puts important anatomical structures	Fails to recognize the correct plane for dissection or ignores the danger of injuring important anatomical structures
IT13	Drills burr holes as appropriate and creates an adequate craniotomy	Makes the burr holes at the appropriate sites. Creates the craniotomy adequate enough for exposure e.g. avoid underlying dural sinuses	Drills the burr holes at inappropriate sites. Damages underlying dura mater +/- brain due to inadvertence	Unambiguously under / over-estimates the size of craniotomy required
IT14	Hitches and opens dura mater in safe and efficient manner	Controls epidural bleeding and opens the dura mater while protecting the underlying brain with appropriate size	Damages underlying brain during opening of the dura mater	Fails to control epidural bleeding efficiently
IT15	Appreciates the important functional area and dissects along the cerebral natural planes	Identifies the sulci, cisterns or fissures concerned; anticipates and protects relevant anatomical structures dissects skillfully and gently	Dissects carelessly; damages the anatomical structures inside the cisterns	Fails to identify and dissect cisterns and their contents

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IT16	Watertight dural repair (either primary closure or with duroplasty)	Performs watertight dural repair	Inability to make an effort to perform watertight dural closure or perform measures to reduce postoperative CSF leak e.g. lumbar drain or EVD insertion	Failure to appreciate the importance of watertight dural repair with unambiguous disregard for CSF leak prevention
IT17	Anchoring of bone flap (either by suturing or by commercial fixation device)	Performs secure anchoring of bone flap by appreciating the importance of three-point fixation	Insecure bone flap placement with loosening	Failure to appreciate the need for secure bone flap fixation
IT18	Layered closure of scalp	Performs satisfactory layered scalp wound closure with adequate wound edge apposition	Scalp wound stepping, gapping, overly tight tissue apposition that may result in poor wound healing, infection or CSF leak	Does not perform layered scalp wound suturing that may result in poor healing, infection or CSF leak
VI. Post-operative management				
PM1	Ensures the patient is transferred safely from the operating table to bed	Personally takes part in the transfer of the patient from the operating table to the bed	Leaves the operating room prior to the transfer	Fails to check patient once they are in bed
PM2	Constructs a clear operation note	Makes a legibly written or clearly dictated note	Writes illegibly, mumbles on Dictaphone	Fails to write or dictate anything at all
PM3	Records clear and appropriate post operative instructions	Writes in clear text a list of post-operative instructions in the notes	Gives verbal instructions to a pass nurse	Fails to write anything in the notes at all
PM4	Deals with specimens. Labels and orientates specimens appropriately	Personally arranges specimens for pathologist	Delegates checking labels to junior	Does not label specimens