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

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| Specialty: Neurosurgery | Procedure: Laminectomy |

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) |
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|  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 |
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| 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 |
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| C3 | Demonstrates sound knowledge of complications of surgery (e.g. spinal cord injury, CSF leak, infection etc.) | Explains in priority order the complications likely to occur in terms of commonality and in terms of seriousness | Spends time explaining rare complications and fails to mentions commoner ones | Misses out one or more major complication(s) when explaining to trainer or patient |
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| 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. Questions the patient to check that their expectations are realistic and they have understood fully | Uses technical terms, explains too quickly and does not check understanding | Misses out common events, particularly those likely to happen in the early post-operative period |
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| C5 | Explains likely outcome and time to recovery and checks understanding | Expresses sensible prognosis and clear has knowledge of the current outcome data | Expresses over optimistic outcomes and glosses over realistic difficulties | Fails to check that the patient has understood by actively listening to the patient’s reiteration of what is being said to them |
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| 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 | Describes an operative plan without the full use of the clinical and investigative material | Fails to take into account specific medical conditions that might limits the technical choices |
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| 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 | Delegates the task of studying the image to junior team member | Fails to check the notes for relevant or unexpected findings. Does note take into account investigative findings when planning or selecting the equipment |
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| PL3 | Checks materials, equipment and device requirements with operating room staff (e.g. fixation instrumentations, intra-operative monitoring modalities, USG) | Either personally visits or rings up the operating theatre to check on equipment availability | Delegates the task to a more junior team member with no plans to check the instruction has been carried out | Fails to communicate with the theatre staff |
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| PL4 | Ensures the operated level is marked | Personally marks the level (e.g. X-ray with a metal clip) | Delegates the task of marking the site to a junior doctor or nurse | Fails to check that the level has been marked |
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| 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 |
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| 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 |
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| PR2 | Gives effective briefing to theatre team | Checks with nurse that they have all equipment needed ready to hand and discusses planned actions | 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 |
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| 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 according to the planned surgical approach taking into consideration of clinical conditions and anatomical variation | 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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| 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 |
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| 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
* Abdominal wall is free from pressure to ensure no obstruction of venous drainage
 | 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 |
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| PR7 | Demonstrates careful skin preparation | Supervises painting of the operative field, ensures the material covers the whole surface | 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 |
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| 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 |
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| 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 brief the team if metal ware is in place in the other limb |
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| PR10 | Ensures appropriate drugs administered (e.g. antibiotics) | Checks notes, liaises with anesthetic team to ensure prescribed drugs administered | Assumes drugs have been administered without checking | Fails to check with anesthetic team that drugs have been administered |
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| PR11 | Arranges for and deploys specialist supporting equipment (e.g. Image intensifier, microscope) 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 |
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| IV. Exposure and closure |
| E1 | Plans the laminectomy wound at correct location | Designs the laminectomy at the correct location according to intra-operative imaging findings and clinical situations | Mark the laminectomy wound that at incorrect location | Does not plan the laminectomy wound according to clinical and intra-op imaging findings |
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| E2  | Achieves an adequate exposure through purposeful dissection. Identifies and protects facet joints. | Gives a running commentary to the trainer of the structures encountered / anticipated to be encountered. Identifies and protects neighbouring facet joints | Describes the structure encountered in the dissection in the wrong location. Damages surrounding facets during the dissection inadvertently. Exposes structures which are clearly unnecessarily or inadequately exposed | Fails to recognize and adjust to anatomical variation |
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| E3 | Achieves adequate bone removal and protects underlying dura | Removal of laminae / ligamentum flavum according to pre-operative planning. Implement measures to protect adjacent facets and underlying dura | Damage facet joints or underlying dura | Fails to recognize inadequate bony or ligamentum flavum exposure  |
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| E4 | 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 |
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| E5 | Protects the wound with dressings 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 | Spends a lot of time removing superfluous tissue | When a difficulty is encountered fails to completer maneuver |
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| 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 |
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| IT3 | Controls bleeding promptly by an appropriate method | Responds calmly by applying pressure initially, briefs the team about what will need to be done | 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. Lets a wound edge gape or pulls one layer of tissue under another | Fails to use the correct method or technique |
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| IT5 | Uses instruments appropriately and safely | Asks for instruments in a timely manner anticipating what is needed  | Uses and 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 |
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| IT6 | Proceeds at appropriate pace with economy of movement | Lets the nurse know what is to be done or needed next | 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 |
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| IT7 | Anticipates and responds appropriately to variation e.g. anatomy | When encountering something unexpected stops and verbalizes concerns with the team | Persists in a task that is proving difficult and has to be stopped | Fails to recognize anatomical variation and has to be stopped |
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| 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 |
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| 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 instruments by correct name | 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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| 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 |
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| IT12 | Safe opening of dura and arachnoid membrane | Open dura without damage of the spinal cord and nerve roots. Good exposure of the intradural tumour is achieved | Damage the underlying cord or nerve roots inadvertently  | Fails to recognize the underlying cord or nerve roots. Inadequate exposure of the tumour |
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| IT13 | Careful removal of intradural tumour tissue and dissection of neural structures | To perform safe tumour resection:1. Identified and protect tumour-cord plane
2. Avoid retraction of the spinal cord
3. Respect electrophysiological monitoring findings as appropriate
 | Attempt en-bloc removal in a very large tumour. Retract spinal cord. Damage spinal cord or nerve roots inadvertently | Fails to identify the tumour-cord plane. Unable to dissect the tumour free from surrounding nerves. Disregard electrophysiological monitoring findings |
| IT14 | Appropriate closure of spinal dura | Close the dura in water-tight manner | Chose the inappropriate material for dural closures | Leave the dura open |
| 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 |
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| 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 |
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| 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 |
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| PM4 | Deals with specimens. Labels and orientates specimens appropriately | Personally arranges specimens for pathologist | Delegates checking labels to junior  | Does not label specimens |
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