**\*Bangladesh-focused guideline on laparoscopic entry\***

1.Scope & purpose

To reduce morbidity/mortality from bowel, urological and major vascular injuries that occur during initial abdominal access (Veress needle, trocar/trocar cannula insertion or optical trocar), and to ensure prompt recognition and management when injuries occur. (Adapted from RCOG Green-top No.49 and SAGES guidance.)

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1. Pre-operative steps (risk stratification & consent)
   * History & exam: Document prior abdominal/pelvic surgery,

infections, endometriosis, radiotherapy, obesity, pregnancy — these raise risk of adhesions or altered anatomy.

* + Imaging when indicated: Consider abdominal ultrasound or CT when prior surgery/adhesions suspected and the plan might change (e.g., alternative entry site).
  + Informed consent: Explain entry-related risks (bowel, bladder, ureteric, vascular injury, conversion to laparotomy, transfusion), and document in patient record. Use local language (Bangla) patient information sheet where possible. (RCOG recommends clear consent discussing entry risks.)

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1. Choice of access technique (practical recommendations)

No single method is proven universally safest; choose method based on patient, surgeon experience and local resources. Key options:

* + Open (Hasson) entry — preferred when adhesions suspected,

previous midline scars, pregnancy or thin abdominal wall; consider as routine for higher-risk patients. Evidence supports lower bowel/vascular injury in many series when open entry is used for adhesions.

* + Closed (Veress) needle — acceptable in uncomplicated patients with no prior midline surgery and normal habitus if operator experienced. Use correct angle, test for intraperitoneal placement (saline aspiration, hanging drop, low initial insufflation pressures) and never force.
  + Optical trocar / direct trocar entry — may reduce blind injury in hands of experienced users but does not eliminate risk of vascular/visceral injury.

Practical Bangladesh adaptation: In district hospitals where imaging and ready vascular support may be limited, favour open (Hasson) primary access for patients with any prior midline surgery or other risk factors. For straightforward, low-risk cases, Veress or optical entry may be used by experienced surgeons.

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1. Technical safety measures at entry
   * Put the patient in the correct position; flex and lift the abdominal wall if using Veress.
   * Use smallest reasonable trocar size for initial access.
   * Needle/trocar trajectory: insert vertically through the linea alba at or near the umbilicus unless anatomy dictates otherwise. Consider Palmer’s point (left upper quadrant) for prior midline surgery or suspected adhesions (only if stomach safely decompressed / surgeon experienced).
   * Controlled force & technique: never use uncontrolled force; if resistance is unexpected, withdraw and reassess.
   * Confirm pneumoperitoneum before inserting secondary trocars (look for free movement of scope, safe insufflation pressures).
   * Use direct visual entry (optical trocar) if available and the operator is trained.

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1. Immediate recognition of injury
   * Red flags at entry: sudden loss of insufflation, brisk bleeding from trocar site, haemodynamic instability, bright red blood in trocar, inability to achieve pneumoperitoneum, gross nasogastric/enteric contents in trocar.
   * If any suspicion: do not close ports; maintain visualization and rapidly inspect the cavity with the laparoscope. If bleeding is major or source unclear, convert to open laparotomy without delay. Time to control haemorrhage is critical.

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1. Management algorithm (entry-related vascular/visceral injury)
   1. Minor serosal bowel injury: repair laparoscopically if recognized and surgeon skilled; irrigate well and consider postoperative antibiotics and observation.
   2. Full-thickness bowel injury or delayed diagnosis: formal repair; if contamination heavy or recognition delayed, consider conversion to laparotomy, fecal diversion as indicated, and aggressive sepsis management.
   3. Major vascular injury (arterial / venous): immediate suction to identify source, apply direct pressure through trocar site, convert to laparotomy urgently, call vascular surgery or experienced general surgeon, have blood products ready. Do not waste time attempting complex laparoscopic vascular repairs unless operator experienced and bleeding controlled. Mortality/morbidity is time sensitive.
   4. Urological injury (bladder/ureter): recognise and repair (bladder repair laparoscopic or open depending on size and contamination); stent ureteric injury where feasible and involve urology.

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1. Systems & resourcing (Bangladesh focus)
   * Minimum facility requirements for hospitals offering laparoscopy: functioning laparoscopic tower, reliable suction, electrosurgery, vascular clamps, suture sets for open repair, operating microscope/light for vascular repair not required but useful, access to blood bank/blood transfusion, on-call experienced surgeons and anesthetic support.
   * Transfer policy: where immediate surgical escalation (e.g., vascular repair) cannot be performed locally, have a protocol for urgent transfer — but conversion and local control of haemorrhage should be attempted first; transfer only after stabilization.
   * Audit & reporting: maintain a register of entry-related complications; perform morbidity & mortality review after any major entry injury. RCOG emphasises documentation and audit.

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1. Training & credentialing
   * Formal training modules in safe entry techniques should be mandatory for surgeons performing laparoscopy (simulation where possible). Early operators should perform supervised procedures until credentialed. SAGES and other societies emphasise training and standardization.
   * Regular multidisciplinary simulation drills (including management of catastrophic haemorrhage) are recommended for teams. Practical drills improve team recognition and speed.

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1. Documentation & medicolegal points
   * Document preop risk assessment, consent discussion (entry risks), entry method used, any difficulty at entry, and steps taken if an injury occurred. RCOG notes that entry-related injury in an uncomplicated patient may form part of medicolegal review unless proper consent and technique documented.

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1. Audit metrics (suggested)
   * Rate of entry-related major complications per 1,000 laparoscopies (aim to monitor — literature rates ~0.1–1.4/1000 depending on definitions).
   * Time from recognition to haemorrhage control (target: minimize; record for each major bleed).
   * Percentage of cases with documented informed consent specific to entry risks.
   * Number of conversion to open laparotomy for entry injury.

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1. Quick checklists (one-page) — to keep in the OR

Before skin incision

* + Confirm risk factors and documented consent.
  + Prepare blood products if high risk.
  + Team brief: entry method, anticipated difficulties, conversion plan.

At entry

* + Insert under controlled technique — no excessive force.
  + Confirm pneumoperitoneum before secondary trocars.
  + If unexpected bleeding or loss of insufflation → inspect immediately; do not close trocar sites.

If major bleed

* + Apply direct pressure, suction, convert to open, call for vascular help, transfuse as needed.

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References / sources (key documents used)

* 1. RCOG Green-top Guideline No. 49 — Preventing entry-related gynaecological laparoscopic injuries (RCOG/BSGE).
  2. SAGES — clinical guidelines on diagnostic laparoscopy / laparoscopic practice recommendations.
  3. Review articles on laparoscopic entry techniques and vascular injuries (Ahmad 2019; Asfour 2018; Krishnakumar 2009).
  4. International consensus/position papers (ISGE, WSES, SAGES reviews) and recent literature on entry complications.

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Implementation suggestions for Bangladesh hospitals

* 1. Adopt this summary as a hospital policy addendum to national guidance; distribute one-page checklists in all laparoscopic ORs.
  2. Translate consent & patient information leaflets into Bangla.
  3. Start local audit (register entry injuries) and quarterly morbidity meetings.
  4. Set up a training pathway (supervised logbook, simulation days, team drills) before independent practice.
  5. For low-resource settings: prioritise open (Hasson) entry for higherrisk patients; ensure rapid access to blood transfusion and referral pathways