

Open Technique

Renato Costi^{1,2}, Manuel Baldinu¹, Filippo Montali², Alfredo Annicchiarico^{1,2}

¹Dipartimento di Medicina e Chirurgia, Università di Parma, Parma, Italia; ²Unità Operativa Complessa di Chirurgia Generale, Dipartimento Chirurgico, Ospedale di Vaio, Fidenza (Parma), Azienda Unità Sanitaria Locale di Parma, Italia

To the editor,

Entering a closed abdomen is the first step of any laparoscopic procedure. Although it is generally considered an easy task for any laparoscopic surgeon, the first access to the abdomen has been associated to several and at times fatal complication, including bowel, urological and vascular injuries (1). Currently, in the literature, there are no clear evidence of the superiority of one access technique over another (2). Several methods are used, including the blind introduction of a Veress' needle aimed to pneumoperitoneum induction (3) followed by the introduction of the first trocar in the umbilical region of the inflated abdomen. Such a two-step-procedure has also been reported by under-vision, layer-by-layer penetration of an "optic" trocar incorporating a laparoscopic camera (4).

First proposed by Hasson (5) in the early seventies, a layer-by-layer incision of the abdominal wall to reduce the risk of complications, has been used for laparoscopy access and has never been abandoned. Today considered a safe technique to minimize any technique-associated morbidity, is nowadays universally recognized as "open technique".

Here we propose our step-by-step, open procedure to rapidly gain access to the abdomen, to safely introduce the first trocar and to induce the pneumoperitoneum and to effectively start laparoscopy. Tips and tricks and needed instruments of any step of the procedure are given for an easy-to-catch learning.

The open technique, including 6 steps, and needed instrumentation are reported in Table 1.

Step 1 (Figure 1A): Skin is incised by scalpel (No.11 is generally used). Subcutaneous tissue is divided by scissors/electrocautery until fascia is identified. Retractors are not needed, and incision borders may be possibly retracted by forceps.

Step 2 (Figure 1B): Kocher graspers are used to lift the fascia (supra-umbilical Linea Alba) and open this latter by Mayo scissors until reaching the preperitoneal adipose tissue. Fascia incision should not exceed 10-12 mm.

Step 3 (Figure 1C): A thick, round-shaped needle-holder (NH) is used to identify the peritoneum. If peritoneum is not visible, the NH is pushed until some resistance is perceived, then it is slightly opened in order to grasp only the thin peritoneum layer. A thin 1-mm-grasp of peritoneum will be lifted by NH outside the fascia and safely cut by Mayo scissors under direct vision. Again, the NH may then allow checking the peritoneum actual opening by gently pushing it against the peritoneum itself.

Step 4 (Figure 1D): Stitches (5/8 needle, 1:0 absorbable, synthetic, usually braided suture) are positioned on fascial incision sides.

Step 5 (Figure 1E/1F/1G): Surgical thread is pulled upward as described in figure 1E/1F and a 10/12-mm-trocar is inserted.

Step 6 (Figure 1H): The surgical thread is fixed to the trocar (knotting is usually not needed).

The routine nature of the procedure has diverted attention from the logic of a data collection for scientific

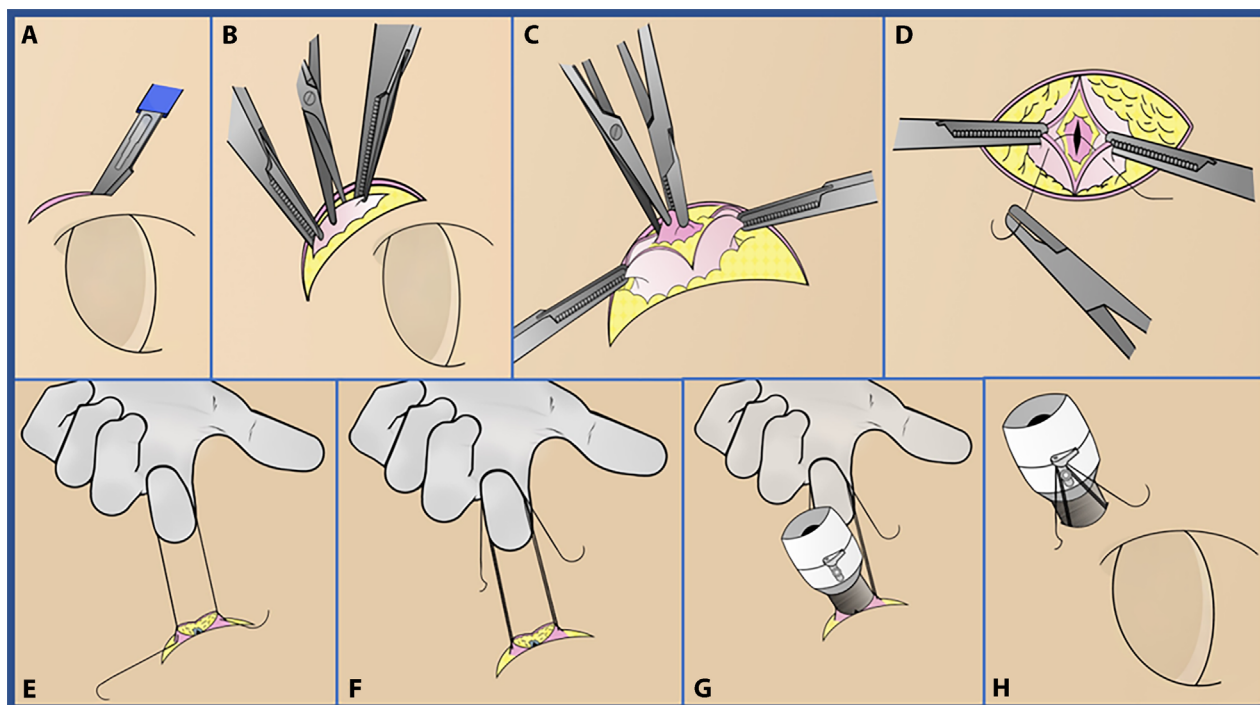


Figure 1. Open Technique Proposed Procedure (Legend: Skin is incised by scalpel and fascia is incised (1A-1B); The peritoneum is identified by needle-holder (NH) and stitches are positioned (1C-1D); Surgical thread is pulled upward (1E-1F); A 10/12-mm-trocar is inserted and the surgical thread is fixed to the trocar (1G-1H).

purposes, therefore sequential data are not available. Roughly speaking, we can state that this technique was performed by the same surgeon through 1423 procedures during an 8-year-span, without being associated to vascular or intestinal injury. In 12 cases, due to tenacious periumbilical adhesions, a second abdominal “open” access has been performed (in 5 cases in the right flank/right iliac fossa, in 7 in the left flank); in one case, a periumbilical mini-laparotomy (4 cm) was eventually performed to safely access the abdomen and place the first trocar. In an estimated 10% of procedures, skin incision exceeded trocar real dimensions, thus causing CO₂ leakage through the abdominal wall, managed by cutaneous, non-resorbable Donati stitches (3:0 Non-absorbable, synthetic, usually monofilament suture) or Backhaus forceps placement. In five cases, subcutaneous emphysema was recorded, in one case causing neck swelling and acidosis, managed conservatively by multiple needle application and medical therapy.

The open technique is still universally considered among the safer ways to access a closed abdomen to

start a laparoscopic operation. Such a procedure may be time-consuming and, especially if performed inappropriately, may not prevent from all possible intraoperative complications, as an ileal loop may be accidentally entered during wall opening.

The procedure we presently describe may allow maximizing open technique’s advantages in term of safety and efficiency without wasting time and rapidly starting laparoscopy.

Some tips need explanation. All layers are easily identified and divided without retractors, including Farabeuf (or Army-and-Navy) retractors, which may hinder a correct vision of such a narrow operating field by the operating surgeon. If fascia vision is not optimal, for example in obese patients, instead of enlarging skin incision for better exposure, a fascia’s blind grasping and pulling upward by Kocher forceps is a safe step at this stage, allowing for an easy fascia opening by Mayo scissors.

Once the fascia has been entered, at times it may be difficult to enter the peritoneum, which is usually

Table 1. Instrumentation in open access technique.

Step	Action	What is needed	What is not
1	Skin and subcutaneous tissue incision, fascia identification	S1: Scalpel, Forceps, Mayo scissors S2: Forceps, small-sized gauze (electrocautery)	Retractors (Including Farabeuf or Army&Navy retractors)
2	Fascia incision	S1: 2 Kocher graspers, Mayo scissors/scalpel S2: Forceps	Electrocautery
3	Peritoneum identification and incision	S1: Round-headed needle-holder, Mayo scissors S2: (Forceps)	Any grasper (S1)
4	Fascial stitches positioning	S1: Needle-holder, 5/8-needle 1:0 Absorbable braided stitch, Kocher graspers S2: (Forceps)	Any grasper (S1)
5	Upward pulling and first trocar introduction	S1: 10/12-mm-trocar S2: --	Anything else
6	Stitch fixation to the first trocar	S1: -- S2: --	Anything else
Overall		Multi-use instruments: 2 Forceps, 2 Kocher graspers, 1 Mayo scissors, 1 Round-headed needle-holder, (Electrocautery) Disposable devices: Scalpel, Small-sized gauze, 5/8-needle 1:0 Absorbable braided stitch, 10/12-mm-trocar	Retractors (Including Farabeuf or Army&Navy retractors)

Abbreviations: S1: Surgeon 1; S2: Surgeon 2.

covered by a preperitoneal fat layer, which may vary widely in thickness. During this step, NH may be useful, as it presents the perfect shape to allow for a gentle pushing to evaluate whether the peritoneum is already open or, if it is not, to precisely and non-traumatically grasp it without biting any ileal loop potentially adherent to peritoneum. In fact, if a large NH bite is needed to grab the peritoneum, some jejunal loop may be attached to the peritoneum (due to adhesions) and the procedure should be suspended or abandoned, at least at this place. On the contrary, a thin 1-mm-peritoneum bite by NH, after the peritoneum itself has been easily pulled upward, may be safely cut by scissors. Although it is not mandatory, fascial stitches' positioning at this stage may allow pulling the fascia towards the trocar, and not the opposite, thus minimizing the risk of intra-abdominal damages by trocar's blind insertion. Carrying out this surgical step at this

time is certainly more effective than later in the procedure, as the anatomical structures (fascia and peritoneum) have just been identified and are grasped by Kocher forceps. At the end of the surgery, which can last several hours, the surgical team is tired, the level of attention inevitably drops, and finding/suturing fascia and peritoneum may be more challenging, eventually ending in a sub-optimal closure.

While passing the stitches through the fascia, regular graspers may be ineffective, causing needle slipping. Instead, after having pulled the fascia upwards by Kocker forceps, this latter grasper may be used to easily recover the needle by a firm grab as soon as the needle has been placed by the NH and its tip appears beneath the fascia. After their placement, surgical threads can be subsequently attached to the trocar's CO2 faucet by knotting or small Kelly forceps placement. This step, which is obviously not mandatory, may

allow for the constant traction of the fascia against the trocar, thus avoiding small CO₂ leakage.

The use of this open laparoscopic entry technique could be proposed because its simplicity and feasibility in accessing the peritoneal cavity. Data collection may be necessary to establish the actual safety of the technique in comparison to the others open or closed techniques.

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Correspondence:

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Alfredo Annicchiarico, MD,

Dipartimento di Medicina e Chirurgia,

Università di Parma, Via Gramsci 14, 43100 Parma

E-mail: alfredoannicchiarico90@gmail.com