

# SAFER LAPAROSCOPIC/ROBOTIC SURGERY: MITIGATION OF FIRST ABDOMINAL ENTRY ACCIDENTS

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## Unacceptable Statistic

First abdominal entry accidents remain a known worldwide entity that deserves further discussion and investigation. It is commonly cited that 40-50% of serious laparoscopic complications can be attributed to this critical and mandatory first step in laparoscopic surgery.

## Current Technology

The conventional sequence for various methods of initial abdominal access begins with penetrating the abdominal wall with a sharp/pointed instrument to achieve its endpoint of establishing pneumoperitoneum.



POTENTIAL PITFALLS associated with this step lead to entry accidents that reflect an inefficient control of the variables attributed to patient age, sex, body habitus, abdominal wall laxity, unpredictable strength and thickness of the anterior fascia, as well as individual surgeon background and experience.

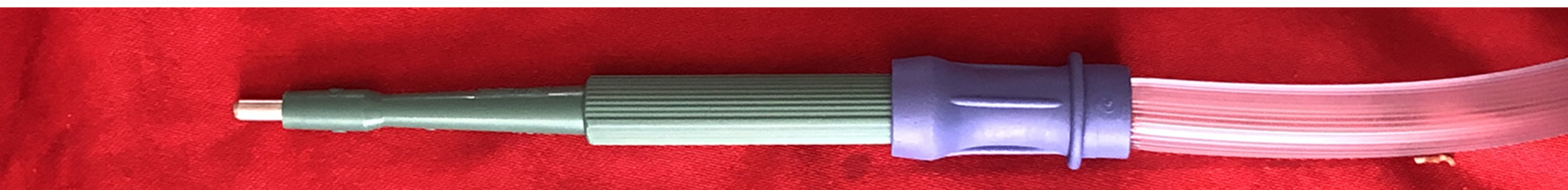
After creating conditions for resistance-free advancement of the entry instrument into the peritoneal cavity, these variables become largely irrelevant.

## Conclusion:

•The variables and pitfalls that lead to first abdominal entry accidents have always existed and remain a constant that every generation of surgeons must overcome. If the conventional procedural sequence remains the same, the unacceptable statistics of laparoscopic abdominal entry complications remain unchanged.

## Proposed Method: Streaming Hollow-Entry

A 3 mm hollow stainless steel tube with a circular razor situated at the bluntly configured tip is the instrument of choice for initial penetration of the abdominal wall.



The exceptionally benign design of this instrument requires two simultaneous maneuvers: (a) twisting and (b) pushing are necessary in order to cut and penetrate a **fixed point of tissue**; if only one (twisting) without the other (pushing) against a **fixed point**, the instrument is rendered relatively harmless. When the hollow blunt tip of the instrument breaches the peritoneal cavity, the **fixed point of tissue** disappears, rendering the device harmless.

The hollow instrument is connected to the insufflator, set at 'high flow', creating a rapid pneumoperitoneum prior to trocar system insertion.

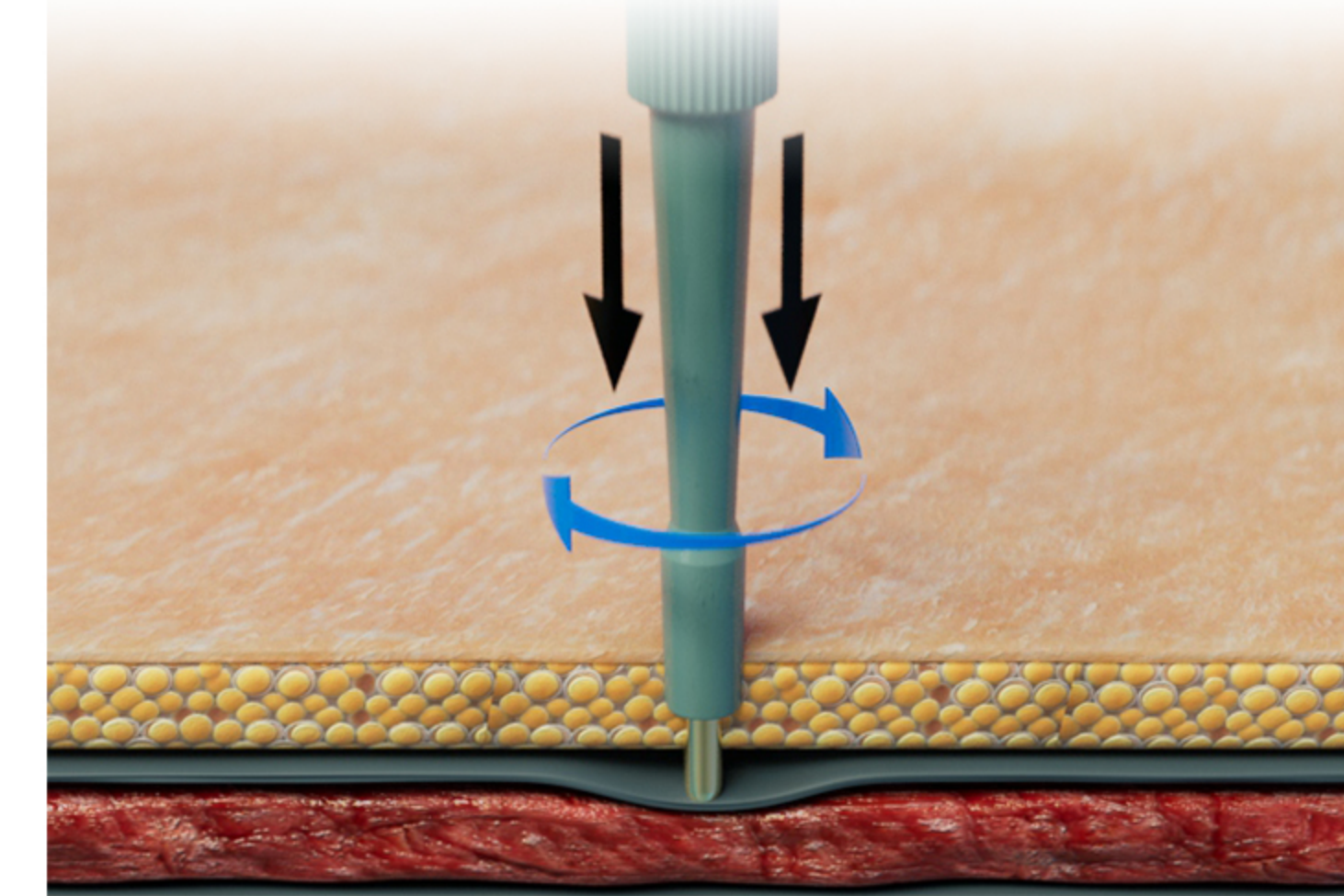
•The conventional method to achieve pneumoperitoneum is modified by precedent penetration and dilatation of the anterior fascia (with the described 'streaming hollow-entry' technique), thereby mitigating the unpredictable variables associated with initial abdominal entry.

•Elimination of the fascial resistance obviates the need to introduce pointed/sharp instruments into the operative field until all safety pre-conditions are met, a key objective to mitigate potential accidents/complications associated with first abdominal entry.

## Procedure: Streaming Hollow-Entry

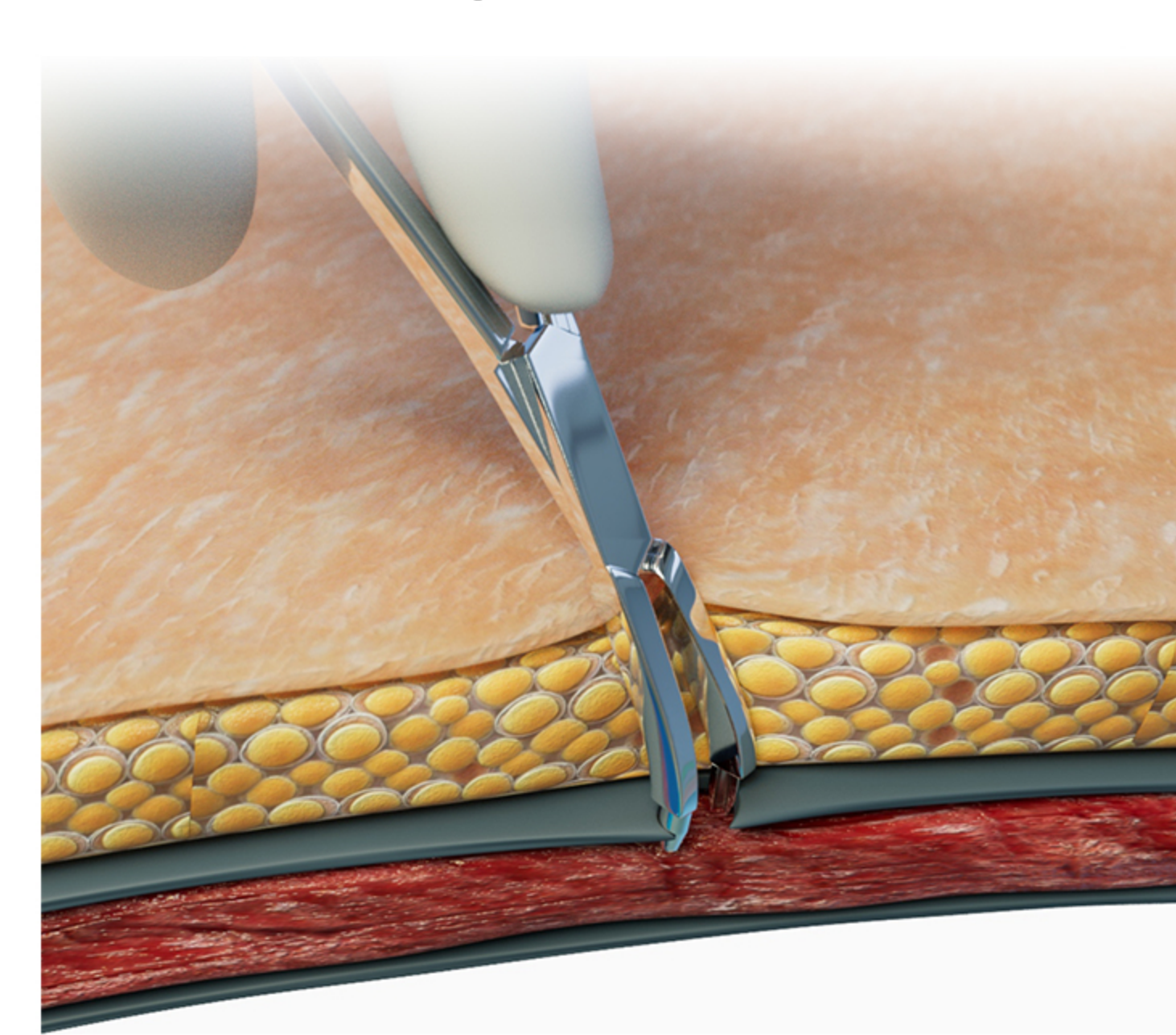
### Step 1

The hollow instrument encounters resistance when its tip makes contact with the anterior fascia. Implementing simultaneous twisting and pushing of the device, the fascia is easily penetrated and at the instant that the tip of the instrument breaches the peritoneum, a rapid pneumoperitoneum is created by direct streaming of 'high flow' gas insufflation.



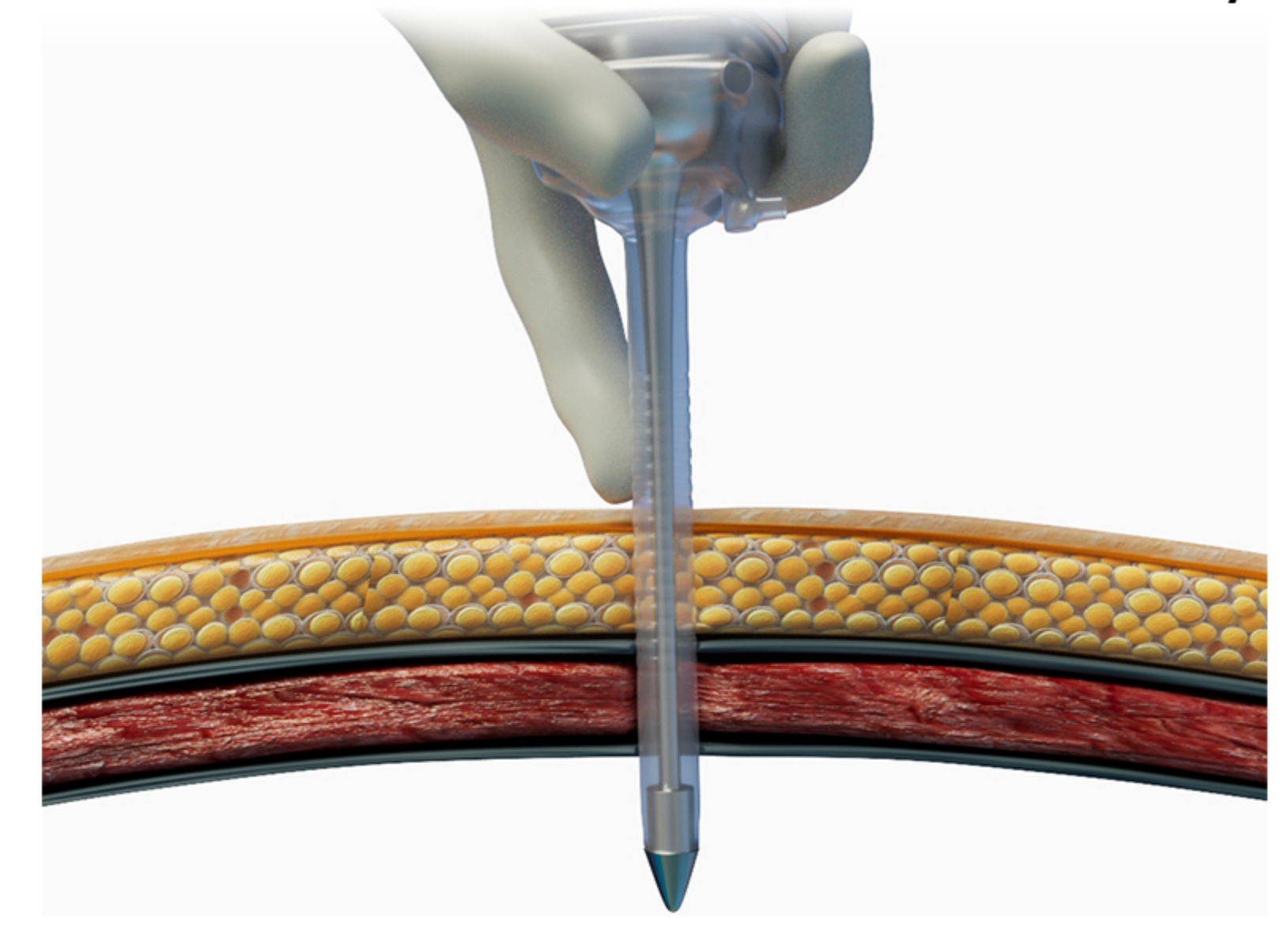
### Step 2

The anterior fascial defect/tract is identified with a hemostat and bluntly dilated.



### Step 3

The trocar system is brought into the operative field and is advanced effortlessly into the insufflated abdominal cavity.



•Verification and validation of the proposed technique will require feasibility studies to be conducted at laparoscopic surgical centers in the future.