

Laparoendoscopic single-site surgery in gynecology: Dawn of a new era

During the past two decades minimally invasive surgery has been used extensively for the management of benign and malignant gynecologic conditions. The rapid advances in minimally invasive surgery in the last two decades have led to most of benign and malignant gynecologic conditions to be managed laparoscopically.^[1] The main advantages of laparoscopy are smaller incisions, faster recovery, reduced operative stay, and morbidity. Conventional laparoscopy requires three to five ports for any operative procedure. Each port or trocar site is associated with risk of bleeding, infection, pain, trocar site hernia, and resulting scar. Hence, the trend in minimally invasive surgery is to reduce the number of ports in surgery to reduce these inherent risks, thereby leading to development of Laparo endoscopic single-site surgery. LESS is emerging as a viable alternative to both conventional laparoscopy and Robotic surgery.

In the current scenario, single port surgeries are used in many surgical specialties such as general surgery, urology bariatric surgery, and gynaecology. The advent of LESS in gynecology that started with tubal ligation now includes various procedures such as hysterectomy, myomectomy, adnexal procedures, and concomitant gynecologic and surgical procedures.

In the article by Chittawar, Magon and Bhandari,^[2] the authors have reviewed that the nomenclature, instruments, platforms, and the gynecological surgeries carried out using single port access. As far as nomenclature of single port surgeries is concerned, though various terms have been used in the past, the consensus is to use the term LESS or laparoendoscopic single-site surgery to encompass all surgeries performed through single incision. The authors then describe the various access techniques, which include multiple fascial incisions through single incision and glove and wound retractor method. In addition, various commercial single access ports are available which allow insertion of three to four trocars.

The problems associated with single port access are lack of triangulation, collision of instruments, and reduced vision and operating space. To overcome these limitations, better optics, specialized instrumentation, and advanced surgical technique and skill are required as described in the article. Flexible tip laparoscopes (Olympus EndoEYE, Olympus medical systems, Tokyo, Japan) provide increased visualization during LESS procedure. In LESS surgeries, the space for the surgical instruments is reduced leading to potential instrument collisions. The handle and rod of the flexible laparoscope can be positioned against patient's external abdominal wall while flexible tip is positioned up against the interior anterior abdominal wall and angled toward the operative site. This allows appropriate visualization during the procedure while remaining outside crowded port space and out of way of laparoscopic instruments. In the case of nonavailability of flexible tip scopes, 30 degree longer bariatric telescopes with right-angled light connector can be used as alternative in LESS procedures.

Laparoscopic camera holders are new innovations, which allow the surgeon to fix the laparoscope in set position while freeing up an extra hand. This increases the ease and efficiency of surgery. The Stryker Wingman is a pneumatic-driven scope holding system that can be used to stabilize any 5 or 10 mm laparoscope and camera. The Wingman is especially useful to stabilize the flexible tip laparoscopic handle against the exterior anterior abdominal wall.

The other laparoscopic camera holders are ViKY robotic laparoscopic holder (Endocontrol Medical, La Tronche, France) and Free-hand laparoscopic camera Controller (ProSurgics, Cupertino, CA, USA). In the early part of the learning curve, the main frustration of the surgeon is collision of the instruments. The Covedien Reticulator and SILS Hand Instruments (Covedien) are 5 mm hand instruments that have articulating distal tips. These come in form of graspers, dissectors shears, and hook. These instruments articulate intraperitoneally thereby causing triangulation in LESS procedure. The movements used to manipulate these instruments may be counterintuitive.^[3]

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In addition to the optics and instruments described in the article, other techniques are useful. To avoid collision, only the main operating instrument should be kept in the target zone. The instrument handles should be kept apart extra corporeally by dividing the space above into various heights or planes and keeping handles separately. Also, only one instrument should be moved at a time to avoid collisions.^[3]

Further, the authors describe the various studies in LESS. The studies show good operative outcomes with benefits such as reduced operative stay and morbidity along with better cosmesis and patient satisfaction. More randomized control studies are required to compare LESS with multiport surgeries with regard to short- and long-term outcomes, cost analysis, and surgical skills required.

To conclude, LESS is an evolving form of minimally invasive surgeries with many benefits. The development of LESS requires innovations in instrumentation, surgical skills, and technique. With time it may become a viable

alternative to conventional multiport laparoscopy and even replace it in certain procedures.

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