

THE IMPORTANCE OF VIDEOLAPAROSCOPIC SURGERY: A LITERATURE REVIEW

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Abstract: This article aims to address the evolution of surgery over the centuries, especially the advent of videolaparoscopic surgery, and how these technological advances have brought countless benefits to patients, especially cancer patients.

Keywords: Evolution of surgery, technological advances, minimally invasive surgery, benefits, oncologic surgery.

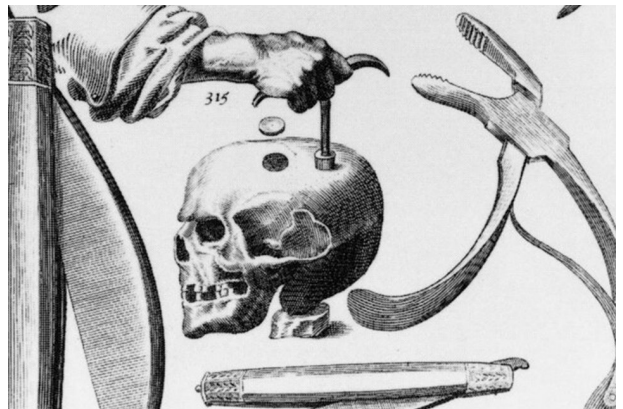
MATERIALS AND METHODS

We performed a literature review on the following platforms PubMed, Up to Date, Scielo, Clinical Key and in Surgery Societies, such as ``Colégio Brasileiro de Cirurgiões`` (CBC), `` Sociedade Brasileira de Cirurgia Minimamente Invasiva e Robótica`` (SOBRACIL) and the `` Colégio Americano de Cirurgiões`` .

INTRODUCTION

Laparoscopic surgery represents one of the greatest advances in contemporary surgery. Currently, this surgical modality is considered minimally invasive, since it is performed through small incisions in the abdomen.¹ The act of undergoing a surgical procedure is a moment of great stress and concern for the patient and his body. To lessen the effects of this situation, this minimally invasive surgical technique, videolaparoscopic surgery, was developed, which has brilliantly replaced conventional surgery.² For many years, several researchers have been studying more effective methods for surgical treatment in oncological surgeries. The term surgery: branch of medicine in which it is proposed to heal by the hands. From the Greek *kheirourgia* (*kheiros* means hands and *ergon*, works) not only doctors who treated diseases with their hands, but also every worker who used them. In past times, surgery was considered a last resort, being applied to patients for whom there were no more remedies to restore their

health. With the advancement of medical knowledge, we see today that the surgeon is required to know not only anatomy, but also bacteriology, biochemistry, immunology, pathophysiology, metabolism and, of course, surgical technique.³ Historians and researchers estimate that the first surgical techniques happened around 6500 B.C. Among the countless techniques reported, we have “trepanation”, a method that was used to cure mental illnesses, the so-called “madness”, in addition to headaches, epileptic seizures, among other illnesses; this technique consisted of submitting the patient to perforation of the skull in order to expose the brain, without anesthesia.



With the advancement of medicine, due to increased investment in research, there was an improvement in surgical techniques during the first and second world wars. Many plastic surgery techniques were improved, both in the field of aesthetic and reconstructive surgery, knowledge that was acquired during attacks and combats in the war fields, where it is worth mentioning the development of grafting techniques, due to the large injuries caused by explosions and shrapnel. of bombs. During the war in Paraguay, the great conflict in Latin America, we also saw great scientific and technical advances, such as the surgical technique of extraction by incision using projectiles and the development of more sophisticated tweezers (the so-called “bullet

extractors”) due to the innovation of firearms at that time. One of the great advents brought to field hospitals (also called “blood hospitals”) was anesthesia. Most of the time, chloroform was used, which had the advantage of being less toxic and less flammable than ether. The surgical procedure came to facilitate and help the patient even as a cure for the disease being treated. Currently, in the 21st century, surgery, especially laparoscopic surgery, and more recently robotics, has been widely used in cancer treatment. In several world literatures, we find reports of the high incidence of mutilation of the affected limbs, whether due to cancer or traumatic injuries that occurred in battles, where there was still no understanding of vascular reconstruction surgery, for example.

And it was in 1985 that the German surgeon Erick Muhe performed, for the first time, a cholecystectomy using the videolaparoscopic technique, a moment that represented a great watershed for the beginning of a new surgical concept, known as non-open surgery (“without cuts”) or minimally invasive.^{3,4} A report was found that two years after the first videolaparoscopic surgery, the French surgeon named Phillippe Mouret (Lyon) performed the first laparoscopic cholecystectomy with the aid of a video camera, a procedure considered for many years to be a symbol of the rise of videolaparoscopy in the world. In his first laparoscopic cholecystectomy, Mühe used a laparoscope designed and built by himself (Galloscope). The equipment had a lateral optic and an instrumentation channel (like a single-port), in addition to a light conductor for the fiber optic cable and a duct for establishing a pneumoperitoneum. Unlike the French who coupled the laparoscopic optics to a micro camera (as gynecologists were already doing), Mühe still used the monocular vision of the old laparoscopy. Mühe accessed the abdominal cavity through a puncture

with a Veress needle in the umbilical scar, where he placed his portal. Eventually, the supra pubic region was used as an alternative for placing the portal for aesthetic reasons. Adapting instruments used for open surgery and endoscopic procedures, in particular, a clipper and long scissors, Mühe developed the technique of clipping the biliary pedicle, which is very important for the implantation and dissemination of laparoscopic cholecystectomy. In 1990, it was published that a “no-cut” surgery was performed at the Albert Einstein hospital in São Paulo, which is described as being the first cholecystectomy by videoparaloscopia in Brazil; team composed of Dr. Thomas Szego, Dr. Gaius Parente, Dr. Sergio Roll, Dr. Eduardo Werebe and Dr. Juan Miguerez (anesthesiologist).

The procedure of a videolaparoscopy surgery, it is about being a less invasive technique where it aims to seek the quickest recovery of the patient and also to reduce the damages during the surgical procedure, such as a colectomy, during a conventional surgery it has to be done an incision a palm below the sternum towards the pelvic part of the patient, depending on where the surgery has to be done, you will have to expose the colon, warmed by compresses, trying to maintain as much as possible your body temperature, and thus also running a very high risk of infection, also generating a very great trauma in the body for post-surgical recovery, on the other hand, its videolaparoscopic approach allows the surgeon to access the retroperitoneum with greater ease and better visualization of the region where the tumor mass is located.

In order to perform the videolaparoscopic surgery, the patient must fast for 8 hours of solid food and liquids (including water intake) before the procedure. Electronic material is also used, such as the monitor that serves to access cavities in the patient’s abdomen. Micro camera and processor used by the

surgeon directing where he will have access and the light source. Optics with a flexible cable are also used, pneumoperitoneum is performed through an insufflator in which carbon dioxide gas (CO₂) is inflated into the abdominal cavity, thus having a greater space between the viscera so that the surgeon can have a better view of it. It is important to emphasize that the technological advance has been so great that we have instruments that help the surgeon to aspirate any type of bleeding or other liquid that may leak into the peritoneal cavity. During the entire surgical procedure, recording can be performed and stored on a DVD.

The technical principles of videolaparoscopic surgery are: -patient positioning

- anesthesia
- positioning of the cabinet with the electronic equipment
- antisepsis and asepsis and placement of surgical drapes
- distribution in the operating field of cables such as hoses and fittings

Continuing with the technical principles, we have general anesthesia with orotracheal intubation

- oximetry
- capnography
- non-invasive monitoring

Right after positioning the patient, as the operation is performed

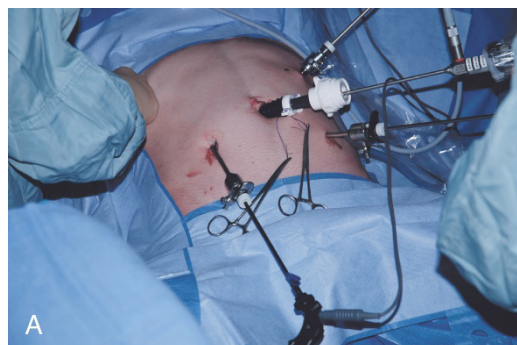
- DDH
- lithotomy (modified)
- side R/L
- Need to fix the patient's table (decubitus)

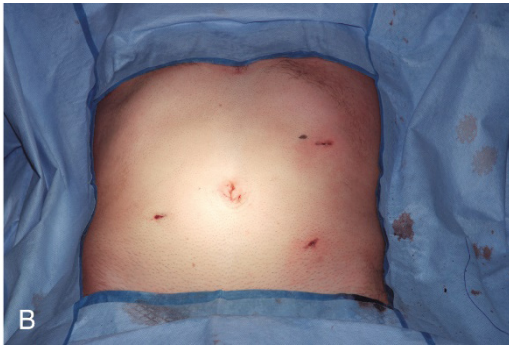
First step: - Pneumoperitoneum

- Puncture of the first trocar
- Veress needle puncture (closed)
- Normal or Hasson Trocars

The abdomen is inflated with carbon dioxide gas with a Verres needle, called pneumoperitoneum, which elevates the

abdominal wall above the internal organs, creating a workspace and better visualization for the surgical team. CO₂ is common to the human body and can be absorbed by tissue and removed by the respiratory system and is non-flammable – which is important as electrosurgical devices are commonly used in laparoscopic procedures. In this procedure, a micro camera and long, delicate tweezers are introduced through portals (trocars) placed in the abdominal cavity through small incisions, depending on the type of surgery to be performed (cholecystectomy, appendectomy, etc.). The image captured inside the abdomen is relayed through a monitor, initiating the surgery with as much care as possible, always looking at the monitor (TV) where the surgical act is being transmitted. Through this better exposure of the surgical field, we will have better access to the site of the surgical condition, where many times in an open surgery we would not have the same access, always making it clear to the patient that even with all the expertise of the surgical team, depending on the clinical picture of the patient at the beginning of the surgery or complication during the surgical procedure, we have to make them aware that there may be the possibility of conversion to conventional surgery.





been, allied with scientific progress. However, this development when in practice is governed by the principles of bioethics, a term created in 1971 by Van Potter that is defined as the study of human behavior in the field of biology and medicine.

CONCLUSION

Therefore, as it is considered a minimally invasive procedure, laparoscopic surgery brings numerous advantages over conventional surgery, such as less postoperative pain, better aesthetic results, with smaller scars, shorter hospital stay, reduced risk of infections, faster return to routine activities and faster patient recovery.

Surgical field for laparoscopic colectomy for adenocarcinoma. (A) Instruments are passed through trocars in the abdominal wall. (B) The small incisions at the completion of the surgery. The largest incision at the umbilicus is used to extract the specimen. 5

Surgery, therefore, will be as it has always

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