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Ph.D. OPEN DEFENCE

University has organized the Open Defence of following Ph.D. Candidate in Pharmacology Department, Board Room, Seth G. S. Medical College & KEM Hospital, Mumbai on 14th January, 2012 at 1.30 p.m... The abstract of the synopsis is appended as attachment for the reference.

Sr. No.	Name of the candidate	Title of the thesis
1	Dr. Hemant S. Bhansali	STUDY OF LAPAROSCOPIC SURGERY

Sd/-

Controller of Examinations

ABSTRACT

The earliest reference to laparoscopy dates to Biblical history, where Ezekiel wrote,

"For the king of Babylon stood at the parting of the way, at the head of the two ways, to use divination: He made his arrows bright, he consulted with images, he looked in the liver (Ezekiel 21:21)." During ancient times, the peritoneal cavity was a central focus, with the umbilicus symbolizing the connection to life and the liver representing the "cradle of the Soul."

It is impossible for any surgeon not to be fascinated by extraordinary changes in surgical procedures for last 20 years, a revolution called Laparoscopic Surgery. This was the culmination of the development of instruments and techniques by many physicians and their application for many diseases. From the steps of Multipicture manual laparoscopic surgery, the flight has now taken for fancier natural port, single port and robotic or computer assisted surgeries.

A review of literature is presented relating to development of key factors in laparoscopic surgery. The basic or core logic for performance will give as a key to more advanced version. The pioneers of laparoscopy believed that the technique was an important adjunct to surgical practice. Nonetheless, inadequate technology limited their vision, both literally and figuratively.

An initial review study is done to understand the basics of instrumentation. Kalk's descriptions of therapeutic laparoscopic interventions earned him the designation as the "Father of Modern Laparoscopy". Despite such advances in laparoscopic imaging and technique, several troublesome problems persisted. The dangers of poor knowledge of instrumentation severely restrict the use of laparoscopy. Few surgeons judged that the advantages of laparoscopy outweighed the inherent risks of the technique.

A study of the creation of space is conducted. The space creation is the most important part of laparoscopic surgery. Various parameters determining the ability to create a space were never considered important. However, they form the distinct criteria between safety and complications of this surgery.

Even though, many new devices are discovered for haemostasis and tissue approximation, have not been able to take the place of simple knotting and suturing. There always have been the unanswered questions of different types of knots for various purposes in the life but only few in for surgery. A proper understanding of their mechanics will reveal the drawbacks or plus points of the knots used in surgery.

For performing laparoscopic surgery, abdomen is insufflated with gas to create a space in which manoeuvring of instruments is done. The higher intra-abdominal pressure created during pneumoperitoneum in laparoscopic surgery is not without any problems or consequences. It is desirable to limit the insufflation pressure and only adequate volume of the gas should be insufflated to have adequate vision. This will increase the safety of doing laparoscopic surgery by many folds. Hence it is proposed to have a Volume measuring and controlling Insufflator than what is available in market as pressure controlling insufflator.

With the progress of laparoscopic surgery, new instruments are devised for control of bleeding and holding bowels. However all these instruments have technical deficiency of proper functionality, poor ergonomics, deficiencies due to inadequate workplace and instrument design and reduce degree of freedom in the abdominal cavity. The coagulator is considered to be a highly dangerous instrument, due to disturbed or insufficient functionality: e.g. electricity leakage, insufficient insulation, incorrect setting, sparking, defects of cables and connectors. In open surgery, for a pedicle, more than one clamp can be easily applied and the resulting stump is easily ligated or sutured by under-running. However, restricted port and poor ergonomics of port sites makes this task almost if not completely impossible in laparoscopic surgery. A new clamp is proposed to perform all the functions for clamping and haemostasis as is done in open surgery.

The laparoscopic revolution is indeed exhilarating for the pioneers, who see their wildest predictions come true. This revolution has become banal for the younger generations, who quickly learn and master an approach that corresponds exactly to the modern concept of treatment, namely maximum efficacy with minimum adverse side effects. With the human computer interface, the total computer assisted surgery is not far. The precise pointing is most important when one is also thinking of single port surgery.

The laparoscopy surgery represents a well-balanced mixture of skill and technological innovations. . Every surgeon will have some skills though no surgeon will have every skill. Therefore every surgeon should have a characteristic score for the type of application or procedure he is interested in and wants to have mastery. Important components of assessment of competency are described elsewhere. The skill score should be universal to apply to all levels of training and all types of procedure. It should also be able to evaluate the maintenance of skill. The GAJAB score is derived to understand the competency levels.

Ergonomics is the “science relating man and his work, embodying the anatomic, physiologic, psychological, and mechanical principles affecting the efficient use of human energy” Laparoscopic surgery may be kinder to the patient, but it is more demanding on the surgeon. Aside from these intrinsic limitations of laparoscopic surgery, there are other important performance-shaping factors In order to minimize the risk of injuries resulting from two handed laparoscopic surgeries, guidelines have to be established to set limits regarding the amount of shoulder elevation or abduction movements of

the arm during the surgery. The bulk of the NIOSH-reviewed studies do not provide sufficient evidence for the link of postural factors with laparoscopic surgeries. A BJ ergonomic score is derived after taking into account all the factors affecting the bad ergonomics to make surgeries less stressful to the surgeons.

Finally various prospective clinical studies were designed to investigate and compare the results. Laparoscopic cholecystectomy has now become not only Gold standard but a completely accepted procedure. The acute condition however, has posed major problems for safety of such surgery. The other diseases don't enjoy the privileges of laparoscopic surgery as has been given to Gall Stone disease. A review of the literature and comparison with our results are analyzed. A method has been evolved to increase and measure the Calot's triangle area for safe dissection.

There has been a little change in the technique of hernia repair since the revolutionary work of Eduardo Bassini over 100 years ago. With laparoscopic TEP repair, the approach has been changed, the principles of repair have been constant. In addition to rapid evolution in applications there are financial implications for this new technology and more for economically compromised country like India. Reduction of length of stay for some conditions and a shift from in patient to outpatient settings lead to significant decrease in patient's recuperation. The purpose of this study is comparing laparoscopic v/s open hernia repair cost analysis and its effect on economy.

Appendectomy may be one of the most frequently performed operations in India, the interest became more with laparoscopic approach. With this, the incidence of wound infection was lower, the postoperative recovery time was minimally shortened, and diagnostic accuracy was somewhat better. Mini-laparoscopy or a miniature laparoscopy is an emerging area of minimally invasive surgery that involves the use of miniature (2-mm diameter) laparoscopic instruments. The concept behind mini-laparoscopy is that smaller instruments cause less abdominal wall trauma and, consequently, minimize pain and the stress response to surgery. The port-less system has made the appendectomy still less painful. Presented here is a method of miniature laparoscopy with port-less forceps system.

Gastro-esophageal reflux disease (GERD) is a common disorder caused by the reflux of gastric contents into the oesophagus. Antireflux surgery for refractory gastroesophageal reflux disease (GERD) has satisfactory outcome in 85–90% of patients. This study aims to compare the results of classical nissen's fundoplication with Toupet 's partial wrap and also summarize the currently available literature on surgical reintervention after primary antireflux surgery.

In the past decade, there has been rapid development in laparoscopic surgery in dealing with various pathologies of the solid organs on both diagnostic and therapeutic aspects. Solid organs include liver, pancreas, spleen and adrenal gland. Kidney and prostate glands are also solid organs but managed by laparoscopic urologist. Newer, safer and better instruments for control of haemorrhage and good haemostatic techniques have made quite a difference. There are variations of technique and different

surgeons use different approaches in dealing with pathology of different sizes and malignant potentials. Several technical aspects have to be considered when laparoscopic solid organ surgery is carried out.