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شبكة المعلومات الجامعية  
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# شبكة المعلومات الجامعية التوثيق الالكتروني والميكرو فيلم



شبكة المعلومات الجامعية

# جامعة عين شمس

التوثيق الالكتروني والميكرو فيلم

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# **Hemodynamic and Hormonal Response to Upper and Lower Abdominal Operative Laparoscopy**

AcP

## **THESIS**

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M.D. Degree in Anesthesiology

By

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**2001**

*To*  
*The Spirit of my*  
*Father and my Mother*  
*And*  
*To my Husband*

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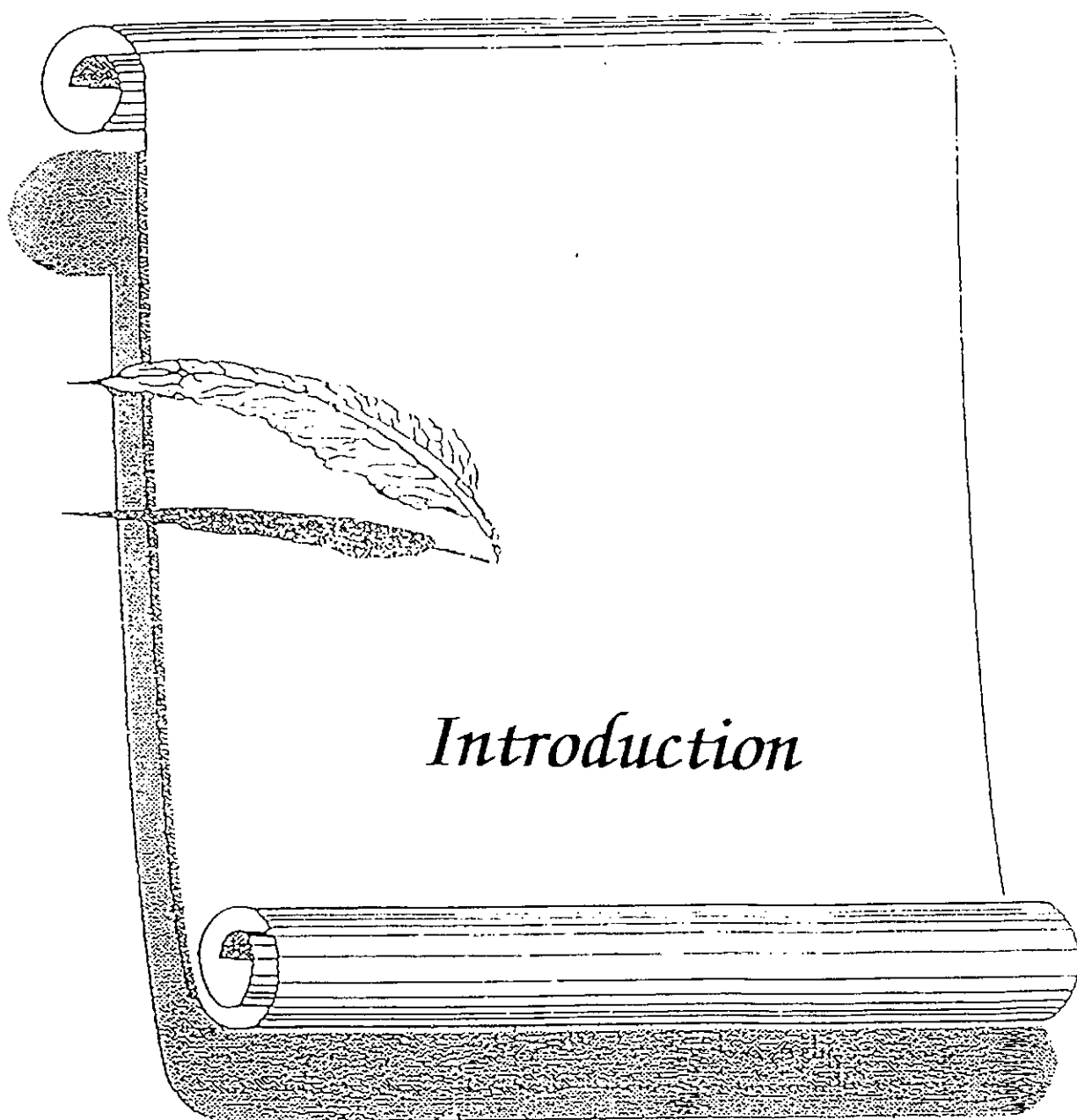
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## *Introduction*

## INTRODUCTION

Laparoscopy is a very common procedure now. It has been used increasingly in the past years for gynecological surgery, cholecystectomy, appendicectomy, herniorrhaphy and peritoneal adhesolysis.<sup>(1)</sup> As advances in instrumentation technology and surgical techniques are expanding the application of laparoscopic approaches to more extensive surgeries.<sup>(2)</sup> It is now used in more complex and difficult surgical procedures *e.g.* hysterectomy, nephrectomy, splenectomy, vagotomy and anti-reflux procedures and bowel resection.<sup>(3)</sup>

Laparoscopy for diagnostic and operative purposes offers specific advantages to the patient, apart from the aesthetic appeal, laparoscopic surgery minimizes tissue trauma required to gain exposure and access to the surgical site, less pain associated with the small limited skin incision, decreased requirements for postoperative analgesia, less postoperative ileus and respiratory dysfunction, decreased postoperative morbidity, the shorter hospital stay, reduced hospital costs, early discharge and more rapid return to normal activities.<sup>(4)</sup>

The advent of laparoscopic cholecystectomy was the catalyst that aroused the interest of general surgeons worldwide in laparoscopy and closed abdominal surgery.<sup>(5)</sup>

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Currently, the most frequently performed laparoscopic abdominal operation is laparoscopic cholecystectomy which has emerged rapidly as a popular alternative to open laparotomy for cholecystectomy in management of cholelithiasis and chronic cholecystitis.<sup>(6)</sup>

Indications for laparoscopic cholecystectomy soon became more liberal after confirming its efficacy in patients with acute cholecystitis and in association with obesity, pregnancy and previous abdominal surgery.<sup>(7)</sup> Also, various pathologic gynecologic conditions such as endometriosis, ovarian cysts, fibroids have been diagnosed and treated by using laparoscopy for more than two decades.<sup>(8)</sup>

Laparoscopic surgery is often assumed both by the surgeons and the patients that it is a minor event. This may be due to many benefits reported after laparoscopy which explain its increasing success and the efforts to introduce the endoscopic approach for the surgical procedures<sup>(9)</sup> and this is reflected in the trend towards advocacy of the laparoscopic approach for a wide variety of major abdominal operations especially in older and sicker patients who may have co-existing cardiac or pulmonary disease or both.<sup>(10)</sup> Laparoscopy is used now as an investigative tool particularly on a day-case basis.<sup>(11)</sup>

Laparoscopic surgery has been termed minimally invasive surgery by advocates of this technology.<sup>(12)</sup>

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**History of Laparoscopy :**

The history reflects the trials of 20<sup>th</sup> century physicians and surgeons attempting to access the hollowed abdominal body cavity and the adaptation evolving technology into clinical medicine.<sup>(13)</sup> Some recommendations by early pioneers for more modifications such as the combination of laparoscopy with endoscopy of the stomach, urinary bladder or rectosigmoid have application today.<sup>(14)</sup>

Although laparoscopy was first described at the beginning of the 20<sup>th</sup> century, therapeutic laparoscopic surgical procedures have only recently become well established being somewhat ignored until the late 1960s.<sup>(15)</sup>

In 1967, Steptoe described a laparoscopic technique for use in simple pelvic procedures (ovarian cystectomies, tubal ligation and uterine leiomyomas excision).<sup>(16)</sup>

The publication by Steptoe of the technique of laparoscopy for use in gynecologic practice was adopted widely by practitioners and was followed by several reviews outlining the anesthetic considerations for these procedures.<sup>(17)</sup>

Acceptance of the laparoscopy into surgery occurred in 1980s by the development of the computer chip television camera which allowed videolaparoscopy of abdominal cavity. The growth of this technology

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and its applications developed logarithmically. Finally, laparoscopy has dramatically altered approach to many abdominal processes.<sup>(18)</sup>

The first laparoscopic cholecystectomy was performed in Lyon by Phillipe and Mouret in 1987,<sup>(19)</sup> was reported first in the literature by Perissat, Collet and Belliard,<sup>(20)</sup> refined, popularized in the United Kingdom by Nathanson, Shimi and Cuschieri<sup>(21)</sup> and refined and popularized in the United States by Reddick and Olsen.<sup>(22)</sup>

In 1990s, Semm reported that pneumoperitoneum was done by air first then oxygen (O<sub>2</sub>) then nitrous oxide (N<sub>2</sub>O) and recently carbon dioxide (CO<sub>2</sub>).<sup>(23)</sup>

## Laparoscopic Surgery :

Laparoscopy is not a minor procedure and is accompanied by hemodynamic and neuroendocrinal changes which resulted from the combined effects of creation of pneumoperitoneum and patient position.<sup>(24)</sup>

## Pneumoperitoneum :

Pneumoperitoneum means instillation of gas into the peritoneal cavity. It is necessary to enhance the surgeon's ability to see inside the cavity.<sup>(25)</sup> Laparoscopy requires the establishment of pneumoperitoneum to provide adequate surgical exposure and maintain operative freedom. It is essential to enable exposure, visualization and manipulation of intra-abdominal contents.<sup>(26)</sup>

The ideal insufflation gas would be colorless, physiologically inert, inexplosive in the presence of electrocautery and laser coagulation and capable of pulmonary excretion.<sup>(27)</sup>

Historically, a number of gases have been used to facilitate laparoscopic surgery. Air, oxygen ( $O_2$ ), nitrous oxide ( $N_2O$ ) and carbon dioxide ( $CO_2$ ) have each been used to distend the abdominal cavity. Although nitrous oxide and room air have been used for diagnostic gynecologic procedures, they are unsuitable (*i.e.* flammable) when electrocautery is required. For these reasons and because of its ready