LAPAROSCOPIC VERSUS OPEN APPENDICECTOMY IN YOUNG FEMALE PATIENTS

An Essay Submitted For Partial Fulfillment of Master Degree in General Surgery

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Abbreviations	*Meaning*
AAA	: Abdominal aortic aneurysm.
APACHE	: Acute physiology and chronic health evaluation.
AV	: Atrioventricular.
BMI	: Body mass index.
CA125	: Cancer antigen 125.
CBC	: Complete blood count.
CBD	: Common bile duct.
CDC	: Centers for disease control and prevention.
COPD	: Chronic obstructive pulmonary disease.
CT	: Computed tomography.
D & C	: Dilatation and curettage.
DVT	: Deep venous thrombosis.
ENOTS	: Embryonic natural orifice transumbilical surgery
ESR	: Erythrocyte sedimentation rate.
GI	: Gastrointestinal.
GIT	: Gastrointestinal tract.
hCG	: Human chorionic gonadotrophin.
Hct	: Haematocrite.
Hgb	: Haemoglobin concentration.
HIV	: Human immunodeficiency virus.
HNPCC	: Hereditary non polyposis colon cancer.
HPV	: Human papilloma virus.
IBD	: Inflammatory bowel disease.
IUD	: Intra uterine device.
LA	: Laparoscopic appendicectomy.
LESS	: Laparo-endoscopic single-site surgery
LLQ	: Left lower quadrant.
MRI	: Magnetic resonance imaging.
NOTUS	: Natural orifice tansumbilical surgery
NSAID	: Non steroidal anti inflammatory drug.
OA	: Open appendicectomy.
OCPs	: Oral contraceptive pils.
OPUS	: One port umbilical surgery
PEEP	: Positive end expiratory pressure.

Abbreviations	*Meaning*
PET	: Position emission tomography.
PET CO_2	: Pressure endtidal carbon dioxide concentration.
PID	: Pelvic inflammatory disease.
RLQ	: Right lower quadrant.
RUQ US	: Right upper quadrant ultrasonography.
SA	: SILS Appendicectomy.
SILS	: Single incision laparoscopic surgery.
SPA	: Single port access
TOAs	: Tubo-ovarian abscess.
US	: Ultrasonography.
UTI	: Urinary tract infection.
VOC	: Vaso- occlusive crises.
WBC	: White blood cell.

Introduction

The introduction of laparoscopic surgery has dramatically changed the field of surgery, with improvement in the equipment and increasing clinical experience it is now possible to perform almost any kind of procedure under laparoscopic visualization ***(Kehagias et al., 2008)***.

Although more than a century has elapsed since Mc Burney first performed open appendectomy, this procedure remains the treatment of choice for acute appendicitis for most surgeons ***(Kehagias et al., 2008).***

Semm (1983) performed the first laparoscopic appendectomy, ever since then, the efficiency and superiority of laparoscopic approach compared to the open technique has been the subject of much debate ***(Semm, 1983; Kurtz and Heimann, 2001)***.

The idea of minimal surgical trauma, resulting in significantly shorter hospital stay, less postoperative pain, faster return to daily activities and better cosmetic outcome has made laparoscopic surgery for acute appendicitis very attractive ***(Kehagias et al., 2008)***

However, several retrospective studies, several randomized trails and meta analysis comparing laparoscopic with open appendectomy have provided conflicting results ***(Ortega et al., 1995; Kurtz and Heimann, 2001; Guller et al., 2004)***.

Some of these studies have demonstrated better clinical outcomes with laparoscopic approach ***(Ignacio et al., 2004)***.

The most valuable aspect of laparoscopy in management of suspected appendicitis is as diagnostic tool, particularly in women of child-bearing age, patients who undergo laparoscopic appendectomy are likely to have less post operative pain and to be discharged from hospital

and return to activities of daily living sooner than those who have undergone open appendectomy, while the incidence of post operative wound infection is lower after the laparoscopic technique, the incidence of post operative intra abdominal sepsis may be higher in patients operated on gangrenous or perforated appendicitis, there may be an advantage for laparoscopic over open appendectomy in obese patients ***(O'Connell, 2008)***.

Laparoscopic inspection of the abdominal cavity enables the surgeon to diagnose acute appendicitis accurately. Moreover, it has been showed that leaving an appendix that appears normal during laparoscopic inspection is safe, criteria for the diagnosis of appendicitis during laparoscopic inspection are the presence of unequivocal inflammatory changes, such as pus, fibrin or vascular injection of the serosa, rigidity and lack of mobility at manipulation are less certain signs of inflammation ***(Cuesta et al., 2008)***.

Removing a normal appendix at open surgery is associated with a 7-13%risk of early complications and 4% of late complication such as incisional hernia and chronic pain in the first year after operation. If a normal appendix is left in situ during diagnostic laparoscopy, the number of unnecessary appendicectomies will decrease, particularly in fertile women (17-45%). The diagnostic yield of laparoscopy in patients with suspected appendicitis is high, but laparoscopy may be considered too invasive to justify its use only for diagnostic purposes. This reason seems particularly true in the era of helical CT ***(Cuesta et al., 2008).***

Aim of the Work

The aim of this work is to review the advantages and disadvantages of laparoscopic surgery in the management of acute appendicitis in young female patients compared to management by open appendicectomy.

Dedication

First and foremost all thanks and gratitude to **ALLAH,** the most gracious and the most merciful for everything.

I am extremely grateful to Prof. **Sayed Mohamed Rashad El-Sheikh.** *Professor of General Surgery, Faculty of Medicine, Ain Shams University* for devoting much of his precious time and valuable advice for enriching and evaluation this work. I appreciate his close enthusiastic co-operation as well as his generous effort, kind guidance saving no effort or time to help me and read every ward in this work.

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The Caecum and Vermiform Appendix

The caecum is a large blind pouch of large intestine lying in the right iliac fossa below the ileocaecal valve and continuing distally as the ascending colon. The blind-ending vermiform appendix usually arises on its medial side at the level of the ileal opening. The average axial length of the caecum is 6cm and its breadth 7.5cm. The caecum rests posteriorly on the right iliacus and psoas major, with the lateral cutaneous nerve of the thigh interposed. Posteriorly lies the retrocaecal recess which frequently contains the vermiform appendix. The anterior abdominal wall is immediately anterior to the caecum except when it is empty, when the greater omentum and some loops of the small intestine may be interposed ***(Borley, 2008)***.

Usually the caecum is entirely covered by peritoneum, but occasionally this is incomplete posterosuperiorly where it lies attached to the iliac fascia by loose connective tissue. In early fetal life the caecum is usually short, conical and broad at the base, with an apex turned superomedially towards the ileocaecal junction. As the fetus grows, the caecum increases in length more than in breadth, to form a longer tube with a narrower base but retaining the same inclination. Distal growth later ceases, but the proximal part continues to grow in breadth, so that at birth a narrow vermiform appendix extends from the apex of a conical caecum. This infantile form persists throughout life in only a very small percentage of individuals. Occasionally the conical caecum takes on a quadrate shape as a result of the outgrowth of a saccule on each side of

the anterior taenia: the saccules are of equal size and the appendix arises from the depression between them instead of from the apex of a cone. In the normal adult form, the right saccule grows more rapidly than the left, forming a new 'apex'. The original apex, with the appendix attached, is pushed towards the ileocaecal junction ***(Borley, 2008)***.

The caecum commences the process of fluid and electrolyte reabsorption, which occurs to a large extent in the ascending and transverse colon. The distensible nature and 'sac-like' morphology of the caecum are adaptations for the storage of larger volumes of semi-liquid chyme entering from the small bowel via the ileocaecal valve ***(Borley, 2008)***.

Embryogenesis of the vermiform appendix

Normal Development

The appendix is the terminal portion of the embryonic caecum. The appendix becomes distinguishable by its failure to enlarge as fast as the proximal caecum. This difference in growth rate continues into postnatal life. At birth, the diameter of the colon is 4.5 times that of the appendix; at maturity, it is 8.5 times larger ***(Skandalakis et al., 2006)***.

The appendix is visible at about the eighth week of gestation. At first, it projects from the apex of the caecum. As the caecum grows, the origin of the appendix shifts medially toward the ileocaecal valve (Fig.1C). The taeniae of the longitudinal muscle coat of the colon originate from the base of the appendix, showing the same displacement.