CHAPTER I

INTRODUCTION

1.1 Background and Rationale

Carl Langenbuch performed the first successful cholecystectomy in 1882. The morbidity and mortality for cholecystectomy have decrease because of the improvement in operative technique, anesthesia, pre and postoperative care. Despite the excellent results reported [1], the procedure is still quite invasive and cause suffering to the patient from postoperative pain.

Laparoscopic surgery was used firstly in gynecologic surgery [2]. Semm K also reported the first case of laparoscopic appendectomy in 1983 [3]. In 1986, Muhe E. [4] and Mouret P. [5] performed the first laparoscopic cholecystectomy. This procedure is popularized by many investigators such as Dubois F. [6] , Reddick EJ.and Olsen DO[7]. With growing experience laparoscopic cholecystectomy was performed in the majority of cases and the results and complication rates were acceptable [8,9]. Sangsubhan C. [10] reported results of the first 500 cases of laparoscopic cholecystectomy at Chulalongkorn Hospital in 1995 with the overall success rate of 94 per cent and complication rate of 6.2 per cent.

At the present time, laparoscopic cholecystectomy has been accepted as a standard treatment of symptomatic gallstones. It has advantages over open cholecystectomy in terms of less operative pain, shorter hospital stays earlier returning to work and better cosmetic result [27-29]. Tension pneumoperitoneum with carbon dioxide, (TPC) at intraabdominal pressure of 12-15 mm. Hg., is created during routine laparoscopic cholecystectomy to provide "operative space" for surgeon to operate. TPC may cause hypercarbia and decreases venous return to the heart and produces cardiac arrhythmia and decreases cardiac output [11-13]. Minimal gas embolism occurs commonly during standard laparoscopic cholecystectomy but these gas emboli cause minimal cardio-respiratory instability [14] , however, fatal gas embolism has been reported [15,16].

Theoretically TPC may compromise cardiac function due to increased intra abdominal pressure and hypercarbia These disadvantages will be reduced or eliminated by abdominal wall lifting technique (AWL). Many investigators have shown that laparoscopic cholecystectomy using AWL technique is feasible and effective [17-21]. Another potential benefit is that laparoscopic surgery with AWL technique needs no airtight system and requires less expensive instruments. However, AWL technique gives smaller operative space for surgeon to operate because diaphragm is not elevated upward and may lead to failure of the operation [22].

1.2 Overview of the study

The real clinical benefits of abdominal wall lifting technique are still controversial and needs a randomized controlled trial to evaluate. This randomized controlled trial was designed to answer the research questions about the clinical outcomes: success rate, complication rate, postoperative pain, shoulder pain and cost-effectiveness, of the two techniques. The patients with gallstones who passed the eligibility criteria were allocated randomly to controlled group (tension pneumoperitoneum with CO_2 , TPC) and experimental group (abdominal wall lifting, AWL). The patients were operated on by one of the two surgeons, T.T. or S.M.*. The surgeon made his best effort to finish the assigned operation without limit of time, size or number of ports or instruments. If an operation was not progressing or if the surgeon considered that further attempt might be harmful to the patient, he converted to another operation or open cholecystectomy. Like many other clinical studies, biases may occur in many steps. Randomization, blindness and independent evaluator were used in the study to reduce biases. Fortunately, success of the operation, complication, arrhythmia, operative time and hospital stay are hard clinical outcomes and should be measured with high validity and reliability.

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