



ROLE OF PALMER'S POINT IN LAPAROSCOPIC CHOLECYSTECTOMY IN PREVIOUS ABDOMINAL SURGERIES – A PROSPECTIVE STUDY IN SRINAGAR HOSPITAL, J&K, INDIA

Dr Abdul Hamid Samoon	Assistant Professor, Department of Surgery, Govt. Medical College Srinagar, Jammu & Kashmir, India.
Dr Razia Banoo	Resident, Department of Surgery, Govt. Medical College Srinagar, Jammu & Kashmir, India.
Dr Ajaz Ahmad Shah	Resident, Department of Surgery, Govt. Medical College Srinagar, Jammu & Kashmir, India.
Dr Irshad Ahmad Kumar*	Resident, Department of Surgery, Govt. Medical College Srinagar, Jammu & Kashmir, India. *Corresponding Author
Prof. (Dr) Naseer Ahmad Awan	Professor, Department of Surgery, Govt. Medical College Srinagar, Jammu & Kashmir, India.

ABSTRACT **BACKGROUND:** Creation of pneumoperitoneum is the first and most critical step of a laparoscopic procedure. In patients with the past history of abdominal surgery, a different point other than umbilical point is sought. Palmers point access is effective and safe when splenomegaly and gastric distension are not present, especially in obese patients.

METHODS: The prospective study was conducted on 32 patients in the Post Graduate Department of Surgery, Government Medical College, Srinagar after obtaining the ethical clearance from the Institutional Ethical Committee, for the period of 2 years (September 2017 - August 2019).

RESULTS: During the period of this study, data of 32 patients was prospectively evaluated who met the inclusion criterion and on whom Palmer's technique was used for creation of pneumoperitoneum. The mean age of study was 46 ± 4.312 years with male and female ratio of 1:3. In all patients the pneumoperitoneum was created with Veress technique at palmer's point, and it was successful in all of the patients. Mean Veress puncture number was 1.03, (range 1-2). In 96.8 % patients, pneumoperitoneum was created in the first attempt. Mean time to establish pneumoperitoneum was 5.2 minutes, (range is 3.5 – 7 minutes). On entering the peritoneal cavity, intra peritoneal adhesions at peri-umbilical regions were present in 12 patients (37.5%). There were no major entrance injuries encountered. There were no early (within 48 hours of surgery) or late (after 48 hours of surgery) trocar related injuries encountered.

CONCLUSIONS: Our study confirmed the safety of primary left upper quadrant (Palmer's point) access for laparoscopic cholecystectomy in patients with previous history of abdominal operations and recommend the same.

KEYWORDS : Palmer's Point, Laparoscopic, Pneumoperitoneum, Adhesions

INTRODUCTION:-

Laparoscopy is the art of examining the abdominal cavity and its contents. The first laparoscopic cholecystectomy was performed on a patient in 1987 by the French physician, Philippe Mouret.¹ Creation of pneumoperitoneum is the first and most critical step of a laparoscopic procedure because the access is associated with injuries to gastrointestinal tract and major blood vessels and at least 50% of these major complications occur prior to commencement of the intended surgery. This complication rate has remained the same during the past 25 years.² A history of previous abdominal operations significantly increases the risk for omental or bowel adhesions to the abdominal wall. In the case of scars or a history of previous operations, an alternative entry site or entry method has to be considered. One such site "Palmer's point" which is in the left upper quadrant 3cm below the sub-costal border in the mid clavicular line, also known as silent quadrant of the abdomen. Palmer, a gynecologist, described the left upper quadrant access as a safe alternative site for closed Veress entry, especially for patients with previous abdominal operations and intra peritoneal adhesion, to minimize entrance injuries.^{3,4,5} Palmer's point access is effective and safe when splenomegaly and gastric distension are not present, especially in obese patients. The Palmer's point should be considered in patients who have suspected periumbilical adhesions and in obese patients. Left subcostal closed Veress needle approach is a safe method for creating pneumoperitoneum. A Supporting document of left hypochochondrium puncture is that peritoneal adhesions (a risk factor for iatrogenic adhesions) seldom occur in this part of the abdominal wall, because respiratory movement of diaphragm constantly keeps the left hypochochondrium structures in motion, thus making adhesions difficult to happen in this abdominal wall site.⁵ Sites other than Palmer's point for insertion of Primary trocar for creation of pneumoperitoneum are:- Transuterine and Trans cul-de-sac in Females (avoided due to risk of infections)⁶; 9th or 10th intercostal space associated with significant risk to solid organ injuries⁷; Jain point is located in the left paraumbilical region at the level of umbilicus, in a straight line drawn vertically upward from a point 2.5 cm medial to anterior superior iliac spine (ASIS).⁸ In this study our aim was to assess

the safety of PALMER'S POINT as the primary port site in avoiding gut and vascular injuries in patients with previous abdominal surgeries.

METHODOLOGY:-

The prospective study was conducted in the Post Graduate Department of Surgery, Government Medical College, Srinagar after obtaining the ethical clearance from the Institutional Ethical Committee, for the period of 2 years (September 2017 - August 2019). Patients for laparoscopic cholecystectomy having previous abdominal surgeries were included. Patients with hepatosplenomegaly, previous splenectomy, pancreatic surgery, gastric surgery and gastric outlet obstruction were excluded. Patients were given a low residual diet for 48 hours prior to surgery. Patients were kept nil per oral for minimum six hours, Ryle's tube inserted for stomach decompression. Then the upper abdomen is palpated for hepatosplenomegaly. An incision is made of about 0.5 cm at about two finger breadth below left subcostal margin i.e. 3cm below left subcostal margin in mid clavicular line; lateral to superior epigastric artery. By using the Veress needle and at the inserting angle of close to 45° (or close to 90° in obese patients), the Veress needle is inserted into the peritoneal cavity. Confirmation of Veress needle in proper place i.e. inside the peritoneal cavity was done by well-established tests. Before insufflation with CO₂ gas begins, the initial pressure must be below 9 mmHg to confirm the correctly placed needle. The Veress needle is connected to the insufflator and the pressure is measured continuously as the needle traverses the various layers of the abdominal wall. A pressure below 9 mmHg confirms the correct needle placement. Any movement of the needle after placement must be avoided as this may convert a small needlepoint injury into a complex and threatening tear. After ensuring that the Veress needle has been positioned correctly, the insufflation of CO₂ gas is started. After an insufflation volume of approximately 300 mL, the percussion of the liver region confirms the loss of liver dullness. This sign indicates the intra-abdominal insufflation and the distribution of the gas in the whole abdominal cavity. After having created the pneumoperitoneum in the usual manner, the abdominal pressure

should be built up to 18–25 mmHg before inserting the primary trocar as this maximizes the distension of the abdominal wall from all underlying structures. Once the layers of the abdominal wall are compressed, trocar incision becomes easy and the risk of injury minimal as the inflated distance between the abdominal wall and intra-abdominal structures further reduces the risk of damage. The distension pressure should be reduced to 12–15 mmHg for ventilation reasons once the trocar placement has been verified. During gas insufflation, symmetric distension of the lower abdomen and the disappearance of liver dullness can be observed. The time between Veress needle insertion and achieving the intra-abdominal pressure of 20 mm of Hg was defined as pneumoperitonium time. The recorded data was compiled and entered in a spreadsheet (Microsoft Excel). Continuous variables were summarized as Mean and categorical variables were expressed as number and percentages.

RESULTS

During the period of this study, data of 32 patients was prospectively evaluated who met the inclusion criterion i.e. patients for laparoscopic cholecystectomy with previous abdominal surgeries, and on whom Palmer's technique was used for creation of pneumoperitonium.

Table 1 Age Distribution

Age Group (Years)	No of Patients	Percentage
≤ 25	1	3.125%
26 – 35	5	15.625%
36 – 45	16	50%
46 - 55	8	25%
≥55	2	6.25%
Total	32	100%

Among 32 patients, 8 were males and 24 were females; with male and female ratio of 1:3. The Mean age of the study was 46±4.312 years (range 20–72 years).

All the patients had history of previous abdominal surgery (including open appendectomy, previous caesarian section, umbilical hernia repair, enterotomy for worm obstruction and laparoscopic ovarian cyst de-roofing). In all patients the pneumoperitonium was created with Veress technique at palmer's point, and it was successful in all of the patients. Mean Veress puncture number was 1.03, (range 1-2). In 96.8% patients, pneumoperitonium was created in the first attempt, while in one of the patients the attempt was made twice because of Veress needle tip got blockage due to fat.

Mean time to establish pneumoperitonium was 5.2 minutes, (range is 3.5–7 minutes). The 3mm incision was made of palmer's point. Veress needle insertion did not cause gas leakage / bleeding in any patient.

On accessing the peritoneal cavity, intra peritoneal adhesions at peri-umbilical regions were present in 12 patients (37.5%), which included 6 patients with history of appendectomy (4 females, 2 males), 4 patients of previous C-section, single patient with history of umbilical hernia repair, and another patient with history of ileal perforation. Among these 12 patients, one patient (patient previously operated for ileal perforation) had adhesion of small gut loop at the umbilical site.

Table 2 Intra Peritoneal Adhesions Present At Umbilical Region (n=32)

	No. of patients	Percentage
Patients present with history of Surgery	12	37.5%
Appendectomy	6	50%
C-section	4	33.33%
Umbilical hernia repair	1	8.33%
Ileal perforation	1	8.33%
No history of Surgery	20	62.5%
Total	32	100%

There were no major entrance injuries encountered. In all patients pneumoperitonium was successfully created. There were no early (within 48 hours of surgery) or late (after 48 hours of surgery) trocar related injuries encountered.

Table 3 Complication Related To Palmer's Point Access Technique

Intra operative / immediate	Nil
Early complications (within 48 hours of surgery)	Nil
Late complications (after 48 hours of surgery upto in hospital stay)	Nil

DISCUSSION:-

Laparoscopic techniques/minimally invasive technique has reduced large scars to almost invisible prick marks, with time and experience, the focus now is to minimize the complications and gain hold on the weak or difficult aspect of this technique (Laparoscopy). One such critical or difficult point, independent of operating experience, is the initial access to the peritoneal cavity and safe creation of a pneumoperitonium. However, serious complications like visceral and vascular injuries may occur during this step.⁹ About 50% of all laparoscopic complications occur during laparoscopic entry and can be related to the entry technique.^{9,12}

The standard/traditional site of initial access for closed Veress entry is the periumbilical area. Previous laparotomy, history of generalized peritonitis, inflammatory bowel disease, obesity, pregnancy (i.e. >16 weeks gestation) or presence of large intra-abdominal mass are the risk factors for entrance injuries.^{9,11} For patients with higher than average risk for entrance injuries, including patients with previous abdominal surgeries, open entry or an alternative site for closed entry has to be preferred. Open entry is again associated with the entrance related injuries as it has been mentioned that 50% of patients with midline incision and 20% with low transverse incision have some degree of periumbilical bowel adhesions.¹³

The left upper quadrant access i.e. Palmer's technique for closed Veress entry, therefore can be a safe alternative for accessing the peritoneal cavity and creation of pneumoperitonium, especially for patients with prior abdominal operations and intraperitoneal adhesions to minimize entrance related injuries.⁹

As with our study results, the published data too reciprocate the safety of palmer's technique for creation of pneumoperitonium. There was no complication during the access of abdomen through this technique. In 96.8% of patients access was obtained through single attempt and mean pneumoperitonium establishing time was 5.2 minutes.

Rohatgi A and Colleagues⁵ reported the left sub costal approach was successful in 342 of 344 attempts (99%). In 2 patients the method failed because the Veress needle could not be placed in the peritoneal cavity and an open insertion method was used. There were no major complications and a hematoma in the greater omentum in one patient was the only complication, which was self-limiting hematoma and did not require treatment. In all patients, a pneumoperitonium was successfully created.

Similarly, **Ilter Tufekand Colleagues⁹** did not encounter any major entrance injury in 38 patients with prior abdominal operations using palmer's point for creation of pneumoperitonium for laparoscopic radical prostatectomy.

Kumar SK et al¹⁴ in their manuscript "Entry complications in Laparoscopic Surgery" also recommended the open (Hasson) technique and palmer's technique for pneumoperitonium in the obese patient and those with suspected Peri-umbilical adhesion.

Zhang L, Fang D et al.¹⁵ in their study they describe the use of Palmer's point for establishing pneumoperitonium has several advantages. First, because the peritoneum is fixed and braced anteriorly by the arch rib, inserting the Veress needle requires less effort; thus, abdominal traction (e.g., using two towel clips) is unnecessary. Second, there is less subcutaneous fat at Palmer's point, even in obese patients. Thus, inserting the needle is easy and is unaffected by the shape of the patient. Third, with the aid of gravity, the viscera fall away from Palmer's point. There are no major vessels at this site. Inserting the Veress needle in this area is theoretically safe. Although the length of the Veress needle is usually 12 cm, the risk of aortic injury approaches zero. Third, adhesion is rare in these areas, even in patients with prior surgeries. Based on our experience, transperitoneal subcostal access is feasible, effective, and safe in urologic laparoscopic surgeries.

CONCLUSION:-

Although the most commonly used entry technique is classical closed technique via a Veress needle at the umbilical site, in patients with history of previous abdominal operations who are at a higher than average risk for entry complication due to increased incidence for intraperitoneal adhesions, an alternative entry site or entry method has to be considered. We confirmed the safety of primary left upper

quadrant (Palmer's point) access for laparoscopic cholecystectomy in patients with previous history of abdominal operations and recommend the same.

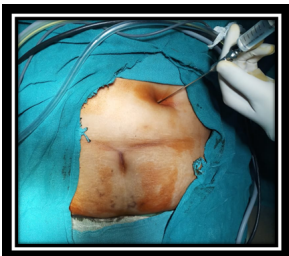


Figure A:- Showing Palmer's point

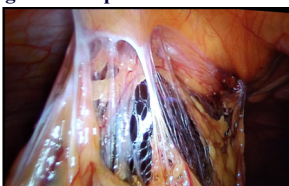


Figure B:- Showing adhesions at the previous scar site

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