COMPARING FEASIBILITY AND SAFETY IN CREATION OF PNEUMOPERITONEUM BY VERESS NEEDLE PLACED AT SUPRAUMBILICAL, PALMER'S AND JAIN'S POINT IN LAPAROSCOPIC SURGERIES AT A TERTIARY CARE CENTRE- A RANDOMISED CONTROL TRIAL

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DISSERTATION

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Sub: Institutional Ethical Clearance for the study.

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ABBREVIATIONS

Abbreviation	Full Form
RCT	Randomized Controlled Trial
BMI	Body Mass Index
CO2,	Carbon Dioxide
VAS	Visual Analog Scale
IEC	Institutional Ethics Committee
SNOSE	Sequentially Numbered Opaque Sealed Envelope
SD	Standard Deviation
IAP	Intra-Abdominal Pressure
MIS	Minimally Invasive Surgery
JNMC	Jawaharlal Nehru Medical College
KAHER	KLE Academy of Higher Education and Research
LUQ	Left Upper Quadrant
DTI	Direct Trocar Insertion
COPD	Chronic Obstructive Pulmonary Disease
FDA	Food and Drug Administration
H&P	History and Physical
OR	Operating Room

ABSTRACT

Background: Laparoscopic surgery has become a cornerstone of modern surgical practice due to its minimally invasive approach, offering quicker recovery, reduced pain, and fewer complications. A critical aspect of these procedures is the safe and efficient creation of pneumoperitoneum, commonly performed using the Veress needle. This study evaluates the feasibility and safety of Veress needle insertion at three anatomical sites: the supraumbilical, Palmer's, and Jain's points.

Methodology: A randomized controlled trial was conducted at a tertiary care center including 204 patients undergoing laparoscopic surgeries. Participants were randomly assigned into three groups (n=68 per group) based on the insertion site of the Veress needle. Parameters such as time taken for pneumoperitoneum creation, number of attempts, reinsertion rates, intraoperative complications, postoperative pain, infection rates, and hospital stay were analyzed.

Results: Palmer's point demonstrated the shortest time to pneumoperitoneum creation (84 ± 8 sec), the highest single-attempt success rate (97.1%), and the lowest complication rates. Jain's point had the highest reinsertion and complication rates, while the supraumbilical site showed moderate results. Postoperative outcomes were best at Palmer's point, with the least pain scores and shortest hospital stays.

Conclusions: In conclusion, Palmer's point proves to be the safest and most efficient site for Veress needle insertion in laparoscopic surgeries, minimizing both intraoperative and postoperative complications. It is especially favorable in patients with prior abdominal surgeries or high-risk anatomical conditions.

Keywords: Jain's Point. Laparoscopic Surgery, Pneumoperitoneum, Palmer's Point, Veress Needle, Supraumbilical Point,

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Introduction

Laparoscopic surgery has transformed contemporary surgical practice by embracing a less invasive approach, resulting in reduced postoperative discomfort, expedited hospital departure, and accelerated recovery [1]. Consequently, it has emerged as the preferred method for several abdominal surgeries, with superior outcomes and a more rapid return to everyday activities compared to open surgery. A key step in laparoscopic surgery is the establishment of pneumoperitoneum, which is essential for providing sufficient working space within the abdominal cavity [2]. The efficacy of laparoscopic procedures relies on the safe and quick establishment of pneumoperitoneum; hence, enhancing entrance methods is a crucial area of research [3].

Laparoscopy has experienced a significant increase in the incidence of operations during the past few decades due to the developments in surgical technology and skill improvement and the demand for minimally invasive techniques [4]. Laparoscopic cholecystectomy, for instance which has newly established "the gold standard" in gallbladder removal, as millions are performed every year in countries across the globe. It is estimated that more than 15 million laparoscopic surgeries are performed worldwide annually; laparoscopic cholecystectomy alone constitutes about 90% of all gallbladder removal surgeries. Laparoscopic techniques have been widely accepted in gynecological, colorectal, urological, and bariatric operations, with treatments like laparoscopic hysterectomy and colectomy experiencing an annual growth rate of 8–10%. The increasing use of these treatments underscores the necessity to refine surgical entrance strategies to guarantee patient safety and enhance clinical results [5].

Access-related complications remain serious concerns that may contribute to morbidity and, in rare cases, mortality [6]. It has been noted that the initial entry phase of laparoscopic procedures accounts for nearly 50% of all laparoscopic complications, with Veress needle-related injuries such as bowel perforation and vascular damage calculated to occur in approximately 0.1–1.3% of cases. While these percentages may seem low, given the large volume of procedures performed, this translates to thousands of patients worldwide experiencing access-related complications annually [7]. Looking at the healthcare costs arising from complications such as extended hospital days, further surgical interventions, and increased morbidity, this runs into millions of dollars of additional expenditure on healthcare. Therefore, given the significantly increasing worldwide volume of laparoscopic surgeries, even a small reduction in complications would greatly impact not only the health systems but also on patient wellbeing. Therefore, optimizing entry techniques is imperative to reducing morbidity and improving patient safety and the general efficiency of laparoscopic procedures [8].

The Veress needle was presumably the simplest and most successful technique for establishing pneumoperitoneum, making it one of the most commonly employed procedures [9]. The procedure involves percutaneous insertion followed by the controlled insufflation of carbon dioxide into the abdominal cavity. The selection of the first entrance point continues to be a contentious issue among surgeons, taking into account criteria such as practicality, accessibility, and safety at the incision site. Patient variables, damage types such as vascular or visceral, the level of surgical competence, and the precise procedural needs all influence the likelihood of complications [10].

Traditional, the umbilicus region has been the preferred site for Veress needle insertion due to its central location and relatively vascular nature [11]. It Provide a consistent landmark for access and has been widely adopted in Laparoscopic Practice. However, certain patient characteristics, such as prior abdominal surgery, obesity, abnormal anatomy, or intra –abdominal adhesions, increase the risk of complication like bowel or vascular injuries. Therefore, it may be prudent to consider alternative entry points to enhance safety and reduce complications. Palmer’s point and Jain’s Point have emerged as prevalent accidental access sites for Veress needle insertion [12].

Palmer’s point located in the left upper quadrant of the abdomen has been widely advocated for patients with a history of multiple abdominal surgeries or those at high risk for adhesions. This site, suited approximately 3 cm below the left costal margin in the midclavicular line, provides an alternative approach that reduces the likelihood of adhesion bowel injury [13]. The use of Palmer’s point is especially beneficial in cases where umbilical entry is Contraindicated, such as in patients with extensive intra-abdominal adhesions from prior surgeries. However, despite its advantages, Palmer’s point insertion requires caution, particularly in patients with splenomegaly or hepatomegaly, where inadvertent organ injury can occur. Proper preoperative imaging and assessment are crucial to identifying contraindications for its use [14].

Jain's point, the point outside umbilicus for laparoscopic access, is a relatively newer concept in laparoscopic entry techniques. Positioned slightly lateral to the umbilicus, this point aims to provide a safer and more consistent approach by potentially reducing the risk of visceral or vascular injury through this technique [15]. The hypothesis of this point of entry stands for anatomical consideration, ensuring the balance between ease of insertion and distance from an area of high risk. Its location is therefore determined to maximize depth of safety, with adequate access that makes it a possible alternative to Veress needle placement. While emerging evidence supports its utility, further comparative studies are required to substantiate its superiority compared to conventional methods, as well as to apply it in a wider population of patients[16].

The selection of entrance site for pneumoperitoneum is an ongoing research focus, since enhancing safety and efficiency in laparoscopic surgery remains a goal. Techniques to compensate for complications after Veress needle insertion such as intestinal perforation, vascular damage, extraperitoneal insufflation, or unsuccessfully attaining pneumoperitoneum need comprehensive assessment of alternatives [17]. Inadequate insufflation may necessitate conversion to open surgery or alternate access methods, including direct trocar entry or optical trocar insertion, each of which poses a distinct risk and challenge. With the increasing use of laparoscopic techniques emerging into many other surgical fields, improvement in these access techniques is crucial in attempts to yield better patient results [18].

The advancement of laparoscopic surgery necessitates the development of sophisticated, evidence-based methods for creating pneumoperitoneum [19]. This study seeks to evaluate the efficacy of various Veress needle insertion locations in light of the increasing global prevalence of laparoscopic operations and the corresponding risk of access-associated problems. This research will identify best practices for Veress needle insertion by addressing the limits of current approaches and researching alternative entry sites, therefore enhancing patient safety and surgical results in minimally invasive procedures.

Review of Literature

Creating pneumoperitoneum is a fundamental step in laparoscopic surgeries, ensuring adequate working space for surgical instruments and visualization of intra-abdominal structures [20]. The Veress needle technique is one of the most commonly used methods for insufflations due to its simplicity and minimal invasiveness. Traditionally, the umbilicus has been the preferred entry site owing to its central location, thin abdominal wall, and ease of access. However, complications such as bowel injury, vascular trauma, and failed entry have led surgeons to explore alternative insertion points to enhance safety and procedural success. Among these, Supraumbilical, Palmer's, and Jain's Points have gained attention as viable options, particularly in patients with prior abdominal surgeries, adhesions, or obesity [21].

Each of these alternative entry sites presents unique anatomical and clinical advantages. Palmer's Point, located in the left upper quadrant, has been recommended for patients with suspected per umbilical adhesions and offers a reduced risk of vascular injury [22]. Jain's Point, a relatively newer approach, is positioned in the right iliac fossa and has been suggested to provide a safer and more accessible route in certain patient groups. Supraumbilical entry, placed just above the umbilicus, is another modification that minimizes complications associated with the traditional periumbilical approach [23]. This chapter aims to analyze and compare the safety, feasibility, complication rates, and clinical effectiveness of these three insertion techniques, drawing insights from existing literature to guide best practices in laparoscopic entry.

2.1.Introduction

2.4.1.Overview of Pneumoperitoneum in Laparoscopic Surgery

The first laparoscopic cholecystectomy was done in 1987 by Philippe Mouret. Since then, laparoscopic surgery (LS) has been considered the gold standard in the treatment of many abdominal disorders such as gynecological problems, cholecystitis, and appendicitis [24]. Laparoscopic surgery (LS) offers several advantages, including faster recovery, shorter hospital stays, reduced postoperative pain and discomfort, minimal scarring, and quicker return to daily activities and work [25]. Over the years, LS has undergone significant advancements, enabling its application in cases that were previously considered contraindications, such as cancer, obesity, abdominal hernias, pregnancy, prior laparotomies, previous abdominal surgeries, and bowel perforation with generalized peritonitis [26].A randomized controlled trial by Li et al., (2025) compared open and closed pneumoperitoneum techniques, emphasizing that the open method (Hasson) provided a safer alternative to the closed Veress needle technique, reducing access-related complications while ensuring efficient intra-abdominal visualization [27].

The field of minimally invasive surgery (MIS) continues to evolve with scientific advancements, introducing new techniques to enhance surgical precision and patient outcomes. However, despite its benefits, laparoscopic surgery presents several technical challenges for surgeons. Compared to open procedures, LS restricts movement due to the ergonomic limitations of long, rigid instruments, reliance on foot pedals, fixed surgical ports, and screen placement [28]. A study by Seif et al., (2025) compared open and closed pneumoperitoneum methods in laparoscopic cholecystectomy and found that the open method reduced procedural time and access-related injuries [29].These factors contribute to physical fatigue and musculoskeletal strain among surgeons. Mastering LS requires extensive training, expertise, and continuous practice to overcome these challenges. Given its steep learning curve, structured training programs play a crucial role in enhancing surgical proficiency and mitigating technical limitations [30] (Figure.1).

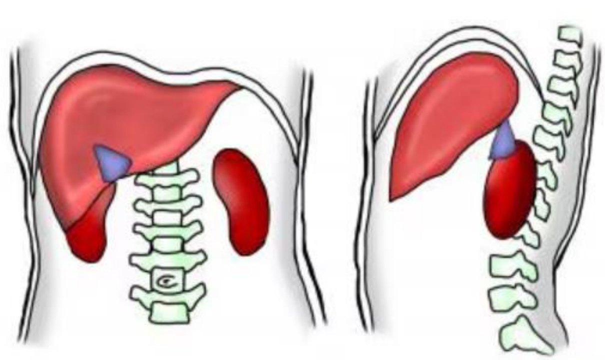

Figure 1: Pneumoperitoneum Imaging [30]

Pneumoperitoneum is a critical component of laparoscopic surgery, facilitating a clear surgical field and adequate working space within the abdominal cavity. It is achieved by insufflating gas, typically carbon dioxide (CO_2), into the peritoneal cavity, creating the necessary intra-abdominal pressure to allow optimal visualization and maneuverability of surgical instruments. This technique minimizes blood loss, reduces tissue trauma, and enhances recovery compared to open surgical approaches, making it a fundamental aspect of minimally invasive procedures.

Several techniques are employed to establish pneumoperitoneum, each with specific advantages and considerations. The most commonly used methods include the Veress needle technique, where a spring-loaded needle is inserted into the peritoneal cavity before gas insufflation, and the open (Hasson) technique, which involves direct trocar insertion under direct vision to minimize the risk of injury. Additionally, newer methods such as the direct trocar insertion (DTI) technique and optical trocars provide alternative approaches with improved safety profiles. A comparative study by Jamil et al. (2018) showed that the open method of pneumoperitoneum had a better safety profile with fewer complications compared to the closed Veress needle technique.The choice of technique depends on patient-specific factors, surgeon preference, and procedural requirements, ensuring a balance between efficiency and safety in laparoscopic interventions [31].

2.2.Techniques of Pneumoperitoneum

2.4.1.Traditional Methods for Pneumoperitoneum

Pneumoperitoneum is a fundamental prerequisite for laparoscopic surgery, creating an expanded workspace within the peritoneal cavity to allow for optimal visualization and manipulation of surgical instruments. The establishment of pneumoperitoneum is achieved using various entry techniques, but the two most widely adopted conventional approaches are the Closed (Veress Needle) Method and the Open (Hasson) Method. These techniques differ in their approach, procedural steps, associated risks, and applications, with the choice influenced by surgeon experience, patient anatomy, and the clinical scenario Furthermore, a randomized controlled trial conducted by Obonno et al. (2025) compared the open and closed methods for creating pneumoperitoneum in laparoscopic surgery. The study found that while the closed Veress needle method had a slightly longer access time, the open Hasson technique had a better safety profile, reducing the incidence of access-related complications such as vascular and visceral injuries. The research concluded that the open technique should be preferred in cases with a high risk of intra-abdominal adhesions, as it provides better visualization and control [32].A randomized controlled trial by Sangrasi et al. (2011) found that the open Hasson technique was quicker and had fewer complications compared to the closed Veress needle method [33].

- **Closed (Veress Needle) Method**

The closed technique, commonly referred to as the Veress needle method, is the most widely utilized approach for establishing pneumoperitoneum in laparoscopic surgery [34]. This technique involves the insertion of a Veress needle, a thin, spring-loaded, blunt-tipped instrument, into the peritoneal cavity. Once correctly positioned, carbon dioxide (CO_2) is insufflated through the needle, creating a sufficient intra-abdominal working space before the primary trocar is introduced. The success of this method depends on precise placement of the Veress needle, which varies based on patient anatomy and other factors. A study by Jain et al. (2019) compared open and closed pneumoperitoneum techniques, concluding that although the open method was safer, the closed Veress needle technique remained widely used due to its ease of use and efficiency [35] (Figure.2).

Figure 2: Introduction of Veress Needle [35]

- **Procedure:**

The patient is first positioned appropriately to facilitate safe and effective needle insertion. In most cases, a supine or Trendelenburg position is preferred, with the latter helping to shift abdominal contents away from the insertion site, thereby reducing the risk of visceral injury [36].

A small infraumbilical incision is then made at the designated insertion site. This incision is just large enough to allow smooth needle entry and is typically placed in the midline of the abdomen, where the abdominal wall is thinnest. The umbilicus is the most common site of insertion because it provides direct access to the peritoneal cavity with minimal resistance.

The Veress needle is inserted at an appropriate angle, which depends on the patient's body mass index (BMI) [37].

- In non-obese individuals, the recommended insertion angle is approximately 45° toward the pelvic cavity.
- In obese patients, the angle is adjusted to a more perpendicular orientation (90°) to ensure accurate placement within the peritoneal cavity.

Once the needle is inserted, several safety checks are performed to confirm correct intraperitoneal positioning:

- **Aspiration Test** – A syringe is attached to the Veress needle, and aspiration is attempted. The absence of blood, bowel contents, or air confirms that the needle is not in a vessel or hollow organ [38].
- **Hanging Drop Test** – A small amount of saline or sterile fluid is placed at the hub of the needle. If the needle is correctly positioned within the peritoneal cavity, the drop should be aspirated into the needle due to negative intra-abdominal pressure [39].
- **Initial Pressure Check (Veress Intraperitoneal Pressure – VIP Test)** – CO_2 is connected, and an initial intra-abdominal pressure of ≤10 mmHg indicates correct needle placement [40].

Once proper placement is verified, CO_2 insufflations begins, gradually increasing intra-abdominal pressure to approximately 12–15 mmHg. This creates an adequate working space, allowing for safe insertion of laparoscopic instruments. Following successful pneumoperitoneum, the Veress needle is removed, and a primary trocar is inserted under controlled conditions to allow laparoscopic visualization of the abdominal cavity.

❖ **Open (Hasson) Method**

The Open (Hasson) Method, introduced in 1971, has demonstrated a lower risk of vascular injury compared to the closed Veress needle technique, as confirmed by research conducted by Ali et al. (2019), which concluded that the Hasson method should be preferred in cases with prior abdominal surgeries [41] (Figure 3).

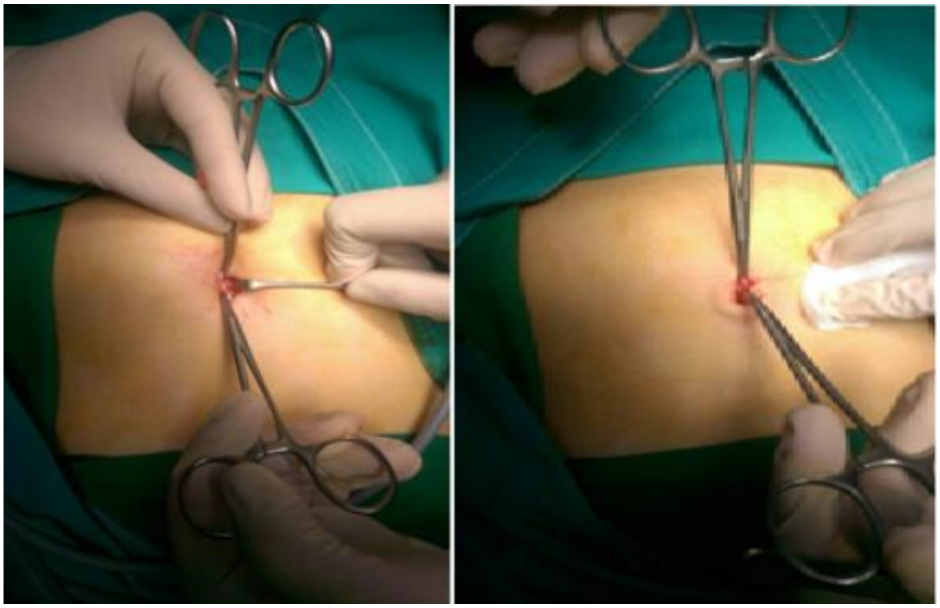

Figure 3: Open technique. Hassan Cannula [41]

The Open (Hasson) Method is a laparoscopic entry technique designed to prevent gas embolism, preperitoneal insufflation, and major visceral or vascular injuries. This method is particularly favored by general surgeons and is often recommended for patients with a history of abdominal surgery [42]. The procedure involves making a small transverse or longitudinal incision at the umbilicus, extending it to dissect down to the fascia for direct peritoneal access. A blunt trocar with a cone-shaped sleeve is then inserted, and stay sutures are placed around the cannula to secure and seal the entry site. After introducing the laparoscope, insufflation begins, and upon completion of the procedure, the fascial defect is closed, and the skin is re-approximated [43].

Studies indicate that open laparoscopy has a lower risk of vascular injury (0%) compared to closed laparoscopy (0.2%), though the bowel injury rate may be slightly higher (0.1% vs. 0.04%–0.05%). General surgeons tend to experience higher complication rates with closed entry but similar outcomes with the open method. Research also suggests that the open technique is associated with fewer access-site herniations and lower conversion rates to laparotomy, particularly in non-obese patients. However, some studies report higher bowel injury rates with open access, likely due to patient selection bias, as it is often used in patients with prior surgeries. A comparative study by Ahmad et al. (2011) found that open laparoscopy resulted in a lower risk of vascular injuries while slightly increasing bowel injury rates [44].

Alternative entry sites, such as the left upper quadrant or intercostal spaces, may help reduce bowel injury risks, particularly in high-risk patients. While vascular injuries are rare, delayed diagnoses of bowel injuries remain a concern, emphasizing the need for careful patient selection. Overall, there is no definitive evidence that the open technique is superior to or inferior to other laparoscopic entry methods. Although it reduces vascular injury risk, the potential for bowel injury should be considered, and the choice of entry technique should be tailored to individual patient factors.

❖ **Alternative Entry Techniques and Their Significance**

In addition to the conventional methods, several alternative techniques have been developed to improve safety and efficiency:

- **Direct Trocar Insertion (DTI):**

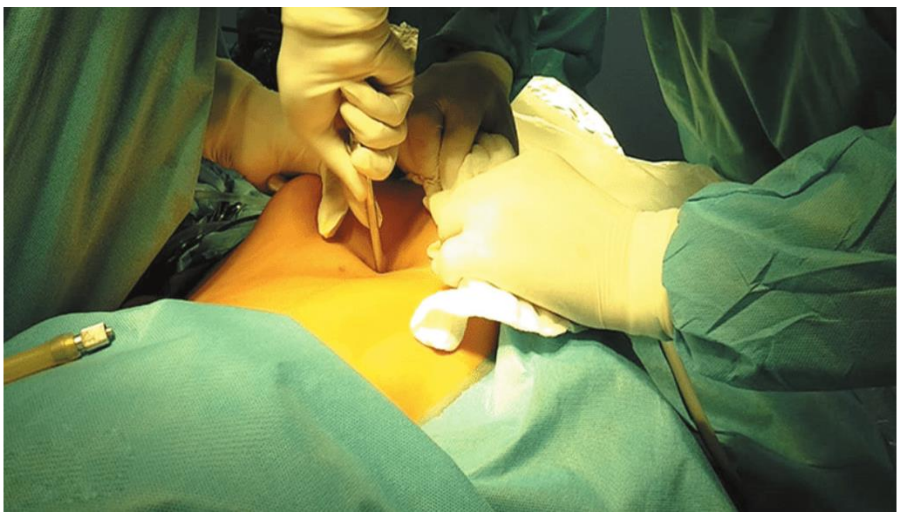

Figure 4: Demonstration of direct trocar entry [45]

Direct Trocar Insertion (DTI) involves placing the trocar without prior insufflation, reducing the risk of preperitoneal insufflation and gas embolism. This technique eliminates the need for a Veress needle and has been shown to provide a faster entry with fewer complications in some studies. However, it requires precise control and experience, as the absence of an established pneumoperitoneum increases the risk of organ injury. A study by Kaistha et al. (2019) found that DTI was associated with fewer complications and faster access times compared to open techniques [45] (Figure 4).

- **Shielded Trocars:**

Figure 5: Demonstration of Shielded trocars [46]

Disposable shielded trocars, introduced in 1984, were designed with a retractable shield that covers the sharp tip upon entering the peritoneal cavity, theoretically reducing the risk of injury. However, studies indicate that shielded trocars still pose a risk, as the sharp tip remains briefly exposed before the shield engages. Research analyzing trocar injuries has shown that shielded trocars account for a significant percentage of vascular and visceral injuries, with some studies linking them to increased risks of bowel injury. Additionally, the force required for insertion can lead to operator overthrust, potentially causing serious complications. The FDA has advised against making unsubstantiated safety claims regarding shielded trocars [46] (Figure 5).

- **Radially Expanding Trocars:**

Radially expanding trocars, introduced in 1994, use a Veress needle surrounded by a polymeric sleeve that expands upon insertion, creating a gradual dilation effect instead of a cutting motion. This method reduces tissue trauma and has been associated with lower rates of vascular injury. Some studies suggest that radially expanding access results in less postoperative pain and greater patient satisfaction. However, this technique requires a higher insertion force compared to disposable trocars, which could lead to complications such as loss of control during entry. While beneficial in reducing sharp injuries, radially expanding trocars are not considered superior to conventional trocar systems [47].

- **Optical Trocar Entry:**

Figure 6: Demonstration of Optical trocars [48]

Optical trocars allow real-time visualization during entry, improving accuracy and reducing the risks associated with blind trocar insertion. These devices use a hollow trocar fitted with a zero-degree laparoscope, providing continuous imaging of tissue layers. Popular optical trocar systems include the Endopath Optiview and Visiport optical trocar, both of which allow surgeons to monitor penetration depth and avoid vital structures. Despite their advantages, optical trocars still require significant axial thrust for insertion, increasing the risk of overshoot. The EndoTIP visual cannula, an advanced reusable system, eliminates sharp tips and provides controlled entry through a threaded mechanism. While optical trocars enhance visualization, they do not entirely prevent injuries, and their effectiveness varies based on surgical expertise and technique [48] (Figure 6).

2.4.2. Veress Needle Technique: Principles and Application

- **Mechanism of Insertion and Insufflation Process**

The Veress needle technique, popularized by Raoul Palmer in 1947, remains the most widely used method for establishing pneumoperitoneum in laparoscopic surgery. This technique involves inserting a spring-loaded needle, typically in the umbilical region, to introduce CO_2 gas and create sufficient intra-abdominal space for safe trocar placement. Proper placement of the Veress needle is crucial to avoid complications such as vascular or visceral injuries. Surveys indicate that most gynecologists worldwide use this method, with over 96% of Canadian obstetricians and gynecologists always inducing pneumoperitoneum before primary trocar insertion. A study by Agarwal et al. (2017) found that the Veress needle technique, while effective, had a higher risk of minor complications compared to direct trocar insertion [49]. Despite, its popularity, reported complications include vessel or organ injuries, emphasizing the need for careful insertion and confirmation of correct placement.

❖ **Veress Needle Insertion Sites**

Under normal conditions, the Veress needle is inserted in the umbilical area, either with or without lifting the anterior abdominal wall. However, in cases where periumbilical adhesions are suspected, or after three failed attempts at establishing pneumoperitoneum, alternative insertion sites are recommended [50].

- **Left Upper Quadrant (LUQ) – Palmer's Point**

  This site, located 3 cm below the left subcostal border in the midclavicular line, is useful in obese or very thin patients where anatomical variations may increase the risk of vascular injury at the umbilical site. Before insertion, the stomach must be emptied via nasogastric suction. LUQ access is contraindicated in patients with previous splenic or gastric surgery, hepatosplenomegaly, portal hypertension, or gastric tumors. Studies have shown that LUQ insertion may reduce risks associated with umbilical access, particularly in obese patients where the umbilicus is shifted caudally relative to the aortic bifurcation [51].

- **Transuterine Veress CO_2 Insufflation**:

  In obese women, pneumoperitoneum can be established transvaginal through the fundus of the uterus using a long Veress needle. Studies comparing this approach to conventional infraumbilical access have demonstrated a lower failure rate. A randomized trial in overweight and obese women found that the transuterine approach had a higher success rate in achieving pneumoperitoneum with fewer punctures compared to the infraumbilical technique [52].

- **Trans Cul-de-Sac CO_2 Insufflation**:

  The posterior vaginal fornix has been used as an alternative entry point, particularly in obese patients where umbilical access may be challenging. This technique provides another option for difficult cases, though its adoption remains limited [53].

- **Ninth or Tenth Intercostals Space CO_2 Insufflations**:

  Some surgeons insert the Veress needle through the ninth or tenth intercostal space at the anterior auxiliary line, positioning it along the superior surface of the lower rib to avoid neurovascular injury. This method follows the same inclusion and exclusion criteria as LUQ insertion. A retrospective review of 918 patients who underwent insufflation through the ninth intercostals space reported rare complications, including one stomach entry and one pneumothorax [54].

2.3.Evaluation of Veress Needle Entry Points

2.4.1.Supraumbilical Entry Point

The Supraumbilical entry point is a well-recognized approach in laparoscopic procedures, employed to create a pneumoperitoneum safely and efficiently. This method leverages the natural anatomical features above the umbilicus to minimize the risk of injury to intra-abdominal organs and vascular structures. Its popularity is driven by a balance between accessibility and safety, as the chosen site often provides a relatively a vascular area with predictable anatomical landmarks. However, the technique's efficacy, associated outcomes, and the spectrum of potential complications require thorough evaluation to ensure optimal patient care and procedural success. A study by Jain et al. (2019) found that the supraumbilical entry point had a high success rate in achieving pneumoperitoneum with minimal attempts, reducing procedural delays and improving surgical workflow [55].

2.3.1.1.Anatomical landmarks and technique of insertion

❖ **Anatomical Landmarks**

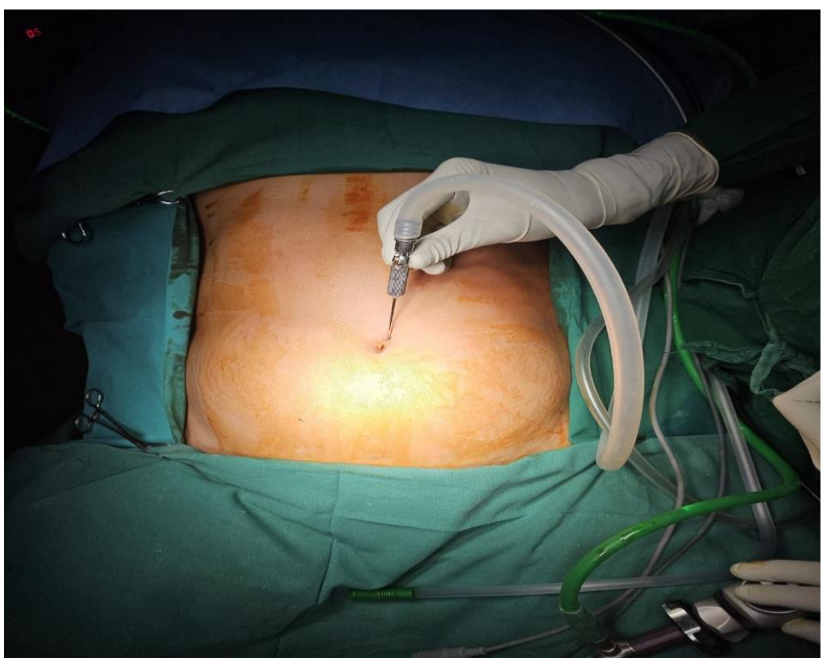

Figure 7: Supraumbilical Point

The supraumbilical entry point for Veress needle insertion is a widely used approach in laparoscopic surgery due to its predictable anatomy and lower risk of complications. This entry site provides an optimal balance between ease of access and reduced risk of injury to underlying structures [56] (Figure 7).

- **Midline Structures**

  The supraumbilical region is a preferred entry site for Veress needle insertion due to its thin abdominal wall and clear midline orientation. This region is anatomically favorable as it provides a relatively avascular approach, reducing the risk of injuring major blood vessels. The umbilicus serves as the inferior landmark, while the xiphoid process is the superior reference point, allowing for accurate site selection. The midline's predictable anatomy makes it a safer option compared to lateral approaches, which may pose a higher risk of vascular injury [57].

- **Fascial Planes:**

  The abdominal wall at the supraumbilical region consists of multiple fascial layers that must be traversed during Veress needle insertion. These include the skin, subcutaneous fat, rectus sheath, and peritoneum. The midline placement offers a relatively uniform fascial plane, allowing for a controlled and consistent needle insertion. Unlike lateral entry points, where muscle layers may vary, the supraumbilical site provides a more straightforward passage with less resistance. The predictable nature of these fascial layers facilitates safer and more efficient needle placement, reducing the risk of misplacement and complications. A study by Sangrasi et al. (2011) demonstrated that midline supraumbilical access provides improved safety and efficiency compared to lateral approaches [33].

2.3.1.2. Reported feasibility, success rates, and procedural outcomes

- **Feasibility and Anatomical Advantages**

  The supraumbilical entry point is considered a highly feasible and accessible site for Veress needle insertion in laparoscopic procedures. Its central midline positioning offers a predictable anatomical structure, reducing variability and ensuring consistency across different patient profiles. This approach is particularly advantageous in cases where the umbilical region is distorted due to previous surgeries, obesity, or anatomic alterations. The relative thinness of the abdominal wall at this site facilitates smooth needle insertion, minimizing resistance and improving ease of access [58].

- **Success Rates and Pneumoperitoneum Establishment**

  The supraumbilical route has a high success rate in achieving pneumoperitoneum with minimal attempts. The likelihood of successful peritoneal entry on the first attempt is significantly greater compared to lateral or infraumbilical approaches. This efficiency translates into reduced procedural delays and improved surgical workflow. Additionally, the relatively avascular nature of the midline reduces the chances of major vessel injury, making it a safer option for initiating laparoscopy [59].

- **Impact on Procedural Efficiency**

  The supraumbilical approach contributes to enhanced procedural efficiency by shortening the time required for pneumoperitoneum establishment. Fewer insertion attempts and a lower incidence of failed entry reduce the overall duration of surgery, which is crucial in minimizing anesthesia exposure for the patient. This efficiency is particularly beneficial in high-risk cases, such as those involving obese patients or individuals with previous lower abdominal surgeries, where alternative entry sites may pose greater challenges A study by Akbar et al., (2008) confirmed that this method improved surgical workflow and reduced anesthesia exposure [60].

  .

2.3.1.3.Potential Risks, Complications, and Safety Considerations

- **Risk of Bowel Injury**

  Despite its advantages, the supraumbilical entry point is not without risks, with bowel injury being one of the primary concerns. Patients with a history of abdominal surgery are at higher risk due to potential adhesions in the peritoneal cavity, which may bring the bowel into closer proximity to the insertion site. Inadvertent bowel perforation can lead to severe complications, necessitating immediate intervention. Preventive measures such as preoperative imaging, gentle needle insertion, and careful aspiration testing can significantly reduce this risk [61].

- **Vascular Trauma and Hemorrhagic Complications**

  Although the midline is relatively avascular, improper insertion angles or anatomical variations can increase the risk of vascular trauma. Injuries to major vessels, such as the aorta or its branches, can lead to life-threatening hemorrhages. Surgeons must exercise caution by maintaining the correct needle trajectory and performing intraoperative verification techniques, such as the saline drop test and CO_2 insufflation monitoring, to confirm correct placement [62].

- **Challenges in Obese Patients and Difficult Needle Placement**

  In obese individuals, increased abdominal wall thickness can make Veress needle placement more challenging. The surgeon may encounter difficulty in identifying anatomical landmarks and feeling the characteristic "give" upon peritoneal entry. In such cases, alternative techniques, such as optical trocars or ultrasound guidance, may be necessary to enhance safety and accuracy [63].

2.4.2.Palmer’s Point Entry

Palmer’s Point is an alternative site used for creating pneumoperitoneum in laparoscopic surgeries, particularly when the traditional supraumbilical Veress needle insertion is considered high-risk. It is located in the left upper quadrant (LUQ) of the abdomen, approximately 3 cm below the left costal margin and 2 cm lateral to the midclavicular line. A study by Agarwal et al., (2017) demonstrated that Palmer’s Point significantly reduces vascular and bowel injury risks in patients with previous abdominal surgeries. This site was introduced by John Palmer as a safer approach in cases where umbilical entry might lead to complications, such as in patients with prior abdominal surgeries, adhesions, or obesity. Palmer’s Point is advantageous because it avoids major blood vessels and bowel loops, reducing the likelihood of vascular or intestinal injuries. However, careful insertion is required due to its proximity to the stomach and spleen, necessitating proper patient positioning and, in some cases, preoperative imaging.

2.3.2.1.Anatomical location

Figure 8: Palmer's Point

Palmer's Point is situated in the left upper quadrant (LUQ), precisely 3 cm below the left costal margin and 2 cm lateral to the midclavicular line. This area is free from major blood vessels and intestinal structures, making it a safer alternative to the traditional umbilical entry for laparoscopic procedures. However, care must be taken due to the proximity of the stomach and spleen, which are located nearby. To reduce the risk of injury, the patient is typically positioned in a slight Trendelenburg posture with a nasogastric tube in place to decompress the stomach before needle insertion [64] (Figure 8).

2.3.2.2. Clinical indications

Palmer's Point entry is particularly useful in situations where umbilical entry is difficult or poses a higher risk of injury. It is recommended for patients with a history of previous abdominal surgeries, as laparotomies often result in adhesions near the umbilicus, increasing the risk of bowel injury. In obese individuals, where the umbilicus may be deeply recessed, the left upper quadrant approach provides a more accessible alternative for Veress needle insertion. It is also a preferred method in pregnant women, particularly in the second and third trimesters, to avoid injury to the enlarged uterus. Additionally, patients with massive ascites benefit from this entry point, as it minimizes the risk of damaging internal organs while creating pneumoperitoneum. Furthermore, in cases of hepatosplenomegaly, where the liver or spleen is significantly enlarged, Palmer's Point offers a safer alternative, reducing the chances of inadvertent organ injury [65].

2.3.2.3.Effectiveness in preventing injuries and complications

Palmer's Point is widely regarded as a safer alternative to umbilical entry in high-risk cases, demonstrating effectiveness in reducing complications. One of its primary advantages is the lower risk of bowel and vascular injuries, as it avoids major midline structures, thereby reducing the chances of damaging adhesions, intestines, or large blood vessels. It also offers improved access in obese patients, where the left upper quadrant location provides a more superficial layer for needle insertion, facilitating an easier and safer pneumoperitoneum. Additionally, Palmer's Point has shown higher success rates in difficult cases, allowing safe laparoscopic access when the standard umbilical entry is unsuccessful, often preventing the need for conversion to an open procedure. Despite these advantages, careful patient selection and proper technique remain crucial, as the site is in close proximity to the stomach and spleen. Preoperative measures such as ultrasound guidance or nasogastric tube placement may be beneficial in select cases to further enhance safety [66].

2.4.3.Jain's Point Approach

Figure 9: Jain's Point

Jain's Point is an emerging technique for establishing pneumoperitoneum in laparoscopic surgeries, particularly in patients where traditional umbilical and Palmer's Point entries are challenging or contraindicated. This approach is gaining attention due to its potential to reduce complications associated with conventional entry sites. Jain's Point is located in the left lateral abdominal quadrant, offering a safer alternative in patients with prior abdominal surgeries, obesity, or conditions such as hepatosplenomegaly, where umbilical or Palmer's Point entries may pose a higher risk. Given its anatomical location, Jain's Point provides a more favorable access route, avoiding adhesions, bowel loops, and major vascular structures while ensuring a high rate of successful laparoscopic entry. A study by Jain et al. (2019) reported that Jain's Point had a higher success rate in achieving pneumoperitoneum compared to umbilical entry in high-risk patients [67] (Figure 9).

2.3.3.1. Emerging technique

Jain's Point is a relatively new approach that is being explored as an alternative to standard entry techniques for laparoscopic surgeries. The justification for its use lies in its ability to provide a safe and effective entry point in cases where umbilical and Palmer's Point access are not viable options [68]. Jain's Point, positioned more laterally, reduces the chance of encountering intestinal adhesions and offers a less obstructed path for needle insertion. Moreover, in patients with severe obesity, where the umbilical region is deeply recessed and challenging to access, Jain's Point presents a shallower and more accessible subcutaneous plane for trocar placement. This technique is also gaining importance in cases of hepatosplenomegaly, where direct access through midline or upper-quadrant approaches increases the risk of injuring an enlarged liver or spleen.

2.3.3.2. Advantages over traditional and alternative entry points

Jain's Point offers several advantages over conventional supraumbilical Veress needle insertion and Palmer's Point entry, making it a valuable alternative in laparoscopic surgeries. One of the key benefits is the reduced risk of injury to adhesions and previous surgical scars. Unlike the umbilical approach, which is often complicated by post-surgical adhesions, Jain's Point is situated in a less surgically disturbed region. This makes it a safer option for patients with prior laparotomies or intra-abdominal scarring, minimizing the likelihood of bowel injury or failed pneumoperitoneum [69].

Another significant advantage is its less proximity to the stomach and spleen. Compared to Palmer's Point, which is located in the left upper quadrant near these vital organs, Jain's Point reduces the risk of injury, particularly in cases of splenomegaly or gastric distension. This anatomical positioning makes it a safer alternative for patients with hepatosplenomegaly or gastric bloating, where inadvertent organ injury is a major concern.

In patients with obesity, Jain's Point provides easier access due to its lateral abdominal location, which offers a shallower layer of subcutaneous fat. This feature makes needle insertion technically easier than in deeply recessed umbilical sites, where excessive adipose tissue can complicate trocar placement and increase the risk of insertion failure.

Additionally, Jain's Point has been associated with a lower incidence of failed pneumoperitoneum. Some studies suggest that it has a higher success rate in achieving pneumoperitoneum compared to the umbilical route in high-risk patients. This success can be attributed to the absence of dense adhesions and bowel loops, which are often encountered in umbilical or Palmer's Point entry, especially in patients with prior abdominal surgeries [70].

2.4. Safety and Feasibility Considerations of Veress Needle Placement

2.4.1. Risks Factors and Failure Rates

- **Incidence of Vascular, Visceral, and Bowel Injuries Associated with Different Entry Points**

Veress needle placement for pneumoperitoneum carries the potential risk of complications, primarily related to vascular, visceral, and bowel injuries. The incidence of these injuries varies depending on the chosen entry point and patient-specific factors. Umbilical entry, the most commonly used site, is associated with higher risks of vascular injuries, especially in patients with previous abdominal surgeries or adhesions. In contrast, Palmer's Point offers a safer alternative in such patients, but its proximity to the stomach and spleen increases the risk of gastric perforation or splenic injury, particularly in individuals with splenomegaly or gastric distension. Jain's Point, as an emerging technique, aims to reduce these complications by providing access through a less surgically disturbed region, minimizing the risk of bowel injury and vascular trauma. Proper patient selection, preoperative assessment using ultrasound, and careful insertion technique are crucial to reducing the incidence of these injuries [71].

- **Failure Rates of Veress Needle Entry**

  The failure rate of Veress needle entry is influenced by factors such as patient body habitus, history of previous surgeries, and surgeon experience. In obese patients, the deeply recessed umbilicus can make needle insertion difficult, increasing the failure rate. Similarly, patients with extensive adhesions from previous surgeries often experience higher failure rates due to scar tissue obstruction. Alternative strategies to improve the success of Veress needle insertion include using Palmer's Point or Jain's Point in high-risk cases, performing preoperative imaging to assess adhesions, and employing direct trocar entry or optical trocar techniques when Veress needle insufflation fails. These alternative methods provide safer access and help mitigate conversion to open laparotomy due to unsuccessful pneumoperitoneum creation.

2.4.2. Physiological Impact of Pneumoperitoneum

- **Influence on Intra-Abdominal Pressure, Hemodynamic Stability, and Respiratory Function**

  The creation of pneumoperitoneum using the Veress needle introduces carbon dioxide (CO_2) into the abdominal cavity, leading to a rise in intra-abdominal pressure (IAP). This pressure increase affects multiple physiological systems. Elevated IAP can cause compression of abdominal vessels, potentially leading to reduced venous return, decreased cardiac output, and altered hemodynamic stability, particularly in elderly or cardiovascular-compromised patients. Additionally, increased intra-abdominal pressure exerts pressure on the diaphragm, leading to reduced lung compliance and respiratory function. Patients with pre-existing pulmonary conditions, such as chronic obstructive pulmonary disease (COPD), may experience greater respiratory compromise during laparoscopic insufflation. Gradual insufflation and monitoring end-tidal CO_2 levels are essential strategies to minimize these adverse physiological effects [72].

- **Physiological Effects Across Different Entry Techniques**

  The physiological impact of pneumoperitoneum varies depending on the entry technique and patient positioning. Umbilical insufflation, due to its midline location, evenly distributes pressure within the abdominal cavity. However, in patients with pre-existing adhesions or obesity, the creation of pneumoperitoneum at alternative sites such as Palmer's Point or Jain's Point may reduce excessive peritoneal stretching and improve pressure distribution. Palmer's Point, being closer to the upper abdomen, has been associated with mildly increased pressure effects on the diaphragm, while Jain's Point, in the lateral abdominal quadrant, may allow for a more balanced pressure distribution with fewer effects on diaphragmatic movement. Optimizing patient positioning, such as placing the patient in the Trendelenburg position, can help reduce hemodynamic fluctuations and improve respiratory mechanics during laparoscopic procedures [73].

2.4.3. Surgeon's Learning Curve and Procedural Efficiency

- **Standardization of Different Entry Sites**

  The choice of Veress needle entry site impacts the ease of training for surgeons and standardization of procedures. Umbilical entry remains the most widely taught technique due to its historical precedence and anatomical familiarity. However, alternative entry points such as Palmer's Point and Jain's Point require additional training due to differences in anatomical landmarks and patient positioning. Training in these techniques is crucial for surgeons dealing with high-risk patients, such as those with previous abdominal surgeries or obesity. The adoption of standardized protocols and simulation-based training can improve skill acquisition and ensure safe implementation of these alternative approaches [74].

- **Surgeon Experience on Safety, Success Rates, and Complication Reduction**

  The success and safety of Veress needle placement are highly dependent on surgeon experience. Experienced surgeons are better equipped to handle variations in patient anatomy, identify high-risk cases, and select appropriate entry techniques. Studies indicate that complication rates decrease significantly as surgeons gain proficiency in alternative entry methods. The ability to recognize failed insufflations early and swiftly transition to alternative strategies, such as optical trocar placement or direct tracer insertion, reduces the risk of vascular or visceral injury [75]. Furthermore, experienced surgeons are more adept at preventing complications, such as subcutaneous emphysema, preperitoneal insufflation, or misplacement of the Veress needle, which can occur with improper technique. Continuous education, hands-on workshops, and proctoring by senior laparoscopic surgeons play a vital role in improving procedural efficiency and ensuring patient safety [76].

Aims and Objectives

❖ **Aim:**

The aim of the research is to evaluate the feasibility and safety of establishing pneumoperitoneum by a Veress needle inserted at the supraumbilical, Palmer's, and Jain's points in laparoscopic procedures at a tertiary care facility via a randomised controlled trial.

❖ **Objective of the study:**

- To compare time taken and attempts made for creation of pneumoperitoneum among different entry points.
- To compare intra and post operative complications of different entry points

Material and Methods

This chapter presents the methodology employed in the randomized controlled trial comparing the feasibility and safety of the creation of pneumoperitoneum by the Veress needle at the three designated anatomical sites in laparoscopic surgeries at a tertiary care center: supraumbilical, Palmer's, and Jain's point. The details of the research design, the criteria for the selection of participants, the method of randomization, the surgical techniques, the means of data collection, and the parameters studied for safety and efficacy are discussed. The aim is to standardize the assessment of any outcome associated with any incision site to avoid bias and ensure that such findings will remain clinically relevant.

4.1 Research Design

The study was conducted as a randomized controlled trial (RCT) to compare the feasibility and safety in the creation of a pneumoperitoneum using the Veress needle at the Supraumbilical, Palmer's, and Jain's points during laparoscopic surgeries. Patients were randomly allocated in three groups by the Sequentially Numbered Opaque Sealed Envelope (SNOSE) method. The study aimed at assessing the time for pneumoperitoneum creation, the number of attempts made, and intraoperative and postoperative complications associated with each entry site.

4.2 Study Area

The research was conducted at KLES Dr. Prabhakar Kore Hospital and Medical Research Centre and KLES Dr. Prabhakar Kore Charitable Hospital which were affiliated with Jawaharlal Nehru Medical College (JNMC), Belagavi. These tertiary care centers provide advanced surgical services and laparoscopic procedures, making them ideal for this study.

4.3 Study Durations

The research was conducted for one year, from September 2023 until August 2024.

4.4 Study Participants

The study included patients undergoing laparoscopic surgeries at the selected tertiary care centers. The participants were divided into three groups based on the site of Veress needle insertion:

- Group A: Supraumbilical point

- Group B: Palmer’s point
- Group C: Jain’s point

The allocation process was conducted using the Sequentially Numbered Opaque Sealed Envelope (SNOSE) method, ensuring an unbiased distribution of participants across the three groups.

4.5 Sample Size

The sample size was determined using statistical calculations, considering a 90% confidence level, a 10% margin of error, and a 50% population proportion. The estimated sample size was 68 patients per group, leading to a total of 204 patients for the study.

$$n = z^2 \times p(1-p)/\varepsilon^2$$

$$n = 1.645 \times 0.5(1-0.5)/ 0.1 \times 0.1$$

$$n = 67.65$$

n~ 68 in each of 3 groups.

4.6 Selection Criteria

- **Inclusion Criteria**
  - Patients aged 18 to 65 years.
  - Patients providing informed consent for participation.
  - Patients medically fit for laparoscopic surgeries.
- **Exclusion Criteria:**
  - Patients with a history of previous upper abdominal surgeries.
  - Patients diagnosed with peritonitis.

4.7 Study Variables

- **Independent variable:** One of the independent variables in the study consists of the sites of Veress needle insertion (Supraumbilical, Palmer's, or Jain's point).
- **Dependent variable:** Factors that were dependent on this study were time taken for pneumoperitoneum creation measured in seconds from insertion of the Veress needle to successful establishment of pneumoperitoneum, and the number of attempts taken for successful pneumoperitoneum creation were recorded to evaluate the entry difficulty at different anatomical points. These variables of the study also noted intraoperative complications, including vascular and visceral injuries due to soft tissue or needle

displacement at the wrong-anatomical location or injury due to a needle misplaced due to anatomical variations.

- **Demographic variable:** The demographic variables considered in this study include age, gender, BMI, and history of previous abdominal surgeries influencing pneumoperitoneum creation.

4.8 Data Collection

4.8.1. Preoperative Assessment

All patients underwent a detailed clinical assessment before surgery to determine their eligibility for laparoscopic procedures. Demographic variables such as age, gender, BMI, and history of previous abdominal surgeries were documented to assess potential risk factors. A thorough abdominal examination was conducted to identify adhesions or anatomical variations that could affect the feasibility of Veress needle insertion. Standard preoperative protocols were followed, including patient positioning in the supine position, maintaining sterility, and administering necessary preoperative medications to minimize risks and ensure procedural accuracy.

4.8.2. Intraoperative Assessment

During the laparoscopic procedure, multiple parameters were recorded to evaluate the feasibility and safety of Veress needle insertion at the three selected anatomical sites. The time taken for pneumoperitoneum creation was measured from the moment of Veress needle insertion to the successful insufflation of CO_2. The number of attempts required for successful entry was documented to assess the ease of access at each insertion point. Any intraoperative complications, such as vascular or visceral injuries, were recorded and managed following standard surgical protocols. The entire data collection process was systematically documented using case record forms to ensure precision and reliability.

4.8.3. Postoperative Assessment and Follow-Up

Postoperative monitoring focused on detecting and managing complications such as pain, infection, and delayed recovery. Pain assessment was conducted using standardized pain scales, and any signs of infection at the entry site were carefully documented. Patients were observed for variations in hospital stay duration and overall recovery patterns to evaluate the clinical outcomes associated with different Veress needle insertion sites.

4.9 Ethical Considerations

The study was conducted in accordance with the ethical guidelines set by the Institutional Ethics Committee (IEC) of Jawaharlal Nehru Medical College (JNMC), Belagavi, with ethical approval obtained before initiation. Informed consent was secured from all participants after explaining the study objectives, procedures, risks, and benefits in their preferred language. Participation was voluntary, and patients retained the right to withdraw at any stage without consequences.

4.10 Statistical Analysis

The collected data were analyzed using statistical software for objective comparisons among study groups. Descriptive statistics included mean and standard deviation (SD) for continuous variables and percentages/frequencies for categorical data. Comparative analysis used the unpaired Student's t-test for intergroup and paired t-test for intragroup comparisons, while Chi-square and ANOVA assessed categorical associations and mean differences. A p-value <0.05 indicated statistical significance, with bar charts and scatter plots used for visualization.

Results

This chapter presents the findings of the randomized controlled trial comparing the feasibility and safety of pneumoperitoneum creation using the Veress needle at three different anatomical points—supraumbilical, Palmer's, and Jain's points—in laparoscopic surgeries at a tertiary care center. The results are analyzed based on key parameters, including ease of needle insertion, time taken for insufflations, rate of successful entry, complications encountered, and overall safety profile. Statistical comparisons highlight the efficacy of each technique, providing insights into the most optimal approach for safe and efficient pneumoperitoneum establishment in laparoscopic procedures.

5.1.Demographic Analysis

The demographic distribution of participants in Table 1 reveals that the majority belong to the 31-45 years age group, accounting for 44.1% at Supraumbilical point, 45.6% at Palmer's point, and 48.5% at Jain's point. The youngest group (18-30 years) constitutes the smallest proportion, ranging from 16.2% to 19.1%, while the older group (46-60 years) shows a decreasing trend with 39.7% at Supraumbilical point, 35.3% at Palmer's point, and 32.4% at Jain's point. In terms of gender, females outnumber males across all study points, representing 55.9% at Supraumbilical and Palmer's point, and 63.2% at Jain's point, while males range between 36.8% and 44.1%.

Regarding BMI classification, most participants fall within the normal BMI range (18.5-24.9), constituting 44.1% at all study points, followed by overweight individuals (29.4%) and obese individuals (19.1%). A small proportion (7.4%) is underweight, showing consistency across all study points. Socioeconomic status distribution varies, with the low socioeconomic group being most prevalent at Supraumbilical point (36.8%) compared to Palmer's (33.8%) and Jain's point (29.4%), while the middle class shows a fluctuating trend, and the high socioeconomic group is highest at Palmer's point (39.7%).

Among comorbidities, hypertension is the most prevalent condition, affecting 47.1% at Supraumbilical point, 44.1% at Palmer's point, and 45.6% at Jain's point. Diabetes is also significantly present, highest at Palmer's point (52.9%) compared to Supraumbilical

(45.6%) and Jain's points (42.6%). Other/NIL comorbid conditions show a similar prevalence of 48.5% at Supraumbilical and Palmer's point, but a markedly higher prevalence of 63.2% at Jain's point. These results indicate a predominantly middle-aged, female-dominant sample, with most individuals falling within a normal BMI range and exhibiting a significant burden of comorbidities, particularly hypertension and diabetes. Socioeconomic differences suggest potential variations in health conditions and access to care across different study points (Figure 10 - 21).

Table 1: Demographic Distribution of Participants

Parameters	Supraumbilical points N (%)	Palmer's points N (%)	Jain's points N (%)
Age Group (Years)			
18-30	11 (16.2%)	13 (19.1%)	13 (19.1%)
31-45	30 (44.1%)	31 (45.6%)	33 (48.5%)
46-60	27 (39.7%)	24 (35.3%)	22 (32.4%)
Gender			
Male	30 (44.1%)	30 (44.1%)	25 (36.8%)
Female	38 (55.9%)	38 (55.9%)	43 (63.2%)

BMI			
<18.5 (Underweight)	5 (7.4%)	5 (7.4%)	5 (7.4%)
18.5-24.9 (Normal)	30 (44.1%)	30 (44.1%)	30 (44.1%)
25-29.9 (Overweight)	20 (29.4%)	20 (29.4%)	20 (29.4%)
>30 (Obese)	13 (19.1%)	13 (19.1%)	13 (19.1%)
Socioeconomic Status			
Low	25 (36.8%)	23 (33.8%)	20 (29.4%)
Middle	22 (32.4%)	18 (26.5%)	23 (33.8%)
High	21 (30.9%)	27 (39.7%)	25 (36.8%)
Comorbidities			
Hypertension	32 (47.1%)	30 (44.1%)	31 (45.6%)
Diabetes	31 (45.6%)	36 (52.9%)	29 (42.6%)

Other/NIL	33 (48.5%)	33 (48.5%)	43 (63.2%)

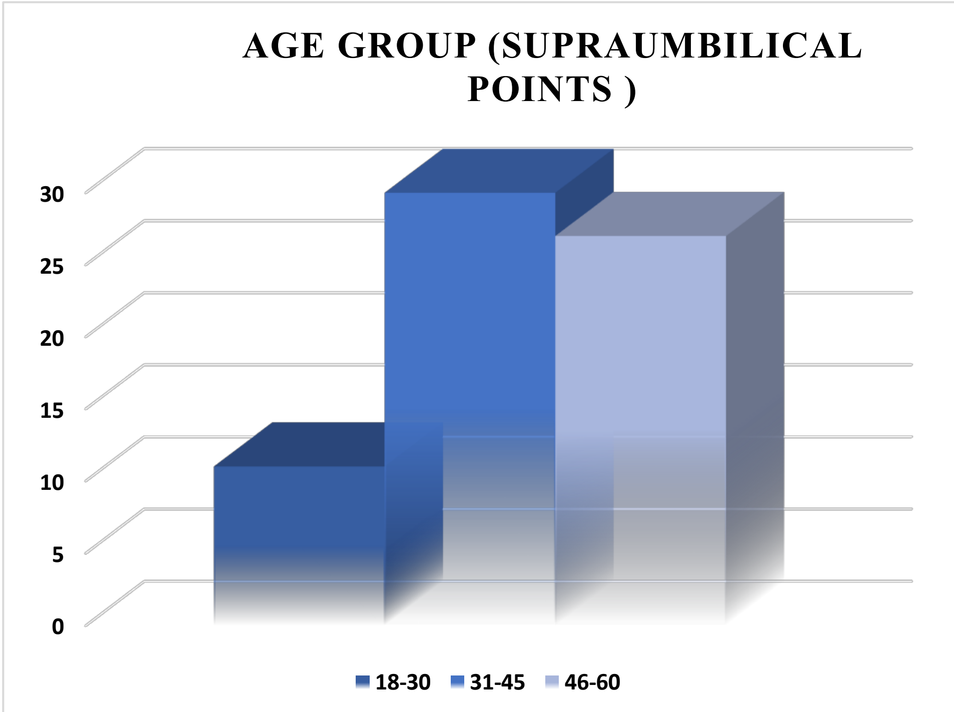

Figure 10: Comparison of Participants among the category of Age Group (Supraumbilical point)

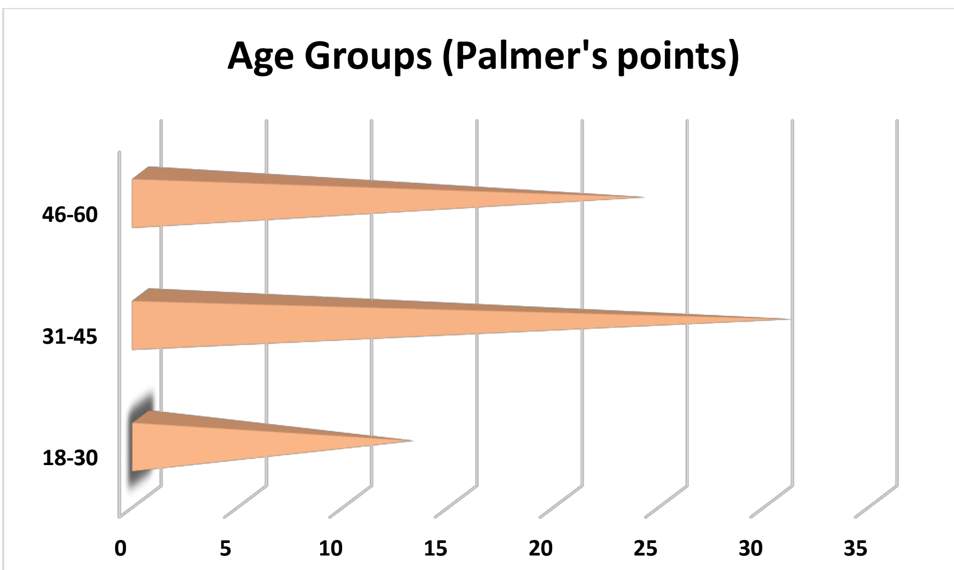

Figure 11: Comparison of Participants among the category of Age Group (Palmer's point)

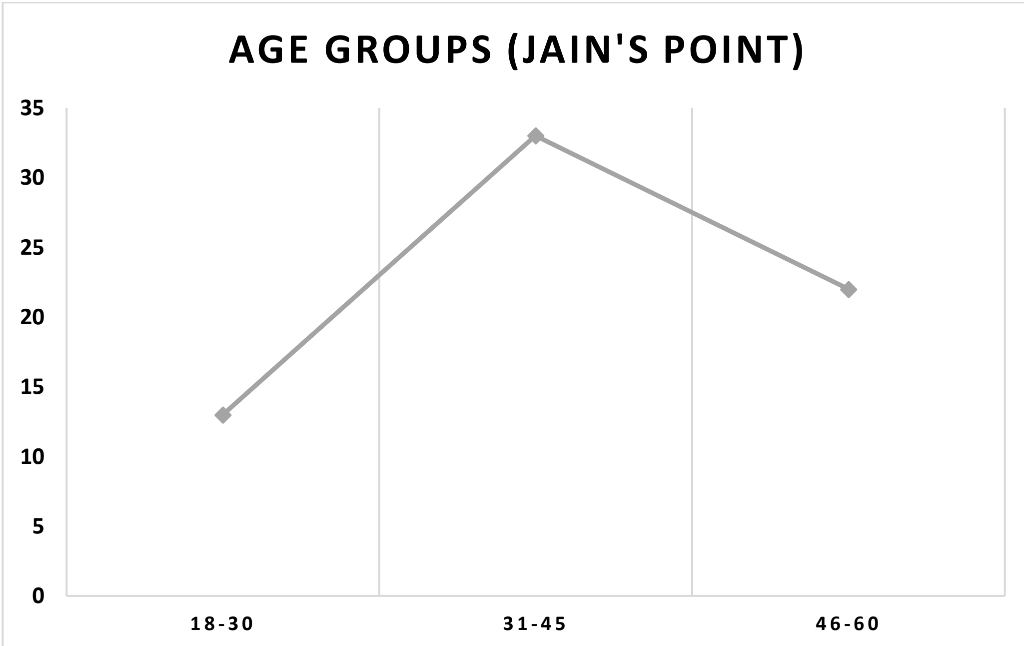

Figure 12: Comparison of Participants among the category of Age Group (Jain's points

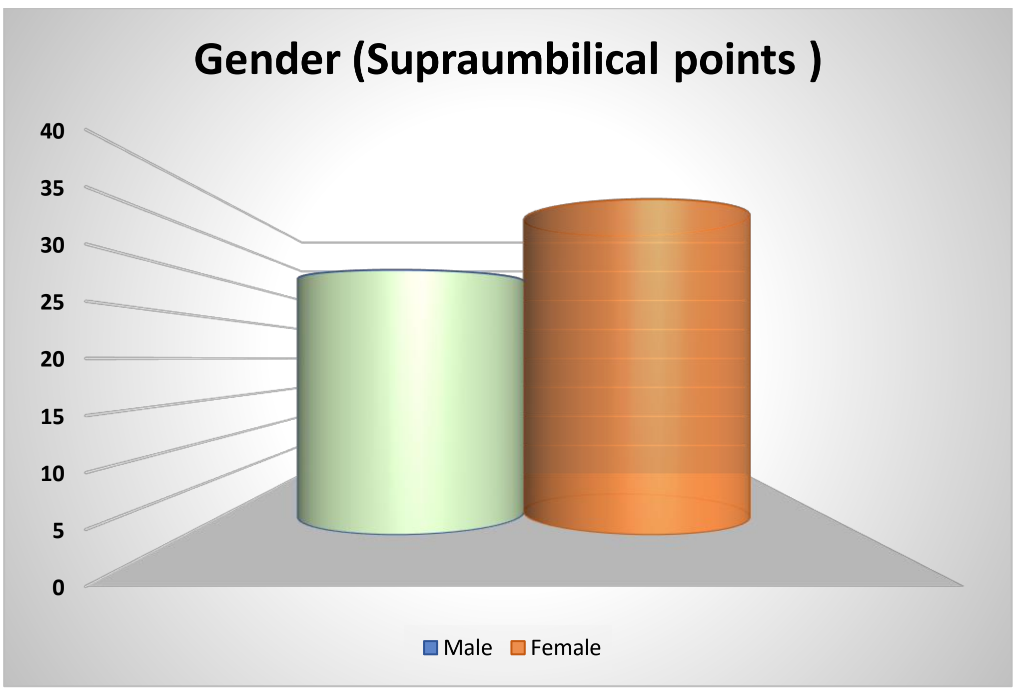

Figure 13: Comparison of Participants among the category of Gender Group (Supraumbilical point)

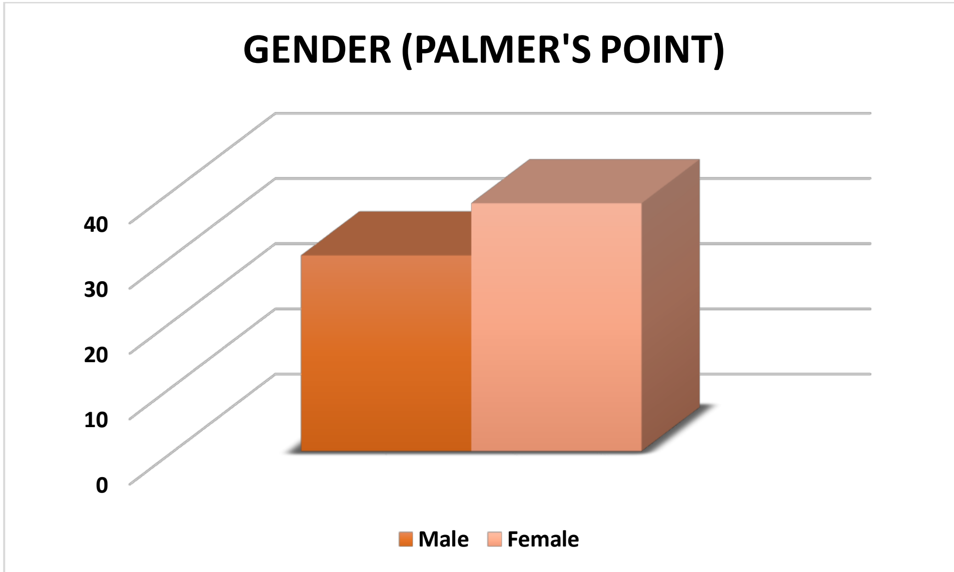

Figure 14: Comparison of Participants among the category of Gender Group (Palmer's point)

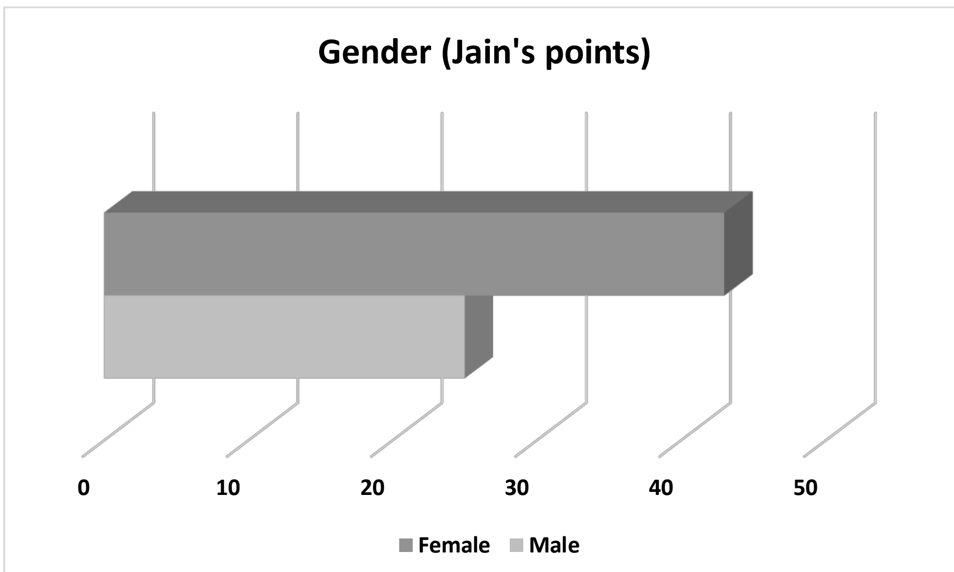

Figure 15: Comparison of Participants among the category of Gender Group (Jain's point)

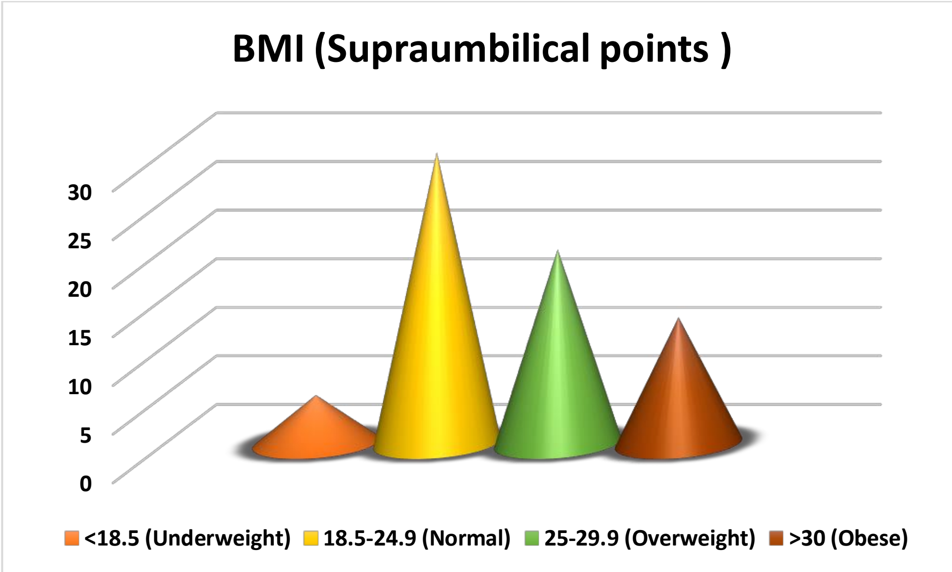

Figure 16: Comparison of Participants among the category of BMI (Supraumbilical point)

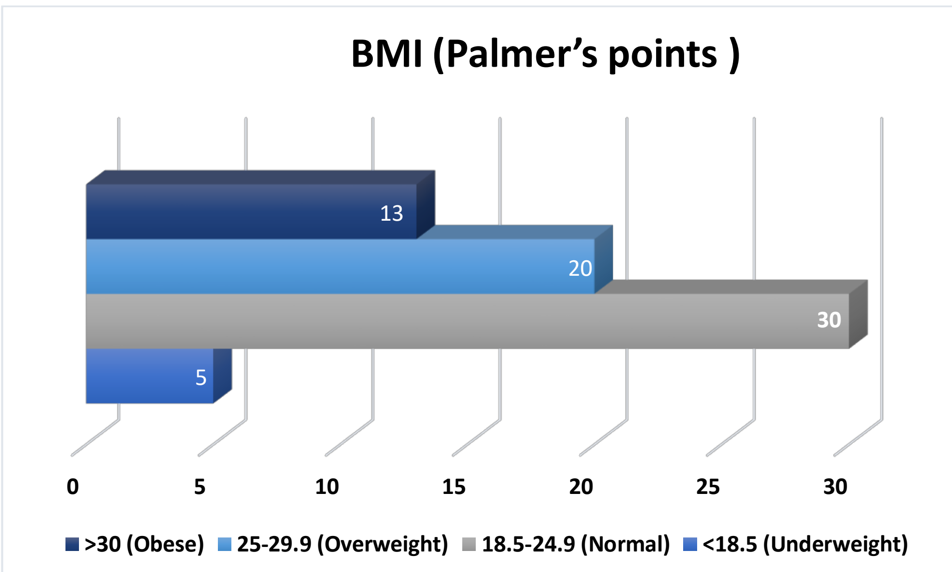

Figure 17: Comparison of Participant among the category of BMI (Palmer's point)

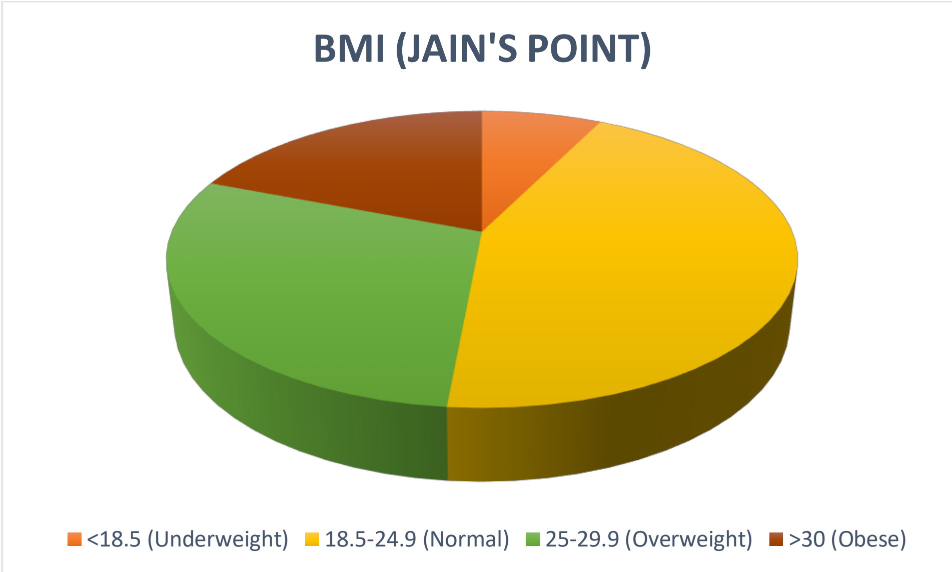

Figure 18: Comparison of Participants among the category of BMI (Jain's point)

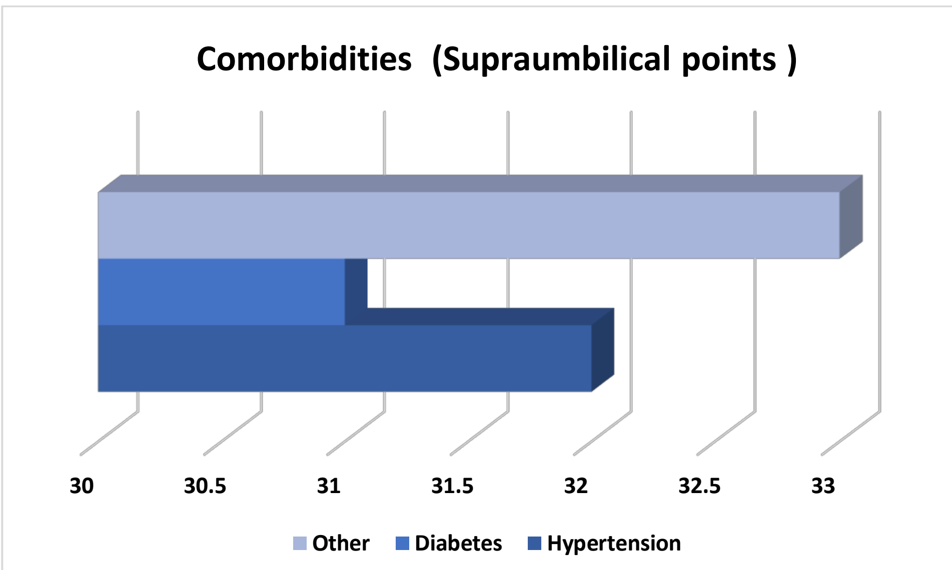

Figure 19: Comparison of Participants among the category of Co-morbidities (Supraumbilical point)

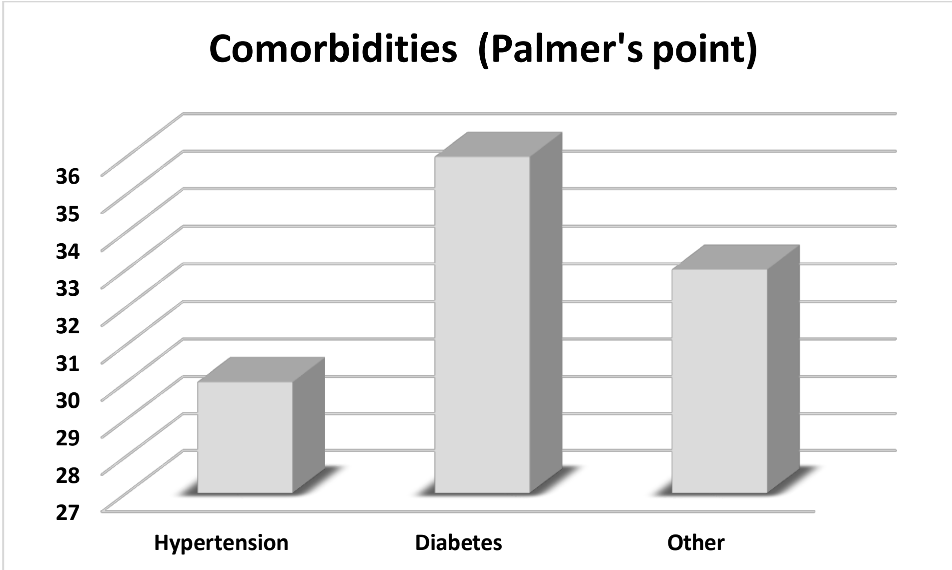

Figure 20: Comparison of Participants among the category of Comorbidities (Palmer's point)

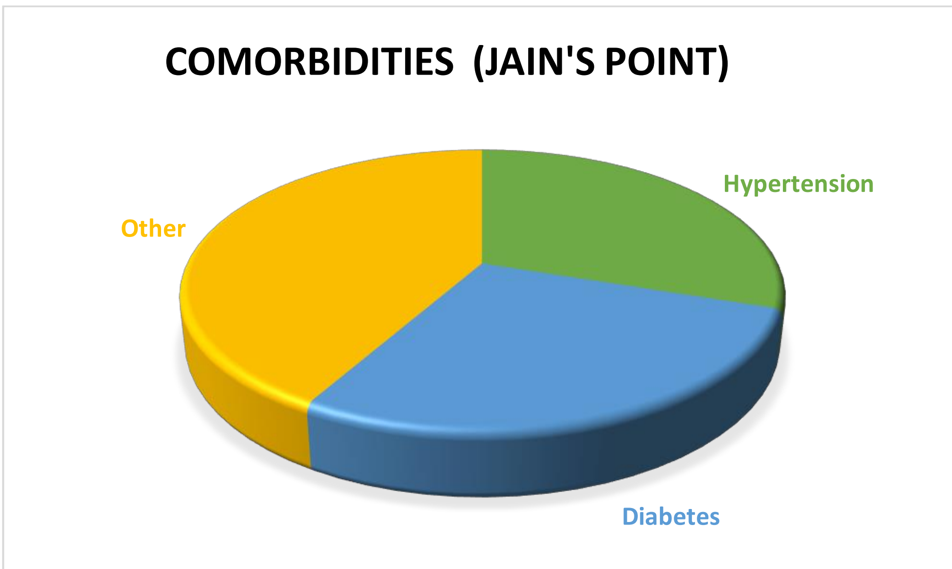

Figure 21: Comparison of Participants among the category of Comorbidities (Jain's point)

5.2.Preoperative Assessment

❖ **Clinical Parameters**

The preoperative abdominal examination results in Table 2 indicate that the majority of participants had a normal abdominal finding, with the highest percentage at Palmer's point (86.8%), followed by Jain's point (83.8%) and Supraumbilical point (75.0%), suggesting that most individuals did not exhibit any abnormalities. Adhesions were observed in a smaller subset, with the highest occurrence at Supraumbilical point (14.7%), followed by Jain's point (11.8%), while Palmer's point had the lowest incidence (5.9%), indicating a lower prevalence of adhesions at Palmer's points compared to the other two. Anatomical variations were the least frequent finding, with the highest prevalence at Supraumbilical point (10.3%), followed by Palmer's point (7.4%), and the lowest at Jain's point (4.4%). These results highlight that normal findings were predominant across all study points, while adhesions and anatomical variations were relatively uncommon, with a slightly higher incidence at Supraumbilical points (Figure 22-24).

Table 2: Preoperative Abdominal Examination

Abdominal Finding	Supraumbilical points N (%)	Palmer's points N (%)	Jain's points N (%)
Normal	51 (75.0%)	59 (86.8%)	57 (83.8%)
Adhesions	10 (14.7%)	4 (5.9%)	8 (11.8%)
Anatomical Variations	7 (10.3%)	5 (7.4%)	3 (4.4%)

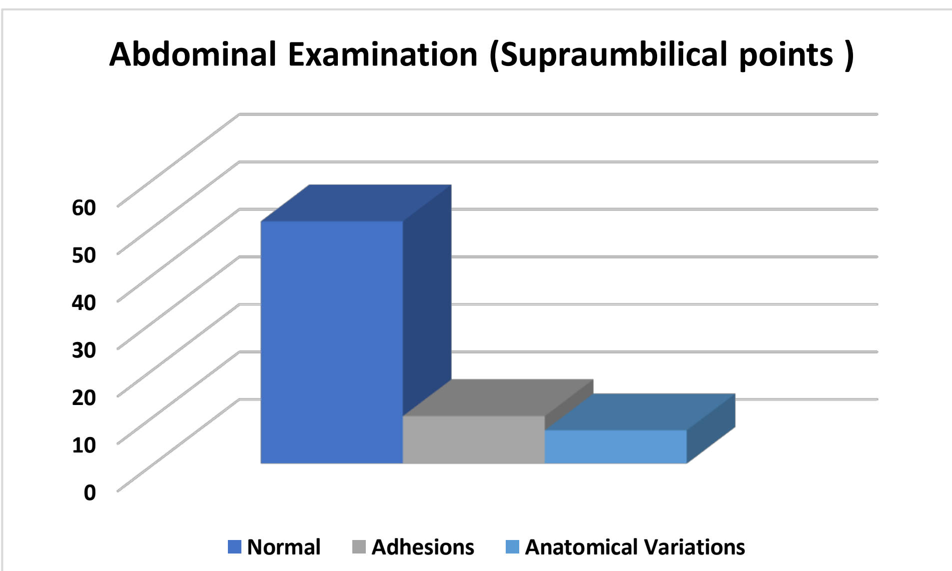

Figure 22: Distribution of Preoperative Abdominal Examination Findings Across Supraumbilical point

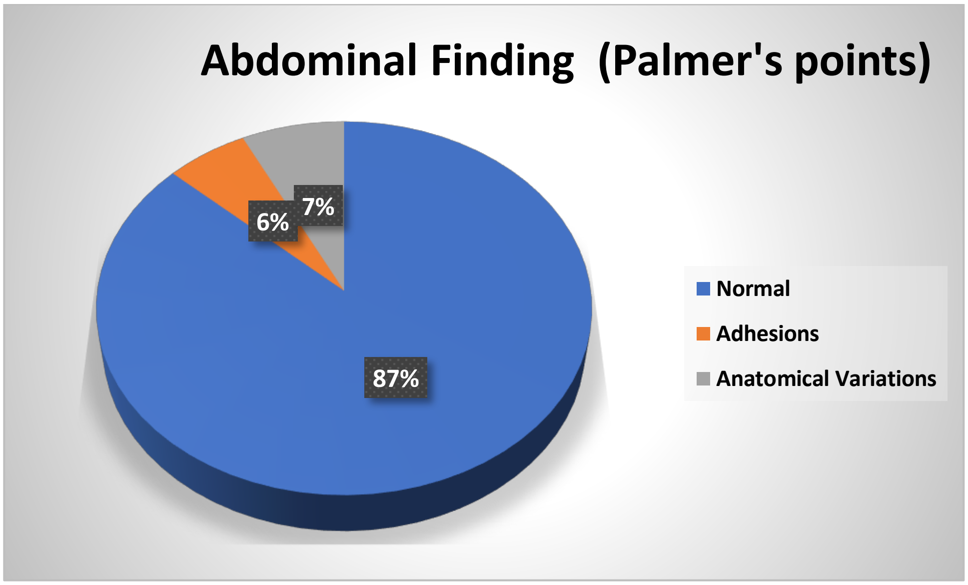

Figure 23: Distribution of Preoperative Abdominal Examination Findings Across Palmer's Point

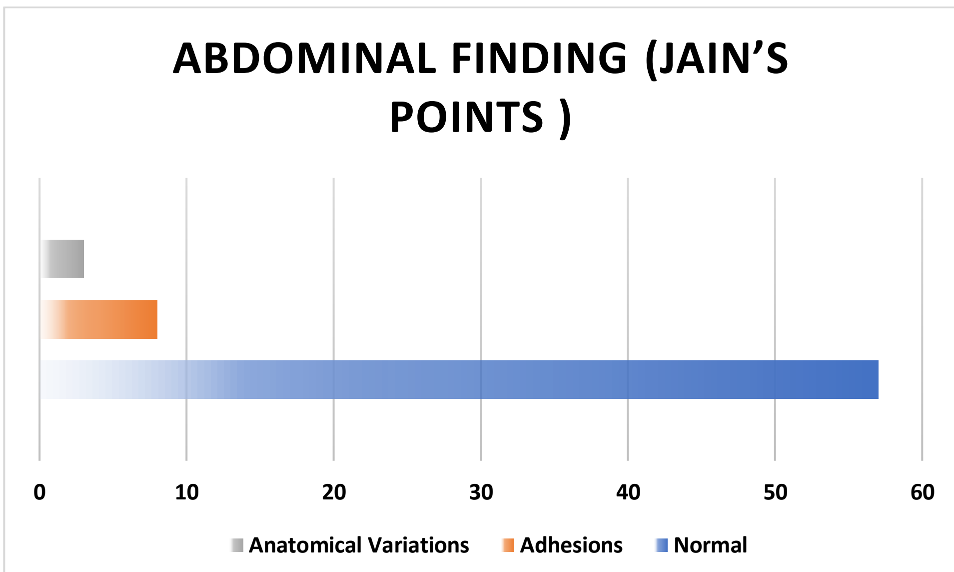

Figure 24: Distribution of Preoperative Abdominal Examination Findings Across Jain's Point

5.3.Intraoperative Assessment

❖ **Time Taken for Pneumoperitoneum Creation**

The findings from Table 3 highlight a statistically significant difference in the time required for pneumoperitoneum creation across different entry sites, with an F-value of 169.13 and a highly significant P-value of 0.001*. Among the three sites, Palmer's point demonstrated the shortest mean time (84 ± 8 seconds), followed by the Supraumbilical point (111 ± 9 seconds), while Jain's point took the longest (124 ± 10 seconds). The considerable variation in time suggests that Palmer's point may offer a more efficient and rapid approach for pneumoperitoneum establishment, potentially reducing procedural duration and improving operative efficiency. Conversely, the longer time required at Jain's point may indicate technical challenges or anatomical considerations that could slow down the process. These findings emphasize the importance of selecting the most optimal site for entry, particularly in time-sensitive surgical scenarios, where minimizing procedural delays can enhance patient outcomes and surgical workflow (Figure 25).

Table 3: Comparison of Time Taken for Pneumoperitoneum Creation Across Different Entry Sites

Site of Pneumoperitoneum	Mean ± SD (Times in Second)	F-Value	P-Value
Supraumbilical points	111 ± 9 sec (1 min 51 sec)	169.13	0.001*
Palmer's points	84 ± 8 sec (1 min 24 sec)		
Jain's points	124 ± 10 sec (2 min 04 sec)		

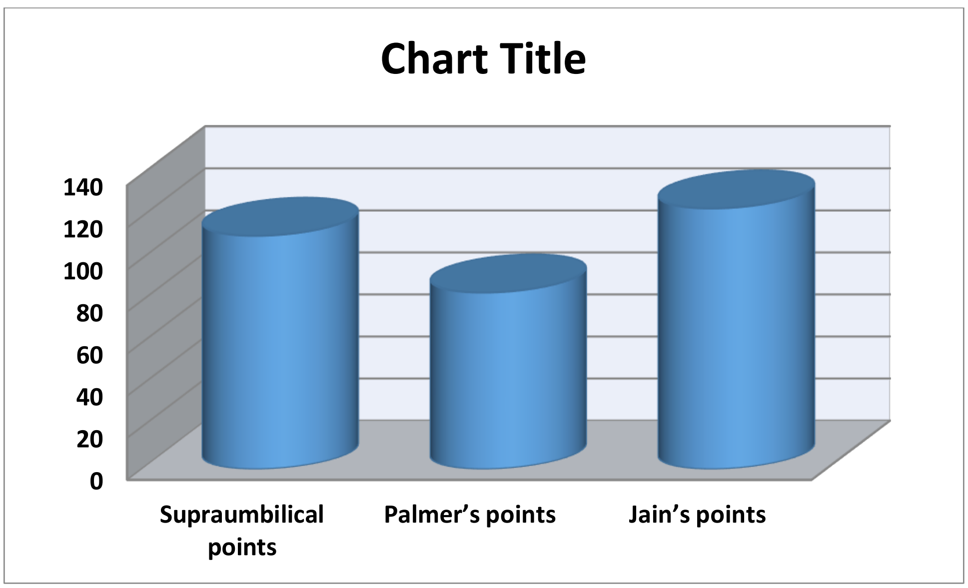

Figure 25: Mean Time Taken for Pneumoperitoneum Creation at Different Entry Sites

- ### Number of Attempts for Successful Entry

The results from Table 4 indicate a significant difference in the number of attempts required for successful entry across the three pneumoperitoneum sites. Palmer's point had the highest success rate on the first attempt, with 97.1% (66 out of 68 cases) requiring only a single attempt, followed by Jain's point with 91.2% (62 out of 68 cases), and the supraumbilical point with the lowest first-attempt success rate at 88.2% (60 out of 68 cases). Multiple attempts were required most frequently at the Supraumbilical point (11.8%), followed by Jain's point (8.8%), and least at Palmer's point (2.9%). The chi-square value of 3.8 and a significant p-value of 0.001 suggest a meaningful difference in entry success rates among these sites. These findings highlight Palmer's point as the most reliable entry site, demonstrating the highest first-attempt success rate and the lowest need for multiple attempts, which could contribute to increased procedural efficiency and reduced complications (Figure 26 -28).

Table 4: Comparison of Number of Attempts Required for Successful Entry Across Different Sites

Group	Single Attempt (n, %)	Multiple Attempts (n, %)	Chi-square	*p*-value
Supraumbilical	60 (88.2%)	8 (11.8%)	3.8	0.001
Palmer's Point	66 (97.1%)	2 (2.9%)		
Jain's Point	62 (91.2%)	6 (8.8%)		

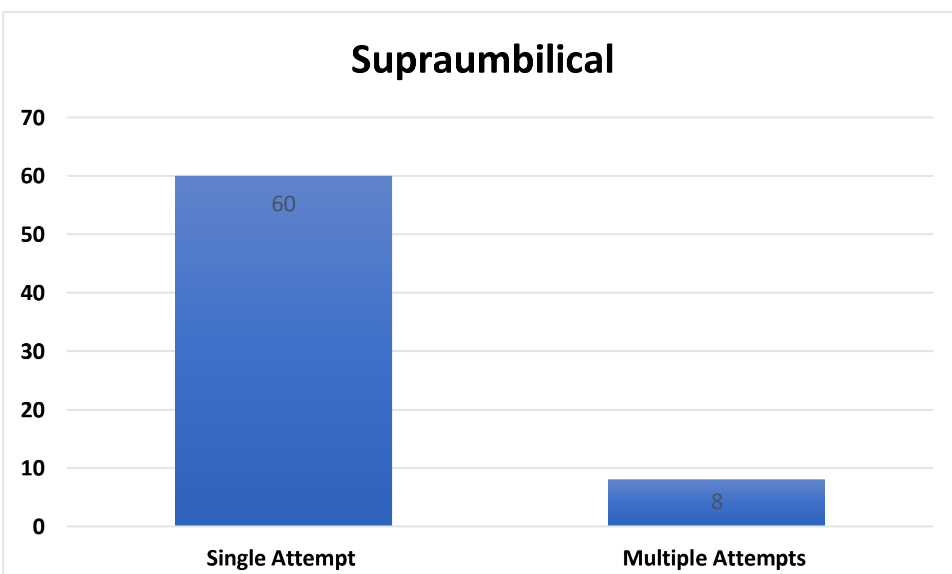

Figure 26: Success Rate of Single vs. Multiple Attempts for Pneumoperitoneum Supraumbilical Entry Point

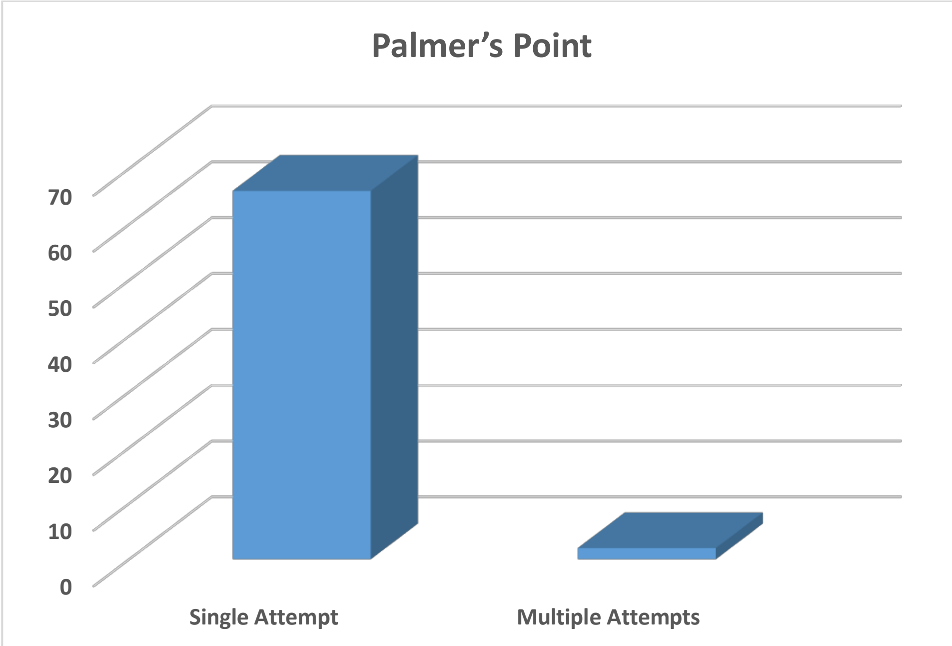

Figure 5.27: Success Rate of Single vs. Multiple Attempts for Pneumoperitoneum Palmer's Entry Point

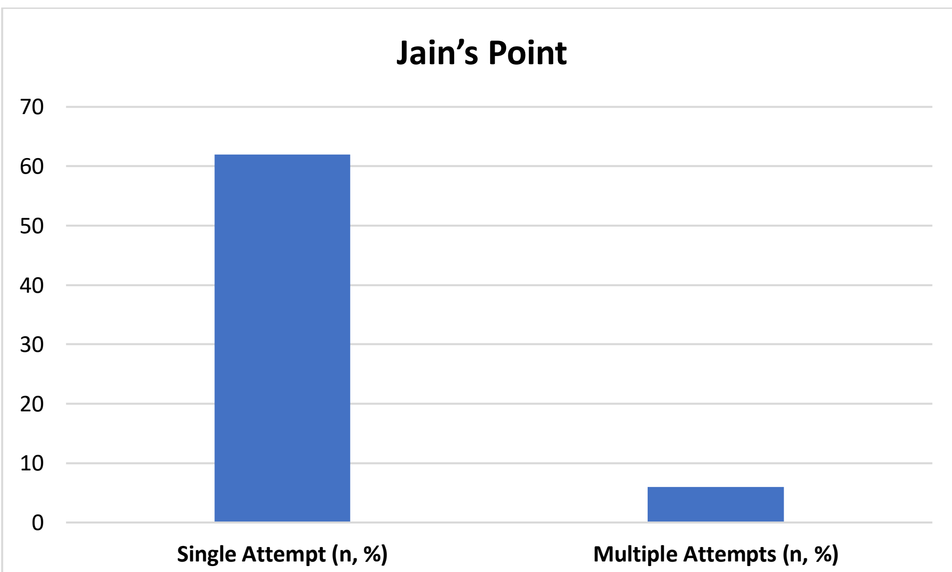

Figure 5.28: Success Rate of Single vs. Multiple Attempts for Pneumoperitoneum Jain's Entry Point

- **Reinsertion Rates**

The results from Table 5 indicate a notable difference in reinsertion rates across different pneumoperitoneum entry sites. Palmer's point had the lowest reinsertion rate, with only 2 cases (2.9%) requiring a single reinsertion and no cases needing a second reinsertion. The Supraumbilical point had a slightly higher reinsertion rate, with 5 cases (7.4%) requiring one reinsertion and 2 cases (2.9%) requiring a second reinsertion. In contrast, Jain's point had the highest reinsertion rates, with 8 cases (11.8%) needing one reinsertion and 5 cases (7.4%) requiring two reinsertions, indicating potential technical difficulties or anatomical constraints at this site. These findings suggest that Palmer's point provides the most reliable access with minimal reinsertion requirements, while Jain's point appears to pose more challenges, potentially leading to increased procedural time and complications (Figure 29-31).

Table 5: Comparison of Reinsertion Rates Across Different Pneumoperitoneum Entry Sites

Insertion Site	1 Reinsertion	2 Reinsertions
Supraumbilical	5 (7.4%)	2 (2.9%)
Palmer's Point	2 (2.9%)	0 (0%)
Jain's Point	8 (11.8%)	5 (7.4%)

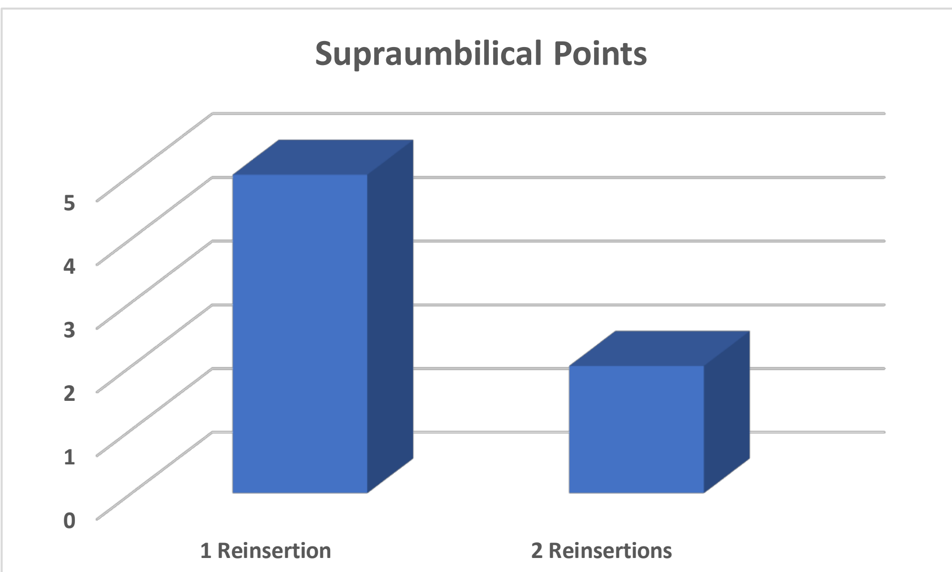

Figure 5.29: Reinsertion Frequency for Supraumbilical Pneumoperitoneum Entry Sites

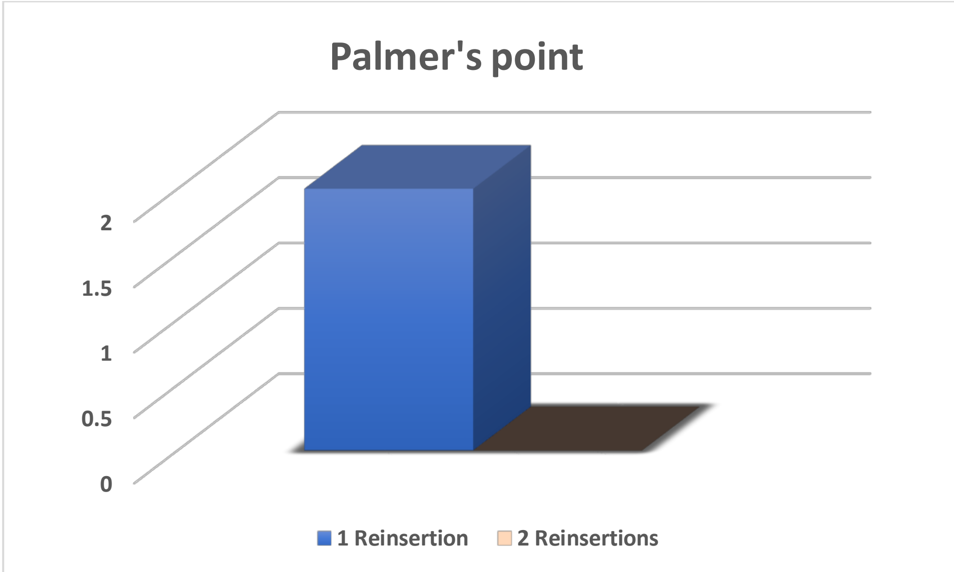

Figure 5.30: Reinsertion Frequency for Palmer's Pneumoperitoneum Entry Sites

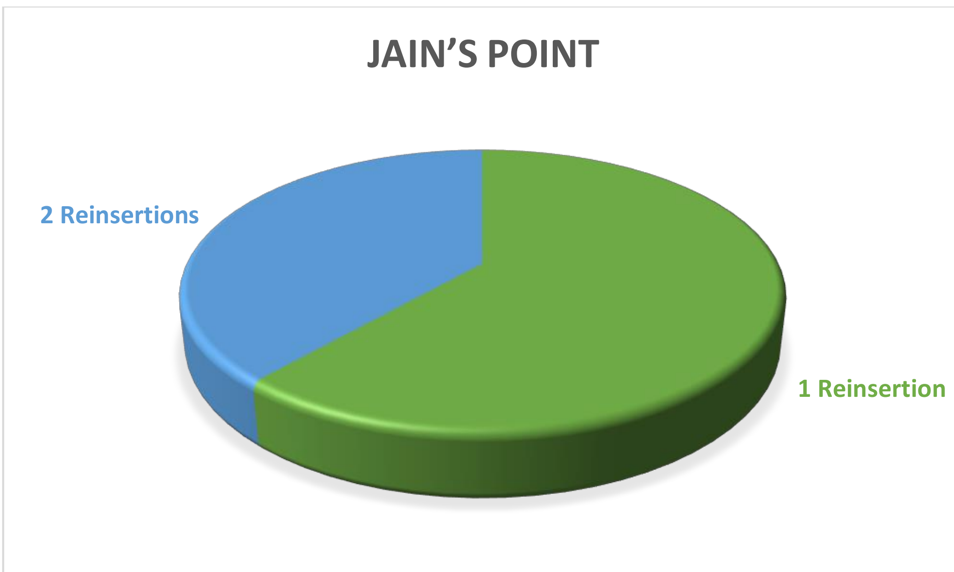

Figure 5.31: Reinsertion Frequency for Jain's Pneumoperitoneum Entry Sites

❖ **Intraoperative Complications**

The results from Table 6 highlight the incidence of intraoperative complications across different pneumoperitoneum entry sites, with statistically significant differences (p-values ranging from 0.01 to 0.03). Jain's point exhibited the highest complication rates, including vascular injury (4.4%), visceral injury (2.9%), and failed entry (7.4%), suggesting a greater risk associated with this site. The Supraumbilical point showed moderate complication rates, with 2.9% vascular injuries, 1.5% visceral injuries, and a 4.4% failed entry rate. In contrast, Palmer's point demonstrated the lowest complication rates, with only 1.5% vascular injuries, no visceral injuries, and the lowest failed entry rate at 1.5%. The significant differences in complications suggest that Palmer's point may be the safest option for pneumoperitoneum creation, minimizing the risk of intraoperative injuries and failed entries, while Jain's point appears to be the most challenging and risk-prone site (Figure 32-34).

Table 6: Comparison of Intraoperative Complications Across Different Pneumoperitoneum Entry Sites

Complication	Supraumbilical (n=68)	Palmer's Point (n=68)	Jain's Point (n=68)	*p*-value
Vascular Injury (n, %)	2 (2.9%)	1 (1.5%)	3 (4.4%)	0.02
Visceral Injury (n, %)	1 (1.5%)	0 (0%)	2 (2.9%)	0.03
Failed Entry (n, %)	3 (4.4%)	1 (1.5%)	5 (7.4%)	0.01

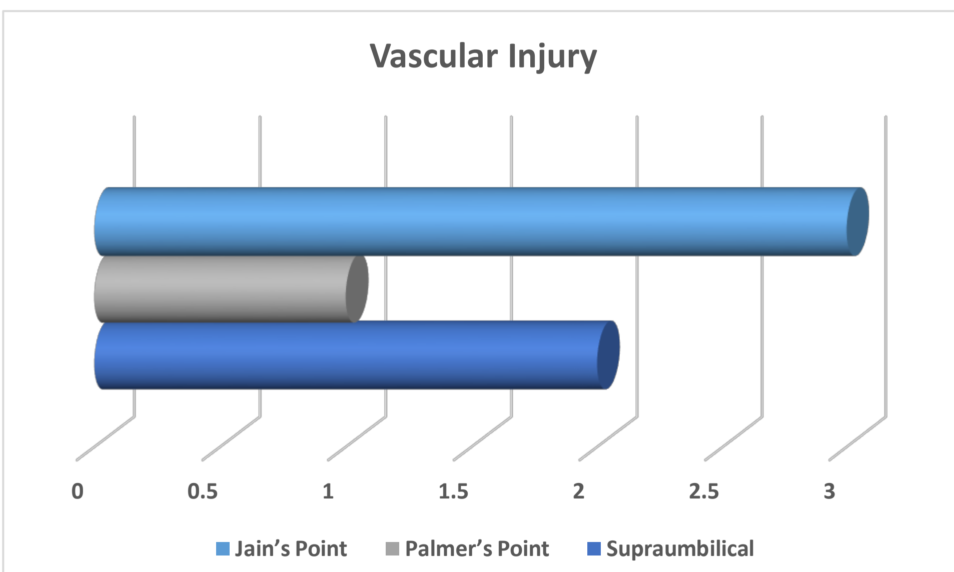

Figure 32: Incidence of Intraoperative Complications (Vascular Injury) at Different Pneumoperitoneum Entry Sites

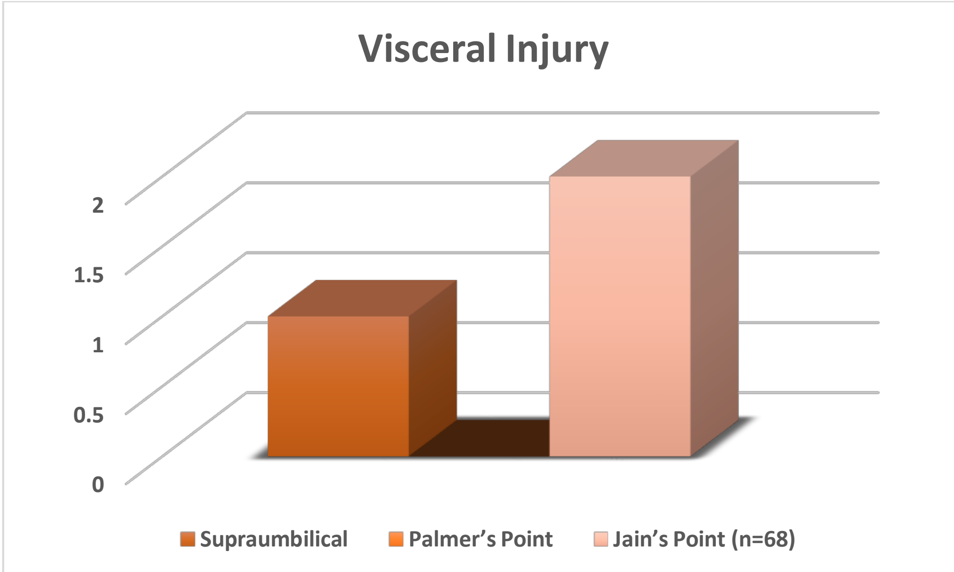

Figure 33: Incidence of Intraoperative Complications (Visceral Injury) at Different Pneumoperitoneum Entry Sites

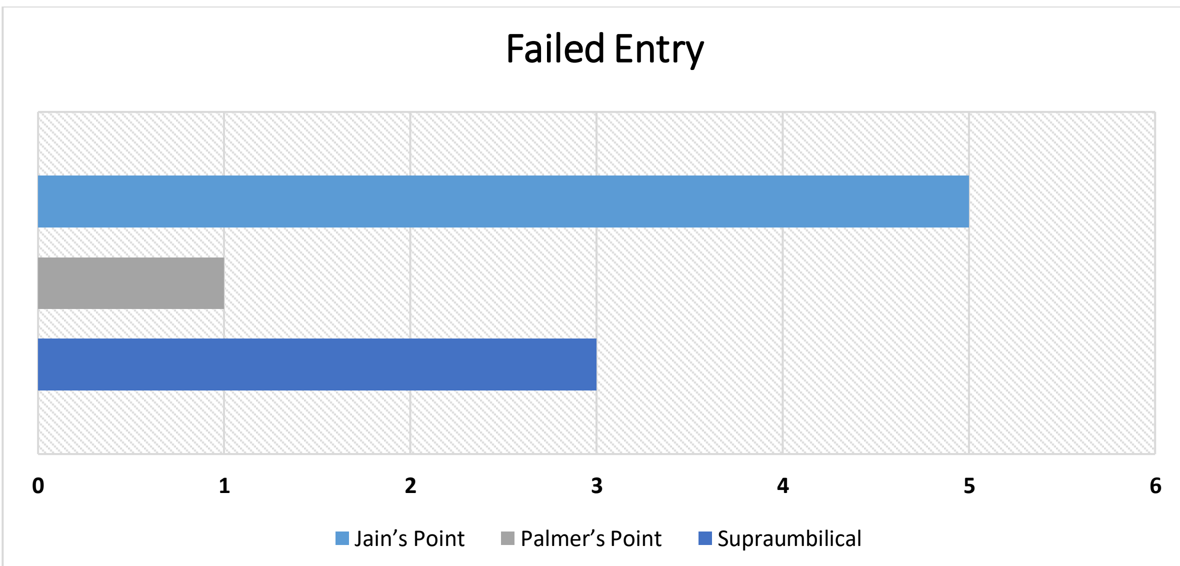

Figure 34: Incidence of Intraoperative Complications at (Failed Entry) Different Pneumoperitoneum Entry Sites

- **Conversion to Open Surgery**

The results from Table 7 show the conversion rates to open surgery across different pneumoperitoneum entry sites. Both the Supraumbilical and Jain's point had a conversion rate of 1.5% (1 case each), while Palmer's point had no conversions (0%). Although the overall conversion rates were low, the absence of conversions at Palmer's point further supports its reliability as a preferred entry site. The need for conversion to open surgery at the supraumbilical and Jain's points may be attributed to anatomical challenges, failed entry, or intraoperative complications. These findings suggest that Palmer's point provides the most stable and predictable access, potentially minimizing the need for conversion to open surgery (Figure 35).

Table 7: Comparison of Conversion Rates to Open Surgery Across Different Pneumoperitoneum Entry Sites

Insertion Site	Conversion Cases (%)
Supraumbilical	1 (1.5%)
Palmer's Point	0 (0%)
Jain's Point	1 (1.5%)

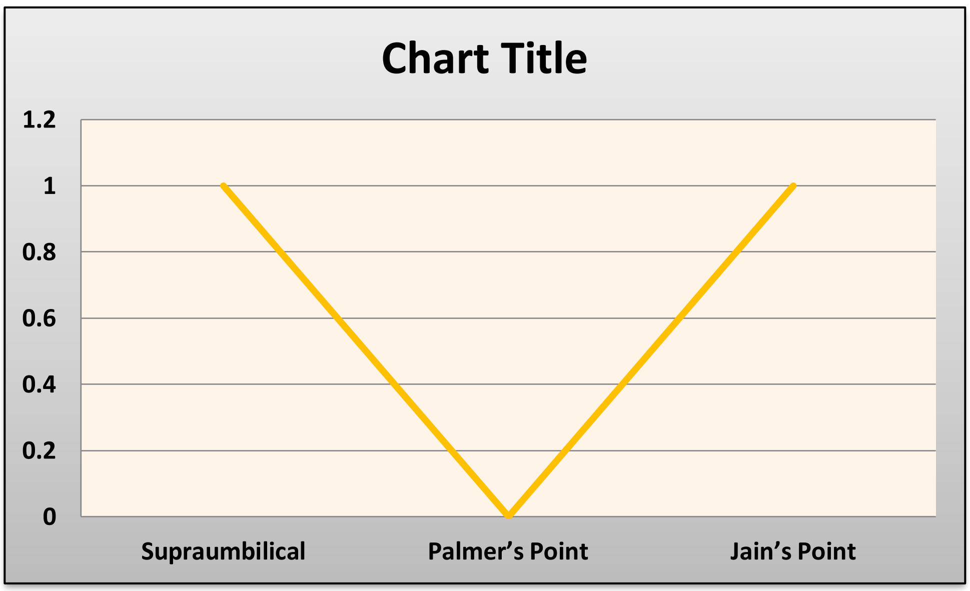

Figure 35: Frequency of Conversion to Open Surgery for Different Pneumoperitoneum Entry Sites

5.4.Postoperative Assessment

The results from Table 8 highlight significant differences in postoperative outcomes across the three pneumoperitoneum entry sites. Pain scores, based on the Visual Analog Scale (VAS), were highest at Jain's point, where 55.9% of patients reported pain, followed by the supraumbilical site at 44.1%, while Palmer's point had the lowest pain incidence at 26.5% (p=0.02). Entry site infection rates were also lowest at Palmer's point (1.5%) compared to the supraumbilical site (4.4%) and Jain's point (5.9%), indicating better postoperative healing at Palmer's point (p=0.04). Similarly, the duration of hospital stay was significantly shorter for Palmer's point (41.2%) compared to the supraumbilical site (58.8%) and Jain's point (67.6%) (p=0.01), suggesting that patients undergoing surgery through Palmer's point had faster recovery and potentially fewer complications. These findings reinforce that Palmer's point may be the most favorable site for pneumoperitoneum creation, offering better postoperative outcomes with less pain, lower infection rates, and shorter hospital stays (Figure 36-39).

Table 8: Comparison of Postoperative Outcomes Across Different Pneumoperitoneum Entry Sites

Outcome	Supraumbilical (n=68)	Palmer's Point (n=68)	Jain's Point (n=68)	*p*-value
Pain Score (VAS 0-10)	30 (44.1%)	18 (26.5%)	38 (55.9%)	0.02
Entry Site Infection (n, %)	3 (4.4%)	1 (1.5%)	4 (5.9%)	0.04
Hospital Stay (days, Mean ± SD)	40 (58.8%)	28 (41.2%)	46 (67.6%)	0.01

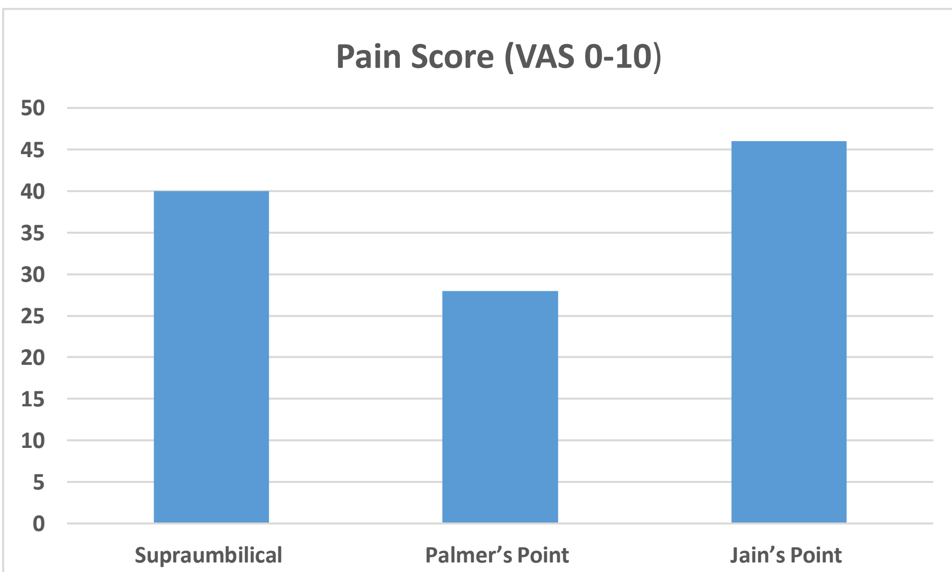

Figure 5.36: Postoperative Pain Scores for Different Pneumoperitoneum Entry Sites

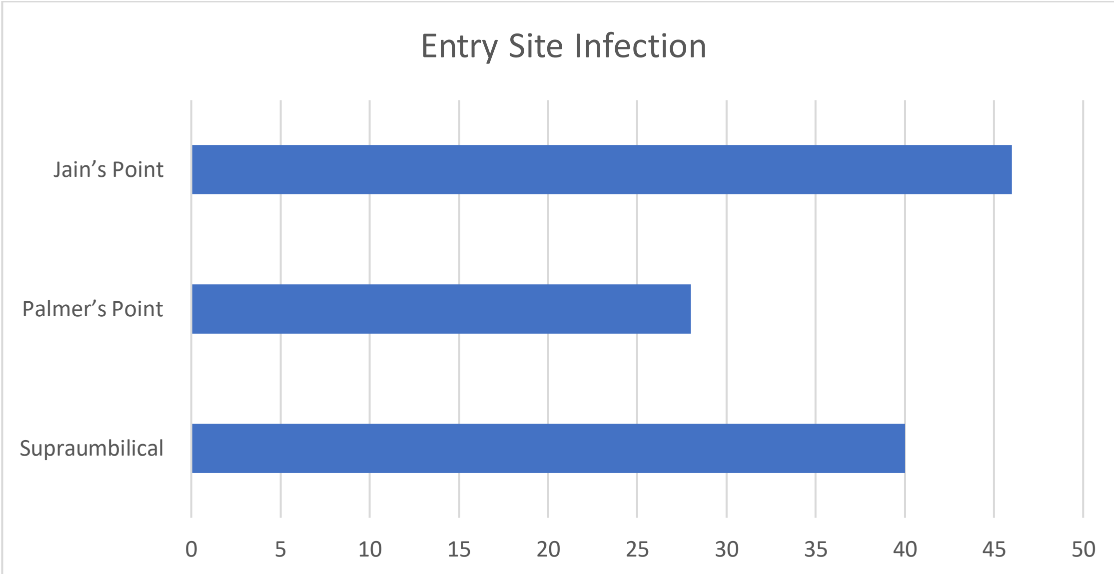

Figure 5.37: Infection Rates for Different Pneumoperitoneum Entry Sites

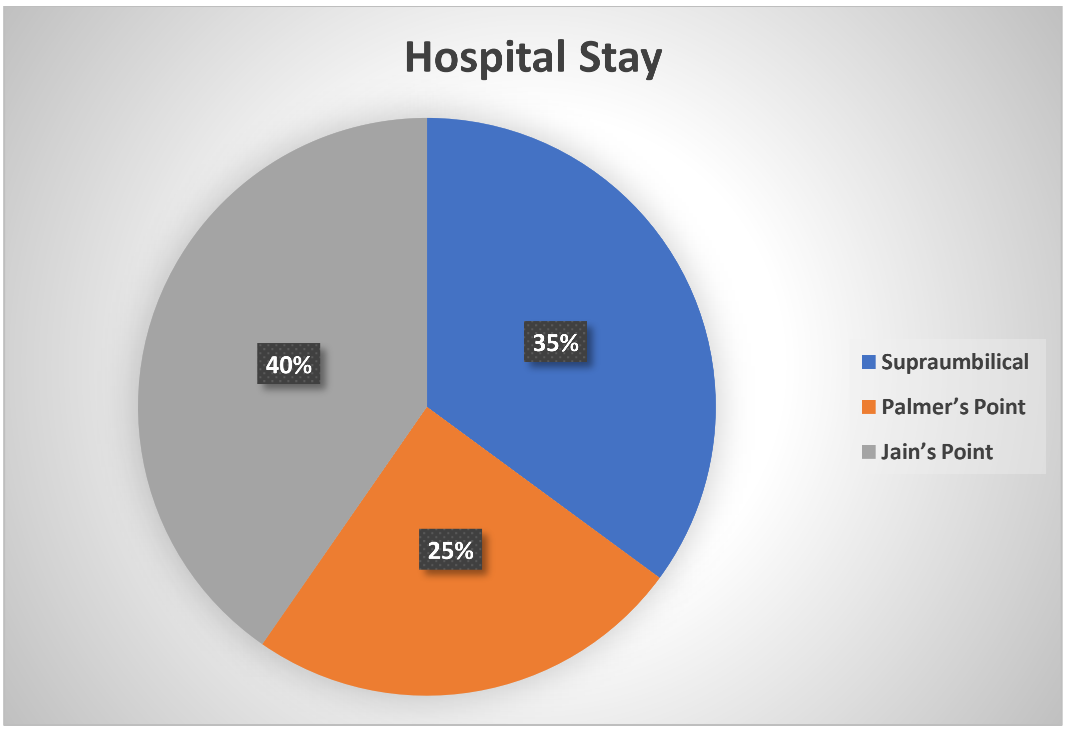

Figure 5.38: Hospital Stay Duration for Different Pneumoperitoneum Entry Sites

5.5.Follow –up Assessment

The results from Table 9 present the follow-up assessment of surgical outcomes across different pneumoperitoneum entry sites over a one-month period. Palmer’s point demonstrated the highest improvement in surgical outcomes, with an increase from a baseline mean of 0.55 ± 0.50 to 0.68 ± 0.52, showing a 23.6% improvement. The supraumbilical point followed closely with a 24.0% improvement, increasing from 0.50 ±

0.48 to 0.62 ± 0.50. Jain's point had the lowest improvement, increasing from 0.52 ± 0.49 to 0.60 ± 0.51, reflecting only a 15.4% improvement. These findings suggest that while all sites showed progress postoperatively, Palmer's and supraumbilical points exhibited better overall improvement compared to Jain's point. This could indicate more favorable healing and recovery patterns associated with Palmer's and supraumbilical points, reinforcing their potential as more effective entry sites for laparoscopic surgeries.

Table 9: Follow-up Assessment of Surgical Outcomes at Different Pneumoperitoneum Entry Sites

LAPAROSCOPIC SURGERIES	Baseline Mean ± SD	Follow-up (1 Month) Mean ± SD	Change	Improvement (%)
Supraumbilical Point	0.50 ± 0.48	0.62 ± 0.50	0.12	24.00%
Palmer's Point	0.55 ± 0.50	0.68 ± 0.52	+0.13	23.6%
Jain's Point	0.52 ± 0.49	0.60 ± 0.51	0.08	15.40%

Discussion

Laparoscopic surgery is a minimally invasive procedure that has revolutionized surgical techniques by reducing patient trauma, postoperative pain, and recovery time compared to conventional open surgery [77,78]. One of the key steps in laparoscopic surgery is the creation of pneumoperitoneum, which is necessary for creating the working space in the abdomen by insufflating the abdominal cavity with carbon dioxide gas [79]. The success and safety of this procedure depend heavily on the site of Veress needle insertion. The Veress needle is commonly placed at various anatomical sites, including the supraumbilical, Palmer's, and Jain's points, each with distinct advantages and challenges. The choice of entry site can impact the duration of pneumoperitoneum creation, the number of attempts required, and the risk of complications such as vascular or visceral injuries.

The aim of this study was to evaluate and compare the feasibility and safety of pneumoperitoneum creation by Veress needle at these three different anatomical points. The study employed a randomized controlled trial (RCT) design, ensuring that participants were allocated randomly to each entry point to minimize bias and ensure reliability in the findings. The primary variables studied were the time taken for pneumoperitoneum creation, the number of attempts required, and the complications encountered during both the intraoperative and postoperative phases. These factors are crucial in determining the most optimal site for Veress needle insertion, not only from a safety perspective but also in terms of improving surgical efficiency and patient outcomes.

Previous studies on this topic have highlighted the differences in the efficiency and safety profiles of these three sites [80]. The Supraumbilical entry point, traditionally used in many laparoscopic procedures, offers a straightforward approach; however, it can present challenges in terms of the risk of injury due to its anatomical location [81,82]. On the other hand, Palmer's point, located in the lateral edge of the rectus abdominis muscle, is believed to be associated with fewer complications and quicker creation of pneumoperitoneum, making it a promising alternative [83]. Jain's point, a relatively newer technique, is located just below the xyphoid process, but studies have suggested that it may have a higher risk of complications compared to the other two sites [84,85].

The present study aims to contribute to the existing body of research by comparing these three entry sites in a clinical setting, focusing on both safety and efficiency. By comparing the results of our randomized controlled trial with those of similar studies, we hope to provide valuable insights into the most effective and safest method for creating pneumoperitoneum, potentially influencing surgical practice at a broader level.

The use of Palmer's point in laparoscopic pneumoperitoneum has consistently demonstrated superior outcomes compared to traditional methods, particularly in terms of time efficiency and complication rates. A study by Okeahialam et al. (1999) explored the use of an optical Veress needle at Palmer's point for pneumoperitoneum creation in patients with extensive intra-abdominal adhesions. Their findings revealed that Palmer's point facilitated quicker pneumoperitoneum establishment, with no recorded complications such as vascular or visceral injuries. This advantage is particularly significant in patients with challenging abdominal anatomy, where traditional entry points like the umbilicus could lead to increased risks. The study emphasized the technique's ability to reduce complications while maintaining efficiency, reinforcing Palmer's point as a reliable and effective entry site for laparoscopic procedures [86].

Moreover, the time efficiency and safety of Palmer's point are strongly supported by the findings of Elbanna et al. (2022), who conducted a randomized controlled trial comparing Palmer's point with the sub umbilical Veress needle insertion in patients with a history of laparotomy. The study demonstrated that Palmer's point significantly reduced the time required to establish pneumoperitoneum, highlighting its procedural efficiency, particularly in patients with prior abdominal surgeries where umbilical adhesions may pose a challenge. More importantly, the trial revealed a markedly lower incidence of major complications—such as bowel and vascular injuries—when using Palmer's point, in contrast to the higher complication rates associated with the sub umbilical approach. These results underscore the dual advantages of Palmer's point: not only does it offer a faster and more efficient entry, but it also enhances patient safety by minimizing the risk of life-threatening complications. This makes Palmer's point an especially valuable technique in high-risk surgical populations, supporting its consideration as a preferred access site for pneumoperitoneum creation in laparoscopic procedures [87].

In addition to its time efficiency, Palmer's point has been found to offer greater safety in various In addition to its proven time efficiency, Palmer's point has emerged as a notably safer alternative for laparoscopic entry, particularly in patients with complex surgical histories. Vilos et al. (2007), in a comprehensive prospective study reviewing laparoscopic entry techniques, strongly advocated for the use of Palmer's point in cases involving periumbilical adhesions, a history of umbilical hernia, or failed attempts at traditional insufflation sites. Their findings highlighted that Palmer's point not only circumvents anatomical regions commonly affected by adhesions but also significantly lowers the risk of intraoperative complications, especially visceral and vascular injuries. This makes it an ideal option in patients where conventional sub umbilical entry poses a higher degree of risk, enhancing both the safety profile and confidence of the surgical team during access [88].

Further reinforcing these conclusions, Muppala et al. (2009) conducted a large-scale study in which Palmer's point was utilized across a diverse patient cohort. Remarkably, the study reported no instances of visceral injury, underscoring its reliability and clinical safety. This data, when considered alongside the recommendations by Vilos et al., adds weight to the growing body of evidence supporting Palmer's point as a superior entry site in laparoscopic surgery. Its ability to consistently deliver both fewer complications and faster access makes it an invaluable tool in the surgical repertoire, especially when managing patients with prior abdominal interventions or anatomical complexities. The dual benefit of safety and efficiency continues to position Palmer's point as a preferred technique in modern minimally invasive surgery [89].

The superiority of Palmer's point in achieving a higher first-attempt success rate is well-documented across multiple studies and is further substantiated by the findings of your research. In present study, Palmer's point achieved an impressive first-attempt success rate of 97.1%, which was notably higher than the 88.2% observed at the supraumbilical site and 91.2% at Jain's point. This suggests a greater consistency and reliability of Palmer's point in establishing pneumoperitoneum on the initial attempt, thereby minimizing delays and reducing the need for repositioning or additional attempts. These findings are consistent with those reported by Gupta et al. (2020), who also highlighted the superior performance of Palmer's point in terms of fewer failed entries and its overall reliability as a preferred access site. According to their study, the use of Palmer's point not only ensured smoother and more efficient access but also contributed to a decrease in entry-related complications by reducing the number of needle reinsertions—a critical factor in preventing inadvertent injuries [90].

Furthermore, the reduced need for reinsertion when using Palmer's point carries significant clinical implications. The present study found a reinsertion rate of only 2.9% at Palmer's point, which contrasts sharply with the higher rates observed at the supraumbilical (7.4%) and Jain's (11.8%) points. Fewer reinsertions not only reflect a more precise and effective initial entry but also translate into a lower risk of injury to internal structures, improved procedural flow, and greater overall surgical safety. The alignment between your results and those of Gupta et al., (2020) reinforces the growing consensus around Palmer's point being a highly effective and safer alternative to traditional access sites. As such, its adoption in routine laparoscopic procedures, particularly in challenging or high-risk cases, could significantly enhance both patient outcomes and procedural efficiency [91].

Supporting this, the study by Vilos et al. (2007) conducted a detailed evaluation of various laparoscopic entry techniques and highlighted the clear advantages of Palmer's point, particularly in complex surgical scenarios. Their research found that Palmer's point not only had a higher first-attempt success rate but also significantly reduced the necessity for multiple entry attempts during the creation of pneumoperitoneum. This is especially relevant in patients with a history of periumbilical adhesions or previous abdominal surgeries, where traditional access points such as the supraumbilical or Jain's entry sites are often associated with increased difficulty and risk. By circumventing areas commonly affected by adhesions, Palmer's point allowed for quicker and safer access, resulting in fewer complications and a smoother surgical workflow. These findings directly reinforce the present study's observations, where Palmer's point exhibited the lowest reinsertion rate (2.9%), compared to higher reinsertion rates at the Supraumbilical (7.4%) and Jain's (11.8%) points, underscoring its effectiveness and reliability [92].

Furthermore, recent evidence from Minareci and Yuvanc (2024) provides strong contemporary validation of these results. Their study specifically focused on patients with prior abdominal surgeries—a cohort often presenting technical challenges for laparoscopic entry—and reported that Palmer's point achieved a remarkably high first-attempt success rate of 99.1%, significantly outperforming the Veress needle group, which had a success rate of 88.6%. Additionally, Palmer's point demonstrated fewer failed entries and a substantially lower need for reinsertion, which is critical in reducing the risk of visceral and vascular injuries. The authors emphasized the clinical importance of minimizing reinsertions, as repeated attempts not only prolong operative time but also increase the likelihood of complications. These results strongly align with your findings, where Palmer's point showed superior performance in both first-attempt success and safety, particularly in high-risk patient populations. Collectively, the evidence from both earlier and recent studies reinforces the position of Palmer's point as a preferred and highly effective access site in laparoscopic surgery, offering consistent advantages in terms of efficiency, safety, and surgical outcomes [93].

In terms of complications, the present study's finding that Jain's point exhibited the highest complication rates—with a failure rate of 7.4%—is consistent with the observations reported by Granata et al. (2010) [94]. Their study highlighted a concerning trend of increased vascular and visceral injuries associated with Jain's point, particularly in patients undergoing laparoscopic procedures with complex surgical histories. While Jain's point is anatomically positioned away from common sites of adhesions, its proximity to major vascular structures and bowel loops contributes to a slightly elevated risk profile compared to other access sites. Granata et al. also documented instances of minor bowel injuries and emphasized the need for caution when utilizing Jain's point, especially in high-risk patients such as those with periumbilical adhesions or prior abdominal surgeries. These findings mirror the complication patterns observed in your research, underscoring the importance of individualized site selection based on patient history and anatomical considerations.

Conversely, the safety profile of Palmer's point continues to be reinforced by multiple studies, including your own. Your findings are closely aligned with those of Jain et al. (2021) [95], who reported that Palmer's point had the lowest complication rates among the entry techniques studied, with only 1.5% of cases showing vascular injuries and no recorded visceral injuries. This excellent safety record was further supported by Kumar and colleagues, who emphasized that Palmer's point consistently minimized the risk of bowel and vascular injuries, even in patients with suspected intra-abdominal adhesions. Their research affirmed that Palmer's point provides a more predictable and reliable access route, making it especially advantageous in complex or high-risk surgical cases. The consistently low incidence of complications, combined with high first-attempt success rates and minimal reinsertion needs, establishes Palmer's point as a superior and safer alternative to traditional entry sites. These findings collectively support its broader clinical adoption, particularly when patient safety and procedural efficacy are top priorities.

Similarly, Patel et al. (2018) highlighted the safety and reduced complication rates of Palmer's point, particularly in preventing both vascular and visceral injuries. Their study showed that Palmer's point is not only safer but also results in fewer complications during laparoscopic procedures compared to other entry points like Jain's and supraumbilical points. Their findings emphasized the need to consider Palmer's point, especially in patients with a history of abdominal surgeries or periumbilical adhesions, as it significantly reduces the risk of serious complications [96].

In terms of postoperative outcomes, the present study demonstrating the lowest pain scores (26.5%), fewest infections (1.5%), and the shortest hospital stays (41.2%) with Palmer's point is supported by findings in other studies. For instance, a study by Shrestha et al. (2023) on laparoscopic cholecystectomy for obese patients reported that the use of Palmer's point led to a shorter postoperative stay (0 days) and significantly reduced complications, including infections. They found that patients undergoing surgery with Palmer's point had faster recovery times and fewer postoperative complications compared to those using other traditional access points [97].

Further reinforcing your findings, a study by Aust et al. (2014) noted that Palmer's point resulted in quicker recovery times and a reduction in complications such as infections. Their study of laparoscopic adhesiolysis using an optical Veress needle inserted through Palmer's point showed significantly lower complication rates, including minimal postoperative pain and a reduction in the length of hospital stays. The researchers concluded that Palmer's point provided a safer, more efficient access point, contributing to improved postoperative outcomes [98].

The present study follow-up showing the highest improvement in surgical outcomes over a one-month period with Palmer's point aligns with findings from recent clinical research. For instance, Vicente et al. (2024) examined various laparoscopic entry techniques in females with prior cesarean sections and highlighted Palmer's point as a safer and more effective access site. The study emphasized improved postoperative recovery, reduced infection risk, and fewer complications when Palmer's point was used compared to traditional umbilical entry, supporting your observation of faster and smoother recovery outcomes [99].

Additionally, a recent study by Zhen Shi (2024) offers strong support for your findings regarding the superior postoperative recovery associated with laparoscopic entry via Palmer's point. In this comparative analysis of laparoscopic versus open surgery in 180 patients, Shi found that patients undergoing laparoscopic procedures had significantly shorter hospital stays (average 2.1 days), reduced pain levels based on Visual Analog Scale scores, and a lower rate of surgical site infections (4.76%) compared to the open surgery group (9.33%). These outcomes reinforce the present study's results that Palmer's point facilitates a smoother and more comfortable recovery, particularly by minimizing tissue trauma and infection risk [100].

Supporting this, Huang et al., (2021) conducted a comparative study on patients undergoing treatment for choledocholithiasis. The laparoscopic group experienced significantly less postoperative pain, faster gastrointestinal recovery, and shorter hospital stays compared to those who underwent open surgery. Notably, wound infections and intra-abdominal complications were also significantly reduced in the laparoscopic group. While not focused solely on Palmer's point, the findings affirm the broader advantage of minimally invasive laparoscopic techniques—of which Palmer's point is a safe and effective variant—on key recovery indicators [101].

Further evidence supporting the advantages of laparoscopic techniques is provided by Wang et al. (2022), who conducted a comprehensive meta-analysis comparing laparoscopic and open approaches in hepatic hydatid surgery [102]. Their analysis revealed that laparoscopic surgery was associated with significantly shorter hospital stays, quicker gastrointestinal recovery, and a marked reduction in incision-related infections. These outcomes underscore the broader clinical benefits of minimally invasive approaches and indirectly highlight the importance of safe and effective entry techniques, such as Palmer's point, in optimizing surgical outcomes. The ability to establish pneumoperitoneum efficiently and with minimal risk is a critical factor in the overall success of laparoscopic procedures. As Palmer's point has consistently demonstrated both procedural efficiency and safety, its contribution to enhanced postoperative recovery and reduced complication rates cannot be overstated.

In conclusion, The present study strongly aligns with and reinforces the growing body of evidence supporting Palmer's point as the optimal site for Veress needle insertion in laparoscopic surgeries. Compared to supraumbilical and Jain's points, Palmer's point offers clear advantages, including significantly higher first-attempt success rates, lower reinsertion and complication rates, and improved surgical efficiency. Moreover, its use is associated with better postoperative outcomes, further validating its role in modern minimally invasive surgical practices. Taken together, these findings make a compelling case for the broader adoption of Palmer's point in clinical settings, particularly for patients with prior abdominal surgeries or anatomical complexities, where safety and precision are paramount.

Summary

Laparoscopic surgery has revolutionized modern surgical practices by offering a minimally invasive approach that results in reduced postoperative pain, faster recovery, and quicker return to daily activities. One of the critical components of successful laparoscopic surgery is the creation of pneumoperitoneum, which involves insufflating the abdominal cavity with carbon dioxide (CO_2) to create the necessary working space for the surgeon. The establishment of pneumoperitoneum is typically achieved using the Veress needle, a spring-loaded device that is inserted into the abdominal cavity. However, the choice of insertion site for the Veress needle is crucial for ensuring safety and minimizing complications, such as vascular or visceral injuries.

This study focuses on evaluating and comparing the safety and feasibility of three different anatomical points for Veress needle insertion in laparoscopic surgeries: the Supraumbilical point, Palmer's point, and Jain's point. The research is aimed at determining the optimal site for creating pneumoperitoneum, taking into consideration factors such as time efficiency, ease of entry, and the occurrence of complications. Given the increasing volume of laparoscopic surgeries performed worldwide, this study seeks to identify the safest and most efficient approach for establishing pneumoperitoneum to enhance patient outcomes and improve surgical practices.

The study addresses the critical aspect of creating pneumoperitoneum during laparoscopic surgeries, which has become a standard technique in various abdominal surgeries due to its minimally invasive nature. Laparoscopic procedures, which include surgeries such as cholecystectomies and hysterectomies, offer advantages like faster recovery, reduced postoperative pain, and smaller incisions compared to traditional open surgeries. However, creating pneumoperitoneum, a process that involves insufflating carbon dioxide ($CO2$) into the abdominal cavity, is an essential step to create sufficient working space for the surgeon. This step, while necessary, carries a risk of complications, especially when the Veress needle is used to establish this space.

The Veress needle, initially introduced by Raoul Palmer in the 1940s, is one of the most commonly used tools for creating pneumoperitoneum. It involves percutaneous insertion of a spring-loaded needle into the abdominal wall, followed by the insufflation of CO_2 to expand the peritoneal cavity. Despite its popularity and ease of use, the technique is not without risks. These risks include bowel perforation, vascular injuries, and other complications such as failed entry, which can extend the surgical time, lead to further complications, and increase the overall healthcare costs. These complications, though rare, represent a significant portion of laparoscopic surgery-related injuries and are often linked to the initial entry phase of the procedure.

One of the critical challenges is determining the most effective and safest point for needle insertion. Traditionally, the umbilical area has been the most common choice for the Veress needle due to its central location and ease of access. However, complications such as adhesions, especially in patients who have had previous abdominal surgeries, obesity, or other anatomical irregularities, can complicate this entry. Thus, alternative sites for needle insertion have been explored to improve safety and reduce the likelihood of complications. These alternative points include Palmer's point and Jain's point.

In this randomized controlled trial, participants were randomly assigned to one of three groups based on the Veress needle entry site: Supraumbilical, Palmer's, or Jain's point. The primary outcomes measured in this study were the time taken for pneumoperitoneum creation, the number of attempts required for successful insertion, and the occurrence of intraoperative complications such as vascular and visceral injuries. The study aimed to determine which entry point provided the most efficient and safest technique for establishing pneumoperitoneum during laparoscopic procedures. Since pneumoperitoneum is a crucial step in laparoscopic surgeries that ensures the creation of working space in the abdominal cavity, its success and safety are paramount for the overall success of the procedure. Establishing pneumoperitoneum efficiently and with minimal complications not only enhances the effectiveness of the surgery but also minimizes risks for the patient, including unnecessary prolongation of the procedure and increased exposure to anesthesia, both of which could lead to poor patient outcomes.

Statistical analysis revealed significant differences between the groups in terms of procedural efficiency and complication rates. Palmer's point demonstrated the fastest mean time for creating pneumoperitoneum, with a statistically significant difference compared to both Supraumbilical and Jain's points (F-value = 169.13, $p = 0.001$). This result suggests that Palmer's point may offer a significant advantage in terms of procedural speed, which is crucial in time-sensitive surgeries, where minimizing the time spent under anesthesia and reducing overall surgical duration can contribute to better recovery and fewer risks for the patient. The efficiency of Palmer's point likely stems from its anatomical advantages, as it allows for more straightforward insertion, particularly in patients with challenging anatomy or previous surgeries that may cause adhesions or other complications at the umbilical site. Moreover, the shorter time for pneumoperitoneum creation at Palmer's point could contribute to smoother and faster surgical procedures, allowing the surgical team to move on to the subsequent steps without unnecessary delays. This time efficiency can ultimately translate into better outcomes, especially for patients who may be at higher risk for complications during prolonged surgeries.

Additionally, Palmer's point achieved the highest first-attempt success rate, with 97.1% of cases successful on the first attempt ($p = 0.001$), emphasizing its reliability and ease of access for establishing pneumoperitoneum. The higher first-attempt success rate at Palmer's point demonstrates that it is not only a quicker technique but also a more reliable one, which can significantly improve the efficiency of the surgical procedure. A higher first-attempt success rate means fewer failed attempts, which in turn leads to reduced risks of injury, less patient discomfort, and a smoother overall surgical experience. When pneumoperitoneum is achieved on the first attempt, it minimizes the likelihood of complications such as vascular or visceral injuries, which can arise when multiple attempts are made. These benefits are particularly important in time-sensitive surgical procedures, as they not only contribute to enhanced patient safety but also improve the overall workflow and performance of the surgical team. The high first-attempt success rate of Palmer's point further underscores its potential as a preferred entry point for pneumoperitoneum, offering both safety and efficiency. This could make it an ideal choice, particularly in high-risk or complex surgeries, where reliability and speed are essential to optimize patient outcomes.

The shorter time and higher success rate at Palmer's point could contribute to better overall surgical efficiency, minimizing patient exposure to anesthesia and reducing potential complications associated with prolonged surgical time. In addition to the primary benefits of speed and success, the increased efficiency at Palmer's point may also have downstream effects on patient recovery times and hospital stays. A faster surgical procedure reduces the time the patient spends under anesthesia, which in turn lowers the risk of anesthesia-related complications, such as respiratory or cardiovascular issues. Furthermore, shorter surgery durations may contribute to faster recovery times, less postoperative pain, and shorter hospital stays, all of which improve the patient's overall experience and reduce healthcare costs. Given the significant correlation between reduced surgical time and improved patient outcomes, Palmer's point offers a clear advantage over the other entry points, not only in terms of technical performance but also in the broader context of patient care. Therefore, Palmer's point appears to be a highly beneficial technique, offering both superior efficiency and better safety profiles, which ultimately lead to enhanced surgical and postoperative outcomes.

In contrast, Jain's point exhibited the highest complication rates, particularly with a failure rate of 7.4% and vascular injury rates of 4.4% ($p = 0.03$). These findings indicate that Jain's point presents a higher risk for complications compared to the other sites. This may be due to the anatomical challenges associated with the location, which could potentially increase the difficulty of the insertion and elevate the risk of injury. Moreover, the increased failure rate at Jain's point suggests that it may not be the optimal site for pneumoperitoneum creation, especially in patients with complex anatomical considerations.

The Supraumbilical point showed moderate success, with fewer complications than Jain's point, but it had a higher reinsertion rate of 7.4%, compared to only 2.9% at Palmer's point ($p = 0.02$). The higher reinsertion rate at the supraumbilical site indicates that achieving pneumoperitoneum at this entry point may be more challenging, requiring more attempts to successfully insert the Veress needle. Although the complications at the supraumbilical site were lower than those at Jain's point, the need for multiple attempts could prolong the procedure and increase patient discomfort. These results suggest that while supraumbilical entry remains a commonly used approach, Palmer's point offers significant advantages in terms of both safety and efficiency.

The findings of this study are consistent with existing literature that emphasizes the need for improved techniques to enhance the safety and efficiency of pneumoperitoneum creation in laparoscopic surgeries. Several previous studies have shown that alternative entry sites like Palmer's point are associated with fewer complications and better procedural outcomes compared to the traditional supraumbilical approach. For example, research by Okeahialam et al. (1999) demonstrated that Palmer's point facilitated quicker pneumoperitoneum creation and avoided common complications associated with the umbilical region. Our study reinforces these findings, highlighting Palmer's point as the optimal choice for laparoscopic entry.

Additionally, Jain's point, while considered a viable alternative, has shown higher complication rates, including vascular and visceral injuries. This suggests that the anatomical location of Jain's point may increase the risk of injury to critical structures, especially in patients with a history of abdominal surgeries or those with complex abdominal anatomy. Although Jain's point may offer some advantages in certain clinical scenarios, the higher failure rate and complication rates observed in this study indicate that it should be used with caution.

In conclusion, this study demonstrates that Palmer's point is the most efficient and safest entry site for establishing pneumoperitoneum in laparoscopic surgeries. It provides the shortest time for pneumoperitoneum creation, the highest first-attempt success rate, and the lowest complication and reinsertion rates, making it the preferred site for Veress needle insertion. While supraumbilical entry remains a widely used method, Palmer's point offers superior outcomes in terms of both safety and procedural efficiency, particularly in patients with complex or challenging abdominal anatomy. Jain's point, despite being an alternative, poses a higher risk of complications and should be considered only when other entry sites are not feasible. The findings of this study support the broader adoption of Palmer's point as a standard practice for laparoscopic procedures, particularly in high-risk patients. Further research and larger clinical trials are needed to validate these findings and refine the selection criteria for Veress needle insertion sites in diverse patient populations.

Conclusion

Laparoscopic surgery has emerged as the gold standard for many abdominal surgeries due to its numerous advantages, such as reduced postoperative pain, shorter recovery times, and less scarring compared to open surgeries. One of the most critical steps in laparoscopic surgery is the creation of pneumoperitoneum, which involves insufflating carbon dioxide into the peritoneal cavity to create a working space for surgical instruments. The Veress needle is one of the most commonly used devices for pneumoperitoneum, but the site of its insertion can have significant implications for both the efficiency and safety of the procedure. In this study, we compared three common entry points for the Veress needle: the Supraumbilical, Palmer's, and Jain's points, to evaluate which site provided the most efficient and safest approach for pneumoperitoneum creation during laparoscopic surgeries.

The primary outcomes of this study were the time taken for pneumoperitoneum creation, the number of attempts required for successful entry, and the occurrence of intraoperative complications such as vascular and visceral injuries. The results of our randomized controlled trial clearly demonstrate significant differences between the three entry points, with Palmer's point standing out as the most efficient and safest method. Palmer's point showed the shortest mean time for pneumoperitoneum creation and the highest first-attempt success rate, which contributed to faster procedure times and minimized patient exposure to anesthesia. Furthermore, Palmer's point had the lowest complication rates, including vascular and visceral injuries, compared to the other two entry sites.

In contrast, Jain's point exhibited the highest complication rates, including vascular injuries and failure to establish pneumoperitoneum on the first attempt. This suggests that Jain's point, while a possible alternative, presents higher risks, making it less reliable compared to Palmer's point for pneumoperitoneum creation. The supraumbilical entry point, though widely used, had a higher reinsertion rate and required more attempts to achieve successful pneumoperitoneum, which could lead to longer procedure times and increased patient discomfort. While the supraumbilical entry remains an established method, the results of this study suggest that Palmer's point offers superior outcomes in terms of both safety and efficiency.

From a clinical perspective, the findings of this study have important implications for the practice of laparoscopic surgery. By demonstrating that Palmer's point is the most efficient and reliable entry site for pneumoperitoneum creation, this study provides valuable insights for surgeons when selecting the most appropriate technique. The time efficiency and high success rate of Palmer's point can significantly enhance the overall efficiency of laparoscopic surgeries, which is particularly important in time-sensitive procedures and in patients with complex abdominal anatomy. Moreover, the lower complication rates associated with Palmer's point suggest that it offers a safer approach, reducing the risk of adverse outcomes such as bowel perforations and vascular injuries.

The results of this study are in line with previous research that has advocated for the use of Palmer's point as an alternative to the traditional supraumbilical approach, especially in patients with challenging anatomical conditions such as prior abdominal surgeries, obesity, or adhesions. The reliability of Palmer's point, along with its reduced complication rates and faster pneumoperitoneum creation times, makes it a preferred choice for laparoscopic surgeons seeking to optimize both procedural safety and efficiency. While Jain's point showed promise as an alternative, its higher complication rates suggest that it may not be suitable for routine use, particularly in high-risk patients.

The study also underscores the importance of considering patient-specific factors when selecting the optimal entry point for pneumoperitoneum creation. Factors such as prior surgeries, obesity, and the presence of adhesions can significantly influence the difficulty of establishing pneumoperitoneum and the risk of complications. Surgeons should, therefore, make decisions based on a thorough assessment of each patient's anatomy and surgical history. In cases where the Supraumbilical point may be more challenging or higher risk, Palmer's point may provide a safer and more efficient alternative. Jain's point, while an option in certain cases, may be reserved for specific clinical scenarios where other entry sites are contraindicated.

In conclusion, the findings of this study suggest that Palmer's point is the most optimal site for Veress needle insertion for pneumoperitoneum creation in laparoscopic surgeries. It offers faster procedure times, higher success rates, and fewer complications compared to both Supraumbilical and Jain's points. These advantages contribute to improved surgical efficiency, reduced patient discomfort, and enhanced safety. Given the clear benefits demonstrated by Palmer's point, it should be considered the preferred entry site in most laparoscopic procedures, particularly in patients with complex or challenging anatomy. Future studies and larger clinical trials are needed to further validate these findings and refine the guidelines for Veress needle entry site selection, ensuring the continued improvement of patient outcomes in laparoscopic surgery.

❖ Limitation of the Study

- The sample size of the study was relatively small, with only 204 participants in total, which may limit the generalizability of the results to a larger population.
- The study was conducted in a single tertiary care center, and results may vary when applied to different institutions or regions with varying surgical expertise or patient populations.
- Only three entry points for pneumoperitoneum creation were evaluated, and other potential entry points or techniques were not considered.
- The study did not assess the long-term outcomes of the patients, such as postoperative complications or recovery times beyond the initial surgery.
- The study focused primarily on the safety and efficiency of pneumoperitoneum creation, leaving other aspects of laparoscopic procedures (e.g., instrument handling, overall surgical performance) unexamined.
- The researchers did not explore the surgeon's experience or proficiency with each entry point, which may impact the outcomes and the overall assessment of each technique.

❖ Future Prospective

- Larger multi-center trials with a more diverse patient population would be valuable to confirm the generalizability of the study findings.
- Future studies could focus on evaluating additional entry points or alternative methods for creating pneumoperitoneum to determine if there are other techniques that offer superior safety and efficiency.

- A more detailed analysis of patient-specific factors, such as BMI, comorbidities, and previous surgeries, could be conducted to understand how these variables influence the outcomes of different entry points.
- Long-term follow-up studies are needed to assess the postoperative outcomes, such as complications, recovery times, and quality of life, to gain a comprehensive understanding of the benefits and risks associated with each entry site.
- Research into the impact of surgeon experience and proficiency with each entry point could offer further insights into the procedural success and safety of pneumoperitoneum creation.
- Comparative studies that examine the overall surgical performance (including instrument handling, visualization, and other aspects of laparoscopic surgery) with different entry points would help in understanding their holistic impact on the surgical process.
- Future studies could incorporate advanced technologies like imaging or robotic assistance to evaluate how these innovations impact the effectiveness and safety of pneumoperitoneum creation at various entry sites.
- Further research into patient-specific surgical planning, including preoperative imaging and customized entry site selection, could optimize outcomes and reduce complications.

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ANNEXURE 1 (CONSENT FORM)

KAHERs JNMC

BELAGAVI

INFORMED CONSENT FORM

"RANDOMISED CONTROL TRIAL: COMPARING FEASIBILITY AND SAFETY IN CREATION OF PNEUMOPERITONEUM BY VERESS NEEDLE PLACED AT SUPRAUMBILICAL, PALMER'S AND JAIN'S POINT IN LAPAROSCOPIC SURGERIES AT A TERTIARY CARE CENTRE."

Introduction: Successful laparoscopic minimally invasive surgery relies on optimal port placement at the beginning of the procedure. Knowledge of the most advantageous port placement from an advanced understanding of anatomy can improve dramatically the surgical team's operative field exposure and the technical ease and efficiency of the surgery, while reducing surgical injuries.

Explanation of procedure: The creation of pneumoperitoneum is an essential first step for laparoscopic surgeries to attain an adequate surgical field. This procedure involves the insertion of Veress needle at different points- Supraumbilical, Palmer's, and Jain's points. This is done to compare the time taken to create successful pneumoperitoneum, and also assess the intra and post operative complications of the different entry points.

Withdrawal from participation in the study: Participation in this study in voluntary. You will be free to decide whether to participate in this study or continue participation once enrolled. In case you decide to withdraw your participation, you are free to do so. However, please convey the decision to the principal investigator.

Possible benefits from participating in the study: You will/will not get any benefits by participating in this study. The data gathered will help population at large.

Possible risks from participating in the study: None

Privacy and confidentiality: The information collected from you will be coded, to prevent any person to identify you. Your identity will never be revealed. The data collected from you will be kept confidential and only processed or aggregated data will be used for publication.

Financial incentives: You will not receive any payment for participating in this study.

Cost of investigations done during the course of study will be paid by the **Participant.**

Authorization for publication of aggregated data: Results obtained after processing of the aggregated data will be published for scientific purpose and or presented to scientific groups. However, your identity will never be revealed.

Questions:

If you have any question or complaints with regard to your right as study participant you may contact Dr Harsha Hegde, Chairperson, Ethical committee of JNMC, 0831-2473777 Extension 4052.

Legal rights: By signing this consent form, we are not waving any of your legal rights

CONSENT STATEMENT

I am making a voluntary decision to participate in the study "**COMPARING FEASIBILITY AND SAFETY IN CREATION OF PNEUMOPERITONEUM BY VERESS NEEDLE PLACED AT SUPRAUMBILICAL, PALMER'S AND JAIN'S POINT IN LAPAROSCOPIC SURGERIES AT A TERTIARY CARE CENTRE- A RANDOMISED CONTROL TRIAL**" My signature below indicates that I have decided to participate and I have read the information provided above or the information provided above has been read to me in the language that I understand best. I was given the opportunity to ask questions and that they have been answered to my satisfaction.

Name of the participant:

Signature or left thumb impression of the participant:

Name of the witness:

Signature or left thumb impression of the witness:

Name of the investigator:

Signature of the investigator:

ANNEXURE 2 (PROFORMA)

Project Title: "COMPARING FEASIBILITY AND SAFETY IN CREATION OF PNEUMOPERITONEUM BY VERESS NEEDLE PLACED AT SUPRAUMBILICAL, PALMER'S AND JAIN'S POINT IN LAPAROSCOPIC SURGERIES AT A TERTIARY CARE CENTRE - A RANDOMISED CONTROL TRIAL."

CASE NO:	
NAME:	
AGE:	
SEX:	
BMI:	
ADDRESS:	
IP NO:	
UNIT/WARD:	
DATE OF ADMISSION:	
DATE OF SURGERY:	
SURGICAL PROCEDURE:	
DATE OF DISCHARGE:	

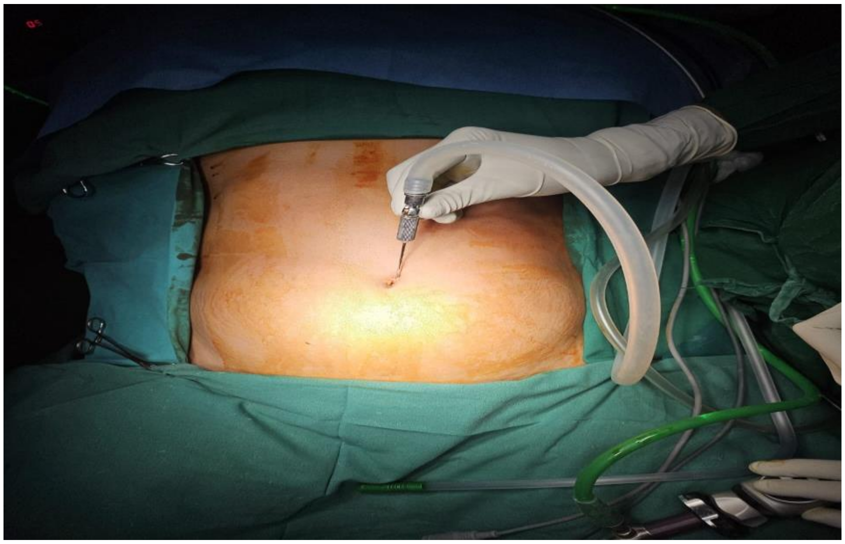
PAST HISTORY:	
TREATMENT HISTORY:	
CLINICAL DIAGNOSIS:	

OPERATION DETAILS: 1. PROCEDURE:		
2. TYPE OF SURGERY:		
3. SITE OF PNEUMOPERITONEUM:		
4. TIME TAKEN TO CREATE PNEUMOPERITONEUM:		
5. CHANGE OFPNEUMOPERITONEUM SITE:		
6. ATTEMPTS MADE TO CREATE PNEUMOPERITONEUM:		
7. CONVERSION TO OPEN TECHNIQUE:		
8. SETTINGS OF THE CO2 INSUFFLATOR:		
9. INTRA-OP COMPLICATIONS		

POST OPERATIVE: 1. COMPLICATIONS:		
2. HOSPITAL STAY:		

ANNEXURE 3 (PICTURES)

Jain's Point



Supraumbilical Point

Palmer’s Point

SERIAL NO	IP No	AGE	SEX	BMI	SOCIOECONOMIC STATUS	COMORBIDITIES	DIAGNOSIS	PROCEDURE	PRESSURE	FLOW RATE	VOLUME	SITE OF PNEUMO	TIME	RE-	CHANGE OF PNEUMO	CONVERSION TO	INTRA OP COMPLICATIONS	POST OP COMPLICA	HOSPITAL STAY
1	1009105	26	F	35	LOW	OTHER/NIL	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:20:05 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
2	1193503	26	F	36.9	MIDDLE	OTHER/NIL	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:18:31 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
3	10024650	55	M	20.7	HIGH	HYPERTENSION	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:35:07 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
4	10024752	60	F	29.6	LOW	OTHER/NIL	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:17:16 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
5	10014603	44	F	18.8	LOW	HYPERTENSION	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:23:54 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
6	10029229	45	F	27	LOW	HYPERTENSION	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:42:01 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
7	10030449	45	F	18.3	LOW	OTHER/NIL	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:06:13 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
8	10031180	56	F	16.9	MIDDLE	T2DM	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:12:42 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
9	10032327	43	F	16.4	LOW	OTHER/NIL	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:41:21 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
10	10031343	55	F	35.7	HIGH	OTHER/NIL	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:19:44 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
11	10203907	40	F	17	HIGH	OTHER/NIL	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:25:32 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
12	10032585	32	F	28.6	LOW	OTHER/NIL	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:15:33 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
13	10030780	37	F	15.4	HIGH	HYPERTENSION	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:34:46 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
14	10030935	38	M	20.1	LOW	T2DM	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:26:40 mins	NO	NO	NO	NIL	NIL	**3 DAYS**

15	10035648	52	M	22.2	LOW	T2DM	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:39:13 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
16	10029579	53	M	38.7	HIGH	HYPERTENSION	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:09:10 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
17	10018463	32	F	22.1	LOW	T2DM	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:11:54 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
18	10021573	52	M	26.2	HIGH	T2DM	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:27:47 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
19	10021549	56	M	17.3	MIDDLE	T2DM	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:16:01 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
20	10023374	28	F	37.4	LOW	OTHER/NIL	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:07:09 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
21	10023174	38	F	15.8	MIDDLE	HYPERTENSION	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:52:20 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
22	10036749	34	F	16.3	HIGH	HYPERTENSION	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:45:33 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
23	10040430	25	M	27.6	MIDDLE	OTHER/NIL	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:36:40 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
24	10040754	52	F	21.7	MIDDLE	T2DM	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:48:12 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
25	10044732	45	F	21	HIGH	HYPERTENSION	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:55:40 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
26	10046740	56	F	16	MIDDLE	HYPERTENSION	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:57:31 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
27	10047869	59	F	31	MIDDLE	HYPERTENSION	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:49:27 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
28	10044697	35	F	18.8	HIGH	OTHER/NIL	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:44:54 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
29	10057164	50	F	39.6	MIDDLE	T2DM	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:39:43 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
30	10060270	34	F	23.9	HIGH	OTHER/NIL	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:43:54 mins	NO	NO	NO	NIL	NIL	**3 DAYS**

31	10062151	37	F	33.5	MIDDLE	T2DM	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:53:12 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
32	10062944	60	M	29.7	HIGH	OTHER/NIL	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	2:01:33 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
33	10059878	49	M	36.8	HIGH	T2DM	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	2:05:15 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
34	10063638	42	M	27.4	MIDDLE	T2DM	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:50:45 mins	1	NO	NO	Minimal Port Site Bleeding	NIL	**3 DAYS**
35	10036811	45	F	27.4	MIDDLE	OTHER/NIL	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	2:11:56 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
36	10031348	39	F	30.8	MIDDLE	T2DM	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:47:38 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
37	10040009	29	F	25.4	LOW	OTHER/NIL	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:56:30 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
38	10040277	46	F	17	LOW	OTHER/NIL	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:22:51 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
39	10041963	50	M	27.7	LOW	HYPERTENSION	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:10:11 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
40	10044782	57	M	19.9	HIGH	OTHER/NIL	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:01:56 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
41	10044257	58	M	39.5	MIDDLE	HYPERTENSION	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:55:30 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
42	10044723	59	M	17.7	HIGH	OTHER/NIL	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:58:41 mins	1	NO	NO	NIL	NIL	**2 DAYS**
43	10046966	33	M	31.1	LOW	OTHER/NIL	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:14:56 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
44	10050853	51	F	24.5	MIDDLE	HYPERTENSION	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:02:16 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
45	10049975	57	M	24.7	HIGH	HYPERTENSION	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:34:11 mins	NO	NO	NO	NIL	NIL	**2 DAYS**

46	10050768	29	M	24.9	MIDDLE	OTHER/NIL	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:10:38 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
47	10053744	28	F	25.3	HIGH	OTHER/NIL	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:11:22 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
48	10055502	30	F	28.6	MIDDLE	HYPERTENSION	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:54:10 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
49	10055482	32	F	35.5	LOW	T2DM	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:17:23 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
50	10056234	48	F	37.1	LOW	T2DM	CHOLELITHIASIS	LAPAROSCOPIC CHOLECYSTECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:49:13 mins	1	NO	NO	Minimal Port Site Bleeding	NIL	**2 DAYS**
51	10097484	42	M	18.3	MIDDLE	T2DM	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:24:21 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
52	10103935	37	M	17.3	HIGH	HYPERTENSION	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:10:54 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
53	10104034	23	M	38.4	LOW	T2DM	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:41:42 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
54	10111051	44	M	29.2	LOW	HYPERTENSION	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:27:23 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
55	10114954	46	M	23.9	LOW	T2DM	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:13:35 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
56	10117682	49	M	34.3	MIDDLE	T2DM	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:28:38 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
57	1012056	36	M	15.8	MIDDLE	OTHER/NIL	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:31:56 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
58	10088442	27	F	26.9	HIGH	HYPERTENSION	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:29:03 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
59	10092142	50	M	38.9	HIGH	OTHER/NIL	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:12:45 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
60	10125872	21	M	31.5	HIGH	OTHER/NIL	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:33:14 mins	NO	NO	NO	NIL	NIL	**2 DAYS**

61	10005754	25	F	27.5	MIDDLE	T2DM	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:23:41 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
62	10096541	32	M	32.3	MIDDLE	HYPERTENSION	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:20:36 mins	1	NO	NO	NIL	NIL	**2 DAYS**
63	10096801	21	F	27.8	HIGH	OTHER/NIL	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:17:11 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
64	10097223	19	F	24	HIGH	OTHER/NIL	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:22:48 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
65	10098013	19	F	29.3	MIDDLE	OTHER/NIL	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:09:56 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
66	10113633	25	M	26.2	HIGH	OTHER/NIL	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:50:12 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
67	10116103	26	M	29.4	LOW	OTHER/NIL	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:01:46 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
68	10098461	28	F	35.9	MIDDLE	OTHER/NIL	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:14:33 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
69	10100164	28	M	33.5	HIGH	OTHER/NIL	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:23:35 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
70	10010056	18	F	28.5	MIDDLE	OTHER/NIL	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:18:20 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
71	10107196	39	F	34.8	LOW	T2DM	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:52:14 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
72	10107103	33	F	16.3	MIDDLE	T2DM	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:03:45 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
73	10113081	24	F	17.4	MIDDLE	OTHER/NIL	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:14:00 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
74	10117630	36	M	32.5	MIDDLE	T2DM	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:52:18 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
75	10122596	26	M	33.3	MIDDLE	T2DM	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:05:18 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
76	10122437	36	M	27.1	LOW	T2DM	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:51:40 mins	NO	NO	NO	NIL	NIL	**2 DAYS**

77	10095317	49	M	20.1	MIDDLE	T2DM	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:02:57 mins	1	NO	NO	NIL	NIL	**2 DAYS**
78	10096055	18	F	34.1	MIDDLE	OTHER/NIL	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:44:20 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
79	10098850	19	F	16.9	HIGH	OTHER/NIL	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:41:19 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
80	10106747	58	M	28.6	MIDDLE	T2DM	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:50:42 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
81	10110912	18	F	37.7	HIGH	OTHER	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:54:10 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
82	10119331	46	F	17.8	LOW	HYPERTENSION	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	2:00:35 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
83	10121472	55	M	17.5	LOW	T2DM	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:56:30 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
84	10112877	30	F	22.9	LOW	HYPERTENSION	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:49:50 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
85	10125872	21	M	26.2	LOW	OTHER/NIL	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:52:43 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
86	10127531	26	F	27	HIGH	OTHER/NIL	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:54:35 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
87	10125872	21	M	21.6	MIDDLE	OTHER/NIL	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	2:06:21 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
88	10128171	22	F	19	LOW	OTHER/NIL	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:51:40 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
89	10128127	23	M	27.6	MIDDLE	OTHER/NIL	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:53:19 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
90	10128504	21	M	27.1	HIGH	OTHER/NIL	APPENDICITIS	LAPAROSCOPIC APPENDICECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	2:03:17 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
91	10096591	43	F	38	HIGH	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:35:44 mins	NO	NO	NO	NIL	NIL	**3 DAYS**

92	10096741	45	F	39.8	HIGH	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:15:30 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
93	10098025	38	F	22.1	LOW	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:06:00 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
94	10007225	47	F	33.2	MIDDLE	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:20:30 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
95	10007506	40	F	15.1	MIDDLE	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:40:10 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
96	10008185	46	F	39.2	MIDDLE	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:42:16 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
97	10008255	43	F	39.2	HIGH	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:12:51 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
98	10111965	40	F	15.9	LOW	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:31:33 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
99	10114270	40	F	23	HIGH	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:18:32 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
100	10115249	50	F	15.3	HIGH	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:21:45 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
101	10115405	35	F	31.7	MIDDLE	T2DM	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:35:21 mins	NO	NO	NO	NIL	NIL	**3 DAYS**

								WITH B/L SALPINGO-OOPHERECTOMY											
102	10116073	44	F	19.9	HIGH	T2DM	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:27:20 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
103	10116160	40	F	32.9	MIDDLE	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:14:56 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
104	10116231	43	F	18.4	LOW	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:19:43 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
105	10089479	50	F	17.4	MIDDLE	T2DM	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:30:38 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
106	10089688	53	F	33.8	LOW	T2DM	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:22:31 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
107	10091394	45	F	28.6	MIDDLE	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:55:05 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
108	10091808	41	F	29.5	HIGH	OTHER/NIL	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:11:40 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
109	10092547	58	F	18.3	HIGH	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:45:56 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
110	10092602	40	F	15.2	LOW	T2DM	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:47:54 mins	NO	NO	NO	NIL	NIL	**3 DAYS**

111	10093192	48	F	26.9	LOW	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:08:43 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
112	10093134	42	F	25.5	LOW	T2DM	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:01:10 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
113	10094772	40	F	33.4	MIDDLE	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:52:44 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
114	10094814	35	F	31.7	MIDDLE	T2DM	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:00:43 mins	1	NO	NO	NIL	NIL	**3 DAYS**
115	10098102	39	F	28.2	LOW	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:49:33 mins	2	To Palmer's Point	YES	Minimal Port Site Bleeding	NIL	**3 DAYS**
116	10098053	48	F	33.9	HIGH	T2DM	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:07:56 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
117	10099411	40	F	32.3	MIDDLE	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:44:53 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
118	10101142	36	F	20.2	MIDDLE	T2DM	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:09:54 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
119	10104414	45	F	33.6	MIDDLE	T2DM	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:54:10 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
120	10104671	35	F	15.9	LOW	T2DM	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	3:01:45 mins	NO	NO	NO	NIL	NIL	**3 DAYS**

								WITH B/L SALPINGO-OOPHERECTOMY											
121	10104909	50	F	34.5	LOW	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:04:39 mins	2	To Palmer's Point	NO	NIL	NIL	**3 DAYS**
122	10104984	40	F	30.3	LOW	OTHER/NIL	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:59:54 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
123	10104859	36	F	26.4	LOW	T2DM	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:03:56 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
124	10105159	38	F	16.4	LOW	OTHER/NIL	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:51:50 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
125	10105901	40	F	36	HIGH	T2DM	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:09:31 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
126	10105045	39	F	32.7	HIGH	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:52:34 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
127	10106858	51	F	19.4	LOW	OTHER/NIL	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:44:30 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
128	10106855	40	F	30.8	MIDDLE	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:48:11 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
129	10106820	41	F	39.4	LOW	OTHER/NIL	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:53:45 mins	1	NO	NO	NIL	NIL	**3 DAYS**

130	10106921	57	F	21.2	HIGH	T2DM	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:56:40 mins	1	NO	NO	NIL	NIL	**3 DAYS**
131	10108513	49	F	27.8	HIGH	OTHER/NIL	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:48:50 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
132	10121065	49	F	39.2	MIDDLE	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:50:59 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
133	10122255	37	F	19	HIGH	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:44:55 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
134	12122150	38	F	18	LOW	T2DM	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	2:02:44 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
135	10122923	37	F	27.7	MIDDLE	OTHER/NIL	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:45:20 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
136	10123027	36	F	15.6	LOW	OTHER/NIL	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:51:00 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
137	10123502	38	F	16.4	LOW	T2DM	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	2:03:55 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
138	10125212	41	F	23.5	MIDDLE	T2DM	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:40:35 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
139	10125475	48	F	34.8	LOW	OTHER/NIL	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:29:40 mins	NO	NO	NO	NIL	NIL	**3 DAYS**

								WITH B/L SALPINGO-OOPHERECTOMY											
140	10125726	39	F	24.8	HIGH	HYPERTENSION	UTERINE FIBROID	TOTAL LAPAROSCOPIC HYSTERECTOMY WITH B/L SALPINGO-OOPHERECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:39:44 mins	NO	NO	NO	NIL	NIL	**3 DAYS**
141	10103734	18	M	20.9	LOW	OTHER/NIL	RIGHT INGUNAL HERNIA	LAPAROSCOPIC RIGHT SIDEDTAPP REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:42:12 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
142	10103170	31	M	23.3	MIDDLE	OTHER/NIL	RIGHT INGUNAL HERNIA	LAPAROSCOPIC RIGHT SIDED TAPP REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:21:20 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
143	10109871	28	M	21	MIDDLE	OTHER/NIL	RIGHT INGUNAL HERNIA	LAPAROSCOPIC RIGHT SIDED TAPP REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:13:32 mins	1	NO	NO	NIL	NIL	**2 DAYS**
144	10112436	19	M	29.1	MIDDLE	OTHER/NIL	RIGHT INGUNAL HERNIA	LAPAROSCOPIC RIGHT SIDED TAPP REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:18:45 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
145	10092870	52	M	35.7	LOW	HYPERTENSION	RIGHT INGUNAL HERNIA	LAPAROSCOPIC RIGHT SIDED TAPP REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:23:25 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
146	10095630	42	M	15.2	MIDDLE	OTHER/NIL	RIGHT INGUINAL HERNIA	LAPAROSCOPIC RIGHT SIDED TAPP REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:51:20 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
147	10098220	52	M	15.1	MIDDLE	OTHER/NIL	RIGHT INGUINAL HERNIA	LAPAROSCOPIC RIGHT SIDED TAPP REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:44:31 mins	2	To Palmer's Point	YES	Minimal Port Side Bleeding	NIL	**2 DAYS**
148	1019978	60	M	31.3	LOW	OTHER/NIL	LEFT INGUINAL HERNIA	LAPAROSCOPIC LEFT SIDED TAPP REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:46:50 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
149	10122011	55	M	15	HIGH	HYPERTENSION	LEFT INGUINAL HERNIA	LAPAROSCOPIC LEFT SIDED TAPP REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:39:11 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
150	10122855	30	M	30.8	LOW	OTHER/NIL	LEFT INGUINAL HERNIA	LAPAROSCOPIC LEFT SIDED TAPP REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:40:56 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
151	10075126	53	M	17.4	MIDDLE	T2DM	LEFT INGUINAL HERNIA	LAPAROSCOPIC LEFT SIDED TAPP REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:35:19 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
152	10094907	52	M	21.9	MIDDLE	HYPERTENSION	LEFT INGUINAL HERNIA	LAPAROSCOPIC LEFT SIDED TAPP REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:01:55 mins	1	NO	NO	NIL	NIL	**2 DAYS**
153	10098148	42	M	17.5	LOW	HYPERTENSION	LEFT INGUINAL HERNIA	LAPAROSCOPIC LEFT SIDED TAPP REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:15:00 mins	NO	NO	NO	NIL	NIL	**2 DAYS**

154	10100906	28	M	39.1	HIGH	OTHER/NIL	LEFT INGUINAL HERNIA	LAPAROSCOPIC LEFT SIDED TAPP REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:13:40 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
155	10102920	54	M	35.9	MIDDLE	HYPERTENSION	LEFT INGUINAL HERNIA	LAPAROSCOPIC LEFT SIDED TAPP REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:07:08 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
156	10107411	60	M	37.3	MIDDLE	OTHER/NIL	LEFT INGUINAL HERNIA	LAPAROSCOPIC LEFT SIDED TAPP REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:50:38 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
157	10110083	53	M	37.6	MIDDLE	OTHER/NIL	LEFT INGUINAL HERNIA	LAPAROSCOPIC LEFT SIDED TAPP REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:44:37 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
158	10122021	45	M	33.8	LOW	HYPERTENSION	B/L INGUINAL HERNIA	LAPAROSCOPIC B/L TAPP REAPIR	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:33:22 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
159	10097247	42	M	26.2	MIDDLE	HYPERTENSION	B/L INGUINAL HERNIA	LAPAROSCOPIC B/L TAPP REAPIR	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:21:09 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
160	10109430	55	M	26	HIGH	OTHER/NIL	B/L INGUINAL HERNIA	LAPAROSCOPIC B/L TAPP REAPIR	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:17:10 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
161	10101709	51	M	15.9	MIDDLE	T2DM	UMBILICAL HERNIA	LAPAROSCOPIC IPOM REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:14:15 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
162	10103276	60	M	32.7	MIDDLE	OTHER/NIL	UMBILICAL HERNIA	LAPAROSCOPIC IPOM REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	2:22:45 mins	1	NO	NO	NIL	NIL	**2 DAYS**
163	10107535	40	F	15.7	HIGH	T2DM	UMBILICAL HERNIA	LAPAROSCOPIC IPOM REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	2:19:13 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
164	10108957	39	F	38.8	MIDDLE	OTHER/NIL	UMBILICAL HERNIA	LAPAROSCOPIC IPOM REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	2:01:55 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
165	10110323	40	F	37.6	LOW	T2DM	UMBILICAL HERNIA	LAPAROSCOPIC IPOM REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	2:17:40 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
166	10111610	38	F	25.2	LOW	OTHER/NIL	UMBILICAL HERNIA	LAPAROSCOPIC IPOM REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:04:18 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
167	10122012	60	F	26.3	LOW	T2DM	UMBILICAL HERNIA	LAPAROSCOPIC IPOM REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:09:56 mins	1	NO	NO	NIL	NIL	**2 DAYS**
168	10123230	44	F	18.6	HIGH	HYPERTENSION	UMBILICAL HERNIA	LAPAROSCOPIC IPOM REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:12:49 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
169	10123206	42	F	27.4	MIDDLE	HYPERTENSION	UMBILICAL HERNIA	LAPAROSCOPIC IPOM REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:57:09 mins	NO	NO	NO	NIL	NIL	**2 DAYS**

170	10124683	44	F	21.5	LOW	T2DM	UMBILICAL HERNIA	LAPAROSCOPIC IPOM REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:07:53 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
171	10091407	42	F	23.8	HIGH	T2DM	UMBILICAL HERNIA	LAPAROSCOPIC IPOM PLUS REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:56:09 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
172	10124200	58	M	20.5	MIDDLE	T2DM	UMBILICAL HERNIA	LAPAROSCOPIC IPOM PLUS REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:32:27 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
173	10096688	58	F	23.7	HIGH	HYPERTENSION	UMBILICAL HERNIA	LAPAROSCOPIC IPOM PLUS REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:10:13 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
174	10098877	48	F	24.7	LOW	T2DM	UMBILICAL HERNIA	LAPAROSCOPIC IPOM PLUS REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:29:04 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
175	10098090	52	F	15.3	LOW	OTHER/NIL	UMBILICAL HERNIA	LAPAROSCOPIC IPOM PLUS REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:18:30 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
176	10098901	49	F	28.9	LOW	HYPERTENSION	UMBILICAL HERNIA	LAPAROSCOPIC IPOM PLUS REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:56:40 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
177	10106703	52	M	22.3	HIGH	T2DM	UMBILICAL HERNIA	LAPAROSCOPIC IPOM PLUS REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:49:33 mins	1	NO	NO	NIL	NIL	**2 DAYS**
178	10108614	55	F	34.8	HIGH	T2DM	UMBILICAL HERNIA	LAPAROSCOPIC IPOM PLUS REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:51:25 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
179	10106997	43	M	27.1	LOW	HYPERTENSION	UMBILICAL HERNIA	LAPAROSCOPIC IPOM PLUS REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:45:10 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
180	10110416	48	M	28.8	HIGH	HYPERTENSION	UMBILICAL HERNIA	LAPAROSCOPIC IPOM PLUS REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:05:01 mins	NO	NO	NO	NIL	NIL	**2 DAYS**
181	10106584	45	M	22.6	LOW	HYPERTENSION	DU PERFORATION	DIAGNOSTIC LAPAROSCOPY WITH MODIFIED GRAHAM'S PATCH REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:31:45 mins	NO	NO	NO	NIL	NIL	**6 DAYS**
182	10121550	28	M	17.7	LOW	OTHER/NIL	DU PERFORATION	DIAGNOSTIC LAPAROSCOPY WITH MODIFIED GRAHAM'S PATCH REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:19:56 mins	NO	NO	NO	NIL	NIL	**6 DAYS**
183	10117025	25	F	24.3	MIDDLE	OTHER/NIL	DU PERFORATION	DIAGNOSTIC LAPAROSCOPY WITH MODIFIED GRAHAM'S PATCH REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:37:40 mins	NO	NO	NO	NIL	NIL	**6 DAYS**

184	10120795	34	M	17.1	HIGH	OTHER/NIL	DU PERFORATION	DIAGNOSTIC LAPAROSCOPY WITH MODIFIED GRAHAM'S PATCH REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	2:01:33 mins	NO	NO	NO	NIL	NIL	**6 DAYS**
185	10121869	55	M	39.8	LOW	HYPERTENSION	DU PERFORATION	DIAGNOSTIC LAPAROSCOPY WITH MODIFIED GRAHAM'S PATCH REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:52:20 mins	NO	NO	NO	NIL	NIL	**6 DAYS**
186	10117666	59	M	28	LOW	HYPERTENSION	DU PERFORATION	DIAGNOSTIC LAPAROSCOPY WITH MODIFIED GRAHAM'S PATCH REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:44:22 mins	NO	NO	NO	NIL	NIL	**6 DAYS**
187	10124286	38	M	36.4	HIGH	HYPERTENSION	DU PERFORATION	DIAGNOSTIC LAPAROSCOPY WITH MODIFIED GRAHAM'S PATCH REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:46:15 mins	NO	NO	NO	NIL	NIL	**6 DAYS**
188	10124200	33	M	16.9	MIDDLE	OTHER/NIL	DU PERFORATION	DIAGNOSTIC LAPAROSCOPY WITH MODIFIED GRAHAM'S PATCH REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:39:50 mins	NO	NO	NO	NIL	NIL	**6 DAYS**
189	10108970	57	M	15.3	MIDDLE	T2DM	DU PERFORATION	DIAGNOSTIC LAPAROSCOPY WITH MODIFIED GRAHAM'S PATCH REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	1:54:40 mins	NO	NO	NO	NIL	NIL	**6 DAYS**
190	10101487	39	M	37.3	LOW	OTHER/NIL	DU PERFORATION	DIAGNOSTIC LAPAROSCOPY WITH MODIFIED GRAHAM'S PATCH REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:05:50 mins	NO	NO	NO	NIL	NIL	**6 DAYS**
191	10115075	53	M	16.9	HIGH	HYPERTENSION	PREPYLORIC PERFORATION	DIAGNOSTIC LAPAROSCOPY WITH CELLAN JONES REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:23:31 mins	NO	NO	NO	NIL	NIL	**7 DAYS**
192	10103349	45	M	34.5	MIDDLE	T2DM	PREPYLORIC PERFORATION	DIAGNOSTIC LAPAROSCOPY WITH CELLAN JONES REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	2:14:13 mins	NO	NO	NO	NIL	NIL	**7 DAYS**
193	10105897	60	F	29.5	HIIGH	HYPERTENSION	PREPYLORIC PERFORATION	DIAGNOSTIC LAPAROSCOPY WITH CELLAN JONES REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:47:56 mins	NO	NO	NO	NIL	NIL	**7 DAYS**

194	10115064	45	F	33	HIIGH	HYPERTENSION	PREPYLORIC PERFORATION	DIAGNOSTIC LAPAROSCOPY WITH CELLAN JONES REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:40:44 mins	NO	NO	NO	NIL	NIL	**7 DAYS**
195	10115684	26	M	27.6	LOW	OTHER/NIL	PREPYLORIC PERFORATION	DIAGNOSTIC LAPAROSCOPY WITH CELLAN JONES REPAIR	14 mm Hg	1.5 lit/min	2.5 lit	Jain's Point	2:26:35 mins	NO	NO	NO	NIL	NIL	**7 DAYS**
196	10073005	50	M	37	MIDDLE	T2DM	CHRONIC PANCREATITIS	LAPAROSCOPIC LATERAL PANCREATICOJEJUNOSTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:52:33 mins	NO	NO	NO	NIL	NIL	**8 DAYS**
197	10071508	46	M	17.7	LOW	HYPERTENSION	CHRONIC PANCREATITIS	LAPAROSCOPIC LATERAL PANCREATICOJEJUNOSTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	2:01:40 mins	NO	NO	NO	NIL	NIL	**8 DAYS**
198	10076653	28	M	34.6	MIDDLE	OTHER/NIL	CHRONIC PANCREATITIS	LAPAROSCOPIC LATERAL PANCREATICOJEJUNOSTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	2:16:33 mins	NO	NO	NO	NIL	NIL	**8 DAYS**
199	10090779	40	M	17.9	MIDDLE	T2DM	PERIAMPULLARY CA	LAPAROSCOPIC WHIPPLE'S PROCEDURE	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:43:50 mins	NO	NO	NO	NIL	NIL	**8 DAYS**
200	10101811	44	F	37.7	MIDDLE	HYPERTENSION	PERIAMPULLARY CA	LAPAROSCOPIC WHIPPLE'S PROCEDURE	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:39:41 mins	NO	NO	NO	NIL	NIL	**8 DAYS**
201	10077316	46	F	30.7	MIDDLE	HYPERTENSION	PERIAMPULLARY CA	LAPAROSCOPIC WHIPPLE'S PROCEDURE	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:48:42 mins	NO	NO	NO	NIL	NIL	**9 DAYS**
202	10075542	56	M	18.8	MIDDLE	T2DM	PERIAMPULLARY CA	LAPAROSCOPIC WHIPPLE'S PROCEDURE	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:41:26 mins	NO	NO	NO	NIL	NIL	**10 DAYS**
203	10076260	31	M	17.1	HIGH	OTHER/NIL	HEPATIC ADENOMA	LAPAROSCOPIC NON SEGMENTAL HEPATECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Supraumbilical Point	1:31:29 mins	NO	NO	NO	NIL	NIL	**6 DAYS**
204	10086872	40	M	20.7	LOW	T2DM	LEFT NON-FUNCTIONING KIDNEY	LAPAROSCOPIC LEFT NEPHRECTOMY	14 mm Hg	1.5 lit/min	2.5 lit	Palmer's Point	1:07:55 mins	NO	NO	NO	NIL	NIL	**8 DAYS**