"STUDY COMPARING CARTER-THOMASON DEVICE VERSUS CONVENTIONAL SUTURING IN PORT-SITE CLOSURE"

BY

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DISSERTATION SUBMITTED TO SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION AND RESEARCH, TAMAKA, KOLAR, KARNATAKA.

In partial fulfilment of the requirements for the degree of

M.S. IN GENERAL SURGERY

UNDER THE GUIDANCE OF

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Signature of candidate

DR. SETTIGIRI AVINASH

LIST OF ABBREVIATIONS

CT	Carter- Thomason
CS	Conventional suturing
HIV	Human Immunodeficiency Virus
MAS	Minimal Access Surgery
LC	Laparoscopic Cholecystectomy
LA	Laparoscopic Appendectomy
MI	Myocardial Infarction
ADP	Adenosine Diphosphate
PDGF	Platelet Derived Growth Factor
TGF-β	Transforming Growth Factor Beta
GAG	Glycosaminoglycan
VEGF	Vascular Endothelial Growth Factor
FGF	Fibroblast Growth Factor
VAS	Visual Analog Scale
IQR	Inter Quartile Range

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ABSTRACT

INTRODUCTION

Technical challenges are common for any surgical interventions, though laparoscopic surgery results in a marked reduction in post-operative pain to patient, with better cosmesis, yet over time comes up the new challenges. One of such challenges are port closing techniques, which are to be dealt meticulously to prevent the trocar site hernias and other complications.

AIMS AND OBJECTIVES

1. To document the outcomes of Carter-Thomason device in port closure.
2. To document the outcomes of Conventional suturing in port closure.
3. To compare the efficacy of Carter-Thomason device with Conventional suturing in terms of closure duration, ease of technique, incidence of surgical site infection, post-operative pain and port site hernia.

MATERIALS AND METHODS

Patients who underwent laparoscopic procedure in General surgery department, R.L Jalappa Hospital, Tamaka, Kolar during December 2019 **to** June 2021**.**

Choosing subjects:

Number of Patients to be studied: **60** Stratified by odd and even method. Patients with similar age, built and co- morbidities are segregated in order to eliminate bias.

Odd group(Carter Thomason device): 30 patients

Even group (Conventional hand suturing): 30 patients.

Inclusion criteria:

Patients who are undergoing primary laparoscopic procedure among 19 to 60 years of age group.

Port sites greater than 10mm.

Exclusion criteria:

Patients who already underwent laparoscopic procedures. Immuno-compromised individuals (Diabetics, HIV, bleeding disorder, patients on steroid and immunosuppressive therapy)

RESULTS

Of the port-closure techniques, Carter-Thomason device technique is faster overall, resulted in fewer port-closure-related complications and provided a leak proof closure. Carter-Thomason device closure had better cosmesis compared to conventional port closure group.

CONCLUSION

The post operative port site pain is noted less with Carter- Thomason device closure compared to conventional suturing . Over all port site closure with carter thomason device is superior and gives best results compared to conventional suturing in terms of time taken for port closure, ease of technique, post operative pain and port site infection.

INTRODUCTION

INTRODUCTION:

Around 200 years prior, endoscopy was initially begun with tin tube assistance ,toward the finish of tube candle will be set to give the illumination.[1] In 1996 the cutting edge space of laparoscopy began with advancement of Hopkin's-Rod system.[2]

Introduction of any surgery carries the new technical difficulties. Since laparoscopy is offering the patients with decrease in postoperative pain and best cosmetic results, it's being utilized every now and again today. Laparoscopy helps in performing many perplexing techniques , however bigger ports are essential to perform surgeries which are complex.[1] These bigger ports results in larger abdominal entry points which results in more complications.[3] Incisional bowel herniation, wound infection and small intestine obstruction are few of those complications.[4,5] Surgical repair of port sites meticulously reduces the above mentioned complications. In 1968, the trocar site ventral hernia was first reported by Fear after laparoscopy.[6,7] Trocar complications happen in around 1 - 6 % patients. [8-16] Trocar site hernias can happen with entry points as little as three millimeters.[17]

It is suggested that every one of the ten millimeters and twelve millimeters trocar sites in grown-ups and each of the five millimeters port sites in kids are to be closed, fusing the 'peritoneum' into fascial closure.[10,18-20] Standard stitch methods can be troublesome and baffling, frequently results in fascial defect closure blindly. Various devices and methods have been created to ease the closure of fascial defect.

Port closure strategies could be characterized according to technical perspective into two categories:

First category: With laparoscopic visualisation

Second category: Without laparoscopic visualisation

FIRST CATEGORY

The port closure in this category is done from inside abdomen under laparoscopic visualization directly, avoiding visceral injuries with maximum safety. These techniques include Grice needle, Maciol needles, the endoclose device, catheter or spinal needles, Gor-Tex device, Carter-Thomason device, Deschamps needles,Reverdin,, the modified Veress needle , Semm's emergency needle with a distal eyelet , dental awl with an eye, Autostitch, Veress needle loop technique;

prolene 2-0 on straight needle aided by a Veress needle, Straight needle with armed suture.[21]

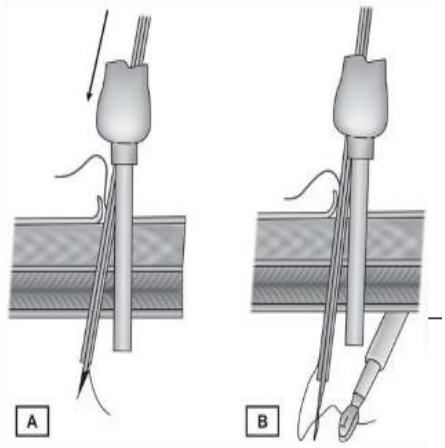
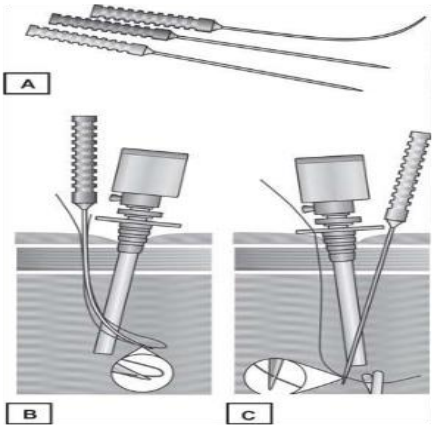


Figure 1[A] AND 1[B]-Grice needle



Figures 2[A] [B] [C]: Maciol suture with needle set

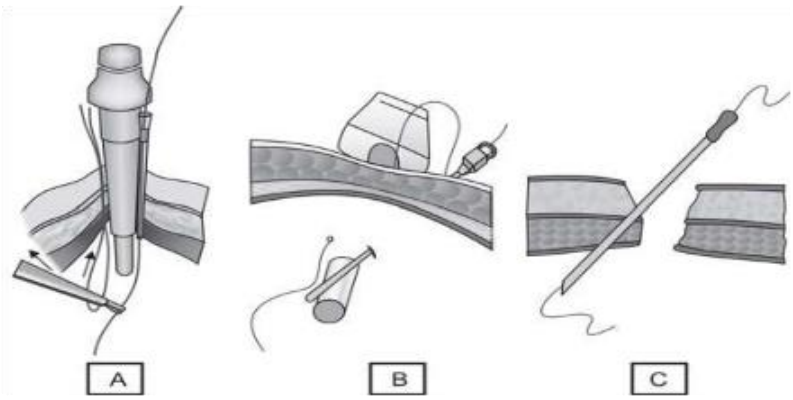


Figure 3[A] Vein catheter **3[B]** spinal cord needle **3[C]** Angiocath needle

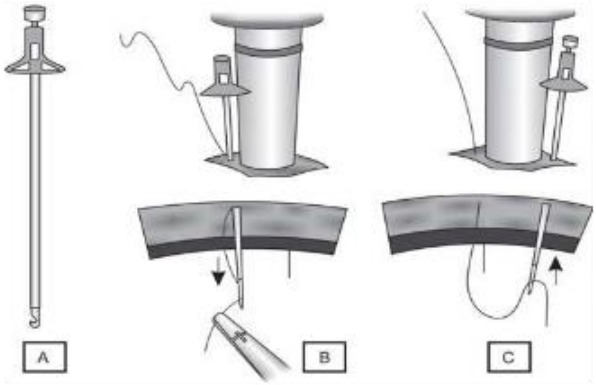
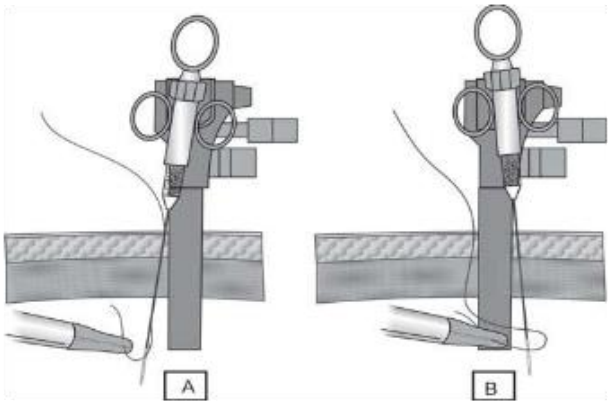


Figure 4 A to C: Endoclosure suture device

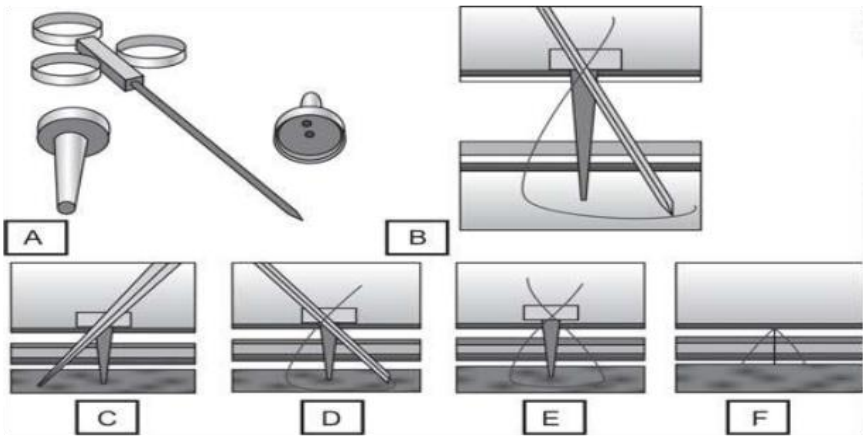


Figures 5[A] and [B]: Gore tex suture

CARTER-THOMASON DEVICE

The Carter Thomason Closure System consists of two parts (Figure 6A and 6 B): The Pilot's Guide and the Carter Thomason suture passer. Closing the port entry site requires four simple steps:

(1) Using the suture guide pass suture through pilot guide, fascia, muscle, peritoneum, and release suture followed by remove suture guide[Figure 6C]



Figures 6A to 6 F: Carter-Thomason device

(2) Pull the suture through the peritoneum, muscle, fascia, and guide [Figure 6E] and

(3) Remove pilot electrode and secure [Figure 6F]. Specially designed for obese and bariatric

patients. The pilot guides and suture passer have been extended to reach peritoneum of bariatric patient to perform a full-thickness closure in this risk group closing the port site must be done under the surgeon's direct view, which requires proper inflation of abdomen. While deflation is

executed, a sense of touch must be felt to close the port.

Some of those techniques include: Suture carrier, Double hemostat technique, Lowsley retractor, Application of bio-absorbable plug for hernias in inserts.[23] Preliminary fascial positioning keeps the sutures above and below the possible exchange site; Threaded Foley Catheter through the porthole for elevation of the fascial edge during traction; fishing hook improvised needle from a hypodermic needle bending it 180° & Groove director.[24]

AIMS & OBJECTIVES

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OBJECTIVES OF THE STUDY

(1) To document the outcome of Carter-Thomason device in port closure.

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(3) To compare the efficacy of Carter-Thomason device with Conventional suturing in terms of closure duration, ease of technique, incidence of surgical site infection, post-op pain & port-site hernias.

REVIEW OF LITERATURE

REVIEW OF LITERATURE:

HISTORY OF LAPAROSCOPIC- SURGERY

Ezekiel and Celsus[25] described the drainage of the abdomen of "bad humors" around 25 BC – AD 50 surgically by insertion of trocar. The first recorded endoscopy was by the use of reflected light to inspect the cervix which was performed by Albukasim who was an Arabian physician[26].

The concept of endoscopic surgery can be traced back to 19th century. The data of using tube instruments date back during Mesopotamia civilization and ancient Greece.

The modern techniques of endoscopy were started in 1805 with Phillip Bozzini[27] an obstetrician from Frankfurt. He used wax candle as the source of light for mirror and examined urinary bladder for calculi and also inspected vagina.

In 1897 Nitze an Urologist from Berlin along with Rayne, an optician and a Viennese master invented the first ever cystoscope which had lenses, and a platinum conductor to create a lighting effect[28].

First successful attempt of "ventroscopy" i.e., an intra-abdominal inspection using light beam of a candle, from frontal mirror to mirror reflector of tube, inserted through a culdotomy opening in 1901, by a gynecologist Dr. Fon Ott from Petrograd[29].

The first successful documented laparoscopy was done on dogs by George Kelling[30] in 1902.

In 1910, First successful thoracoscopy and laparoscopy on humans using a cystoscope was done by Hans Christian Jacobaeus[31]. He also introduced the word "Laparoscopy" into practice.

In 1947, Raoul Palmer[32] used CO2 gas for insufflating abdomen and he also explained the concept of controlling intra-abdominal pressure.

He proposed that intra-abdominal pressure should not exceed 25 mm Hg and also recommended that speed of insufflation should not exceed 400-500 cc per minute[33].

Professor Kurt Semm[34] the German gynecologist and engineer, from the city of Kill has improvised and practiced the modern techniques of laparoscopy and automatic insufflators.

The usage of telescope has been a drastic increase since the invention of fiber optic light in 1952 and the lens system by British doctor Hopkins[35].

In 1977, De Kok performed appendicectomy using partial laparoscopic support[36].

Gallstones extraction using laparoscopy was done on animals by a group of doctors from Germany which was supervised by doctor Fremberg[26] in 1979.

In 1980's an Englishman, Patrick Steptoe[37] performed sterilization in females in operation theatre using laparoscopy.

The solid camera was first introduced in 1982 after which a new era of video laparoscopy began.

First laparoscopic appendicectomy was described by Semm[33] in 1983.

First laparoscopic cholecystectomy using Carbonic gas for insufflation and modified proctoscope for visualization was done by Doctor Mühe[38], the surgeon from Boeblingen in 1985.

In 1986, group of Japanese engineers made a matrix which allowed transferring of video signals to monitors which brought a revolution in endoscopic technology.

Warshow[39] in 1986, identified the stage of cancer pancreas using laparoscopy.

In France, Phillipe Mouret[40] did first video-laparoscopic cholecystectomy in 1987. Minimally invasive surgeries were more often used in surgical directions because of which many complex instruments and devices were invented. Laparoscopy became popular in mid 90's. In the present day 90% surgeries for cholelithiasis is done by laparoscopy.

In 1994, Robotic arm was used to hold Laparoscopic instruments and camera[41].

HISTORY OF INDIAN LAPAROSCOPIC SURGERY:[42]

Diagnostic laparoscopy was performed on a cirrhotic patient using Nitze- type telescope, a feeble filament light bulb and atmospheric air to create pneumoperitoneum by taking help of sigmoidoscope by Dr F.P. Antia, a physician at the KEM hospital, Mumbai.

Excellent clarity of vision was observed by using Storz laparoscope to perform a diagnostic laparoscopy by a famous Gynecologist Dr. N.D. Motashaw at KEM hospital in 1971. In 1990, In India the 1st laparoscopic cholecystectomy was performed at the JJ Hospital Mumbai. Few months later Dr. Jyotsna Kulkarni in Pune performed laparoscopic cholecystectomy.

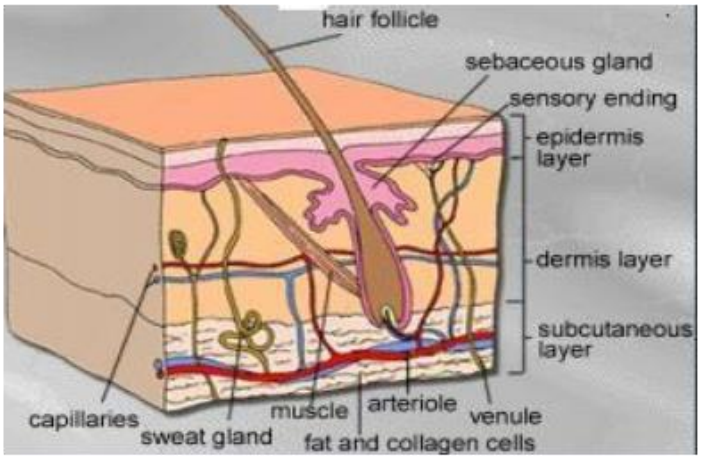
Dr. J.B. Agarwal and Dr. A. Dalvi held the first workshop on minimal access surgery (MAS) in KEM hospital, Mumbai.

The Indian Association of Gastrointestinal Endo-Surgeons was formed in Mumbai by a group of laparoscopic surgeons in 1993 with Dr. T. E. Udwadia as Founder President and Dr. JB Agarwal as Honorary secretary. In 1992, Dr. M.G. Bhat started laparoscopic surgery in Karnataka

INTRODUCTION TO LAPAROSCOPY

"Laparoscopy" is derived from Greek word. It literally means "to see from the flank side". Laparoscopic surgery is also known as the “Minimally invasive surgery”, Band-Aid surgery or keyhole surgery. In the layman’s language, it is known as the “Computer surgery”.

In modern surgical era conventional operations are now done using ports into abdomen through small incisions with aid of camera therefore abdominal cavity is visualized to diagnose a condition or to perform surgery.



SKIN ANATOMY

Figure – 4 : Skin Anatomy

Skin consists of 3 layers[43]

(1) The epidermis,

(2) The dermis,

(3) The subcutaneous tissue.

Epidermis: Its thickness is less than a millimeter, the epidermis is composed of 3 types of cells, the most important cells are moisture-rich keratinocytes. These keratinocyte cells migrate up towards surface of skin from the basal epidermis where they are formed. These keratinocytes lose water, becomes harden, and die. Dead keratinocytes get integrated into sebum or surface skin oil and forms the stratum corneum which is outermost protective layer and then these cells slough off and gets replaced eventually.

The epidermis also contains cells called melanocytes, that produce the pigment melanin responsible for colour of skin; and Langerhans cells, are a part of immune system, Langerhans cells shows defensive mechanism against pathogens which encounters in epidermis.

Dermis:

Just underneath epidermis lies the dermis, it is the thickest of all 3 layers of skin. The fibroblasts are the primary cells of dermis. Dermis is a network of elastin proteins and collagen which is maintained by fibroblasts. All this together forms the structure of skin and maintains skin resilience a6nd elasticity. Dermis is also a home of sebaceous glands. These glands produce the defensive sebum that moves through minuscule hair follicles from dermis to the epidermis where it greases up and protects the surface of skin.

Subcutaneous Tissue:

Composed basically of adipocyte cells, the deepest layer of skin is subcutaneous tissue and is to a great extent responsible for giving protection and cushioning, it also acts as a house of

sweat glands and a system of small muscles associated with follicles of hair.

Ultimately the cutaneous vessels emerge from the source vessels. An angiosome is a three dimensional vascular territory supplied by each source vessel from bone to skin. Adjoining angiosomes have vascular associations through decreased caliber vessels.

Dermis consists of horizontally organized shallow and deep plexuses, that are interconnected through connecting vessels situated opposite to the skin surface. Cutaneous vessels eventually anastomose with adjacent cutaneous vessels to frame continuous vascular network inside the skin.

Wound Healing: Wound healing is dynamic and complex process, as the environment of wound changes with the changing health status of patient. Wound healing is a complex series of events which starts at the moment of injury and continue for months to one year. Many theories are proposed patient. Wound healing is a complex series of events which starts at the moment of injury and continue for months to one year. Many theories are proposed to understand the wound healing process.

A trauma caused by a bullet, incision given by a scalpel, or tissue death resulted by myocardial infarction (MI) all undergo a predictable and similar reparative process[47].

The three categories of wound closure are

1. Primary
2. Secondary,
3. Tertiary[48].

Primary healing is a closure of wound within hours of its formation and one of such example is closing a full thickness surgical incision.

Secondary healing is spontaneous closure of wound through contraction and re-epithelialization. It results in intense inflammatory response compared to primary healing of wound. Secondary wound healing also results in formation of more granulomatous tissue and prominent contraction of wounds.

Tertiary closure is also called as delayed primary closure of wound which involves primary debridement of wound for certain period followed by surgical closure with suturing. In contaminated wounds tertiary closure of wound is recommended. Phagocytosis of contaminated tissue occurs on the 4th day, following which re-epithelisation, deposition of collagen and maturation happens.[49]

The four distinct phases [50] of wound healing are

i. Hemostasis
ii. Inflammation
iii. Tissue formation
iv. Tissue remodelling

Hemostasis

Hemostatsis depends on complex cascade of interaction between cellular growth factors and cellular components. The events like vasoconstriction and coagulation of blood occurs immediately results in hemostasis. Vasoconstriction will be followed by inflammatory cells recruitment into wound, adherence of platelets to disrupted endothelium and releases adenosine diphosphate (ADP), promotes clumping of platelets. Release of numerous cytokines by thrombocytes initiates the inflammatory phase.

Alpha granules secrete PDGF (platelet-derived growth factor), platelet factor IV, and TGF-β (transforming growth factor beta), while vasoactive amines, for

example; histamine and serotonin are secreted from dense bodies present in thrombocytes. PDGF is chemotactic for fibroblasts and alongside TGF-β is a strong modulator of fibroblastic mitosis, resulting in prolific collagen fibril development in later stages.

During early inflammatory phase there will be migration of inflammatory cells into the wound. Epithelial cells migration occurs in the first 12-24 hours, however formation of new tissue happens in the following 10-14 day.

PHASE OF GRANNULATION:

The sub-phases includes the following

1. Fibroplasia
2. Matrix deposition
3. Angiogenesis
4. Re-epithelialization

Fibroblasts migrates into wound within 5 to 7 days, they forms type I and type III collagen. In the earlier stages of healing of wound predomination of type III collagen will be present and later the type I collagen replaces it.

Tropocollagen is precursor of all types of collagen and is transformed in the rough endoplasmic reticulum of the cell, where hydroxylation of lysine and proline occur. Disulfide bonds are created, forming 3 tropocollagen filaments to form a left triple helix called procollagen. Since procollagen is secreted into the extracellular space, peptidases in the cell wall cleave terminal peptide chains, producing true collagen fibrils. The wound is infused with fibronectin and GAG produced by fibroblasts. These GAGs include hyaluronic acid, heparin sulfate, keratin sulfate and chondroitin sulfate. Proteoglycans are GAGs which

are covalently attached to protein core and contributes to the deposition of collagen.[51,52]

Angiogenesis is a process of ramifications of mother vessel.

Neovascularisation requires an extracellular matrix and degradation of base membrane followed by endothelial cells migration, mitosis and maturation. Basic vascular endothelial growth factor (VEGF) and FGF modulates the angiogenesis.

Reepithelialization occurs with cell migration from periphery of wound. In this process proliferation of cells occurs within 24 hours. Peripheral cell division occurs within 48-72 hours, resulting in a thin layer of epithelial cells, which fills the wound. Epidermal growth factors play an important role in re-epithelialization of wound.

Increase in cellular activity results in epithelialization and neovascularization. Stromal elements as extracellular matrix materials are released and organized. This new tissue, called granulation, tissue, depends on specific growth factors for further organization occur at the conclusion of the healing process. This physiological process occurs for several weeks to several months in healthy person.

Remodeling phase: Lastly, tissue remodeling, where contraction and tensile strength of the wound occurs is achieved, occurs within the next 6 to 12 months after the 3rd week, the wound undergoes constant changes, called remodeling, which might persist for years after initial injury. Collagen is degraded and deposited in order to create a balance, resulting in no change in the amount of collagen present in wound. Collagen deposition in the normal wound healing peaks around the 3rd week after the onset of the wound. The contraction of wound is process resulting in part from the proliferation of myofibroblasts, which look like contractile smooth muscle cells. Wound contraction occurs to a greater degree in secondary healing compared to primary healing. Systemic disease and local causes can influence wound healing[53].

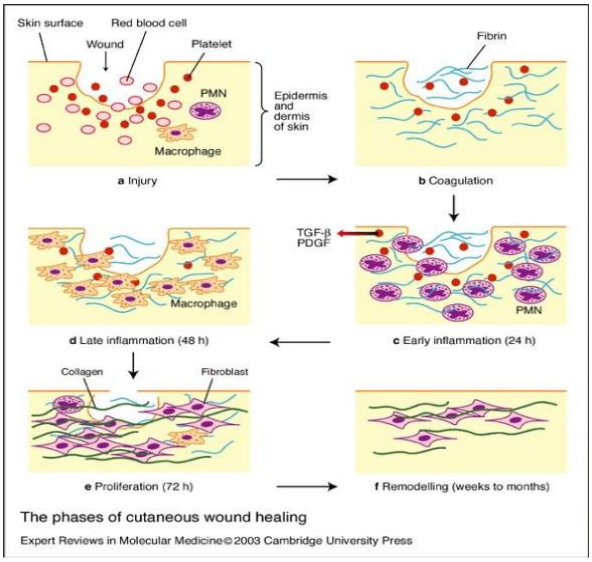


Figure – 6 : Phases of Wound Healing[54]

An incisional portsite hernia after laparoscopy can result from failure of approximation of the edges of the fascial defect, infection, premature disruption of the suture, a bulge on an old port site should arouse suspicion immediately.[22]

Hernias at the trocar portsites are classified into 3 types :

1. The early onset type (which occurs immediately following surgery, with small intestine obstruction especially Richter's hernia) that often develops,
2. The late onset type (which is recurrent several months after surgery, usually with bulging of local area of abdomen and no development of small intestine obstruction [laprocele]), and
3. A Special type (which indicates protrusion of the bowel or omentum) .[20]

Richter's hernia usually presents a few days later and patient’s diagnosis will be delayed due to persistence of functioning of bowel resulting in significant morbidity.

MATERIAL & METHODS

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Source of data:

Patients who underwent laparoscopic surgery in Department of General Surgery, R.L Jalappa Hospital, Tamaka, Kolar during the period December 2019 to June 2021.

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Even group (Conventional hand suturing): 30 patients.

Inclusion criteria:

Patients who are undergoing primary laparoscopic procedure among 19 to 60 years of age group.

Port sites greater than 10mm.

Exclusion criteria:

Patients who already underwent laparoscopic procedures.

Immuno-compromised individuals (Diabetics, HIV, bleeding disorder, patients on steroid and immunosuppressive therapy)

Due informed consent has been obtained. The same antibiotic protocol is followed, Injection of CEFAZOLIN 1 gram as a single dose administered intravenously in the time of anesthesia.

Closure of the skin and fascial defect was performed for the 10 mm ports and skin on 5 mm ports. Port site infection information is obtained from patients who had presence of pus in the wound site.

Assessments of postoperative pain was done at 6hrs, 12hrs, 24hrs and 48hrs with VAS (Visual Analog Scale) score. The following parameters are observed, the time taken for port site closure, ease of technique, presence of surgical site infection and port site hernia. Patients were followed up to 6 months for port site hernias.

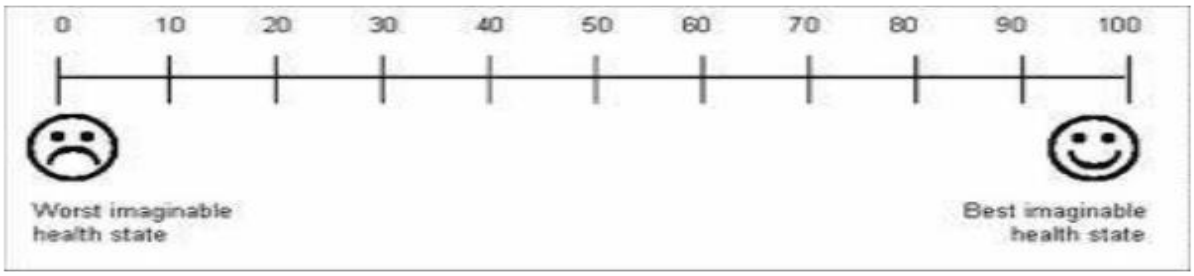

Figure – 10 : Visual Analogue Score

RESULTS

RESULTS

STATISTICAL METHODS:

Incidence of surgical site infection was considered as primary outcome variables. Method of closure was considered as Primary explanatory variable. For normally distributed quantitative parameters the mean values were compared between study groups using independent sample t-test (2 groups for non-normally distributed Quantitative parameters, Medians and Interquartile range (IQR) were compared between study groups using Mann Whitney u test (2 groups).

Table 1: Descriptive analysis of Age in the study population (N=60)

Name	Mean ± SD	Median	Minimum	Maximum	95% CI	
					Lower CI	Upper CI
Age	37.68 ± 8.46	38.00	23.00	51.00	35.54	39.82

Table 2: Descriptive analysis of Gender in the study population (N=60)

Gender	Frequency	Percentage
Male	37	61.67%
Female	23	38.33%

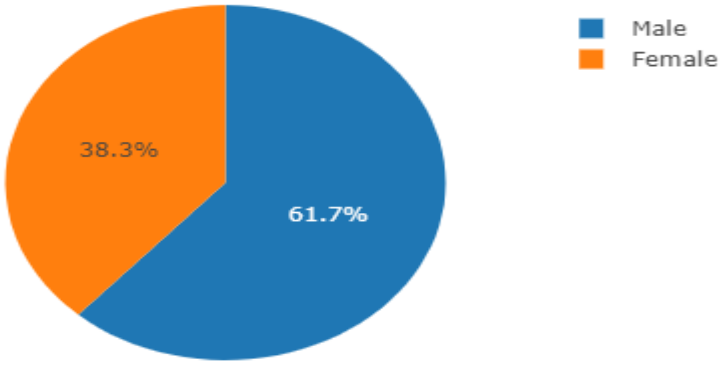

Figure 1: Pie Chart of Gender (N=60)

Table 3: Descriptive analysis of Method of Closure in the study population (N=60)

Method of Closure	Frequency	Percentage
Conventional suturing	30	50.00%
Carter-Thomason device	30	50.00%

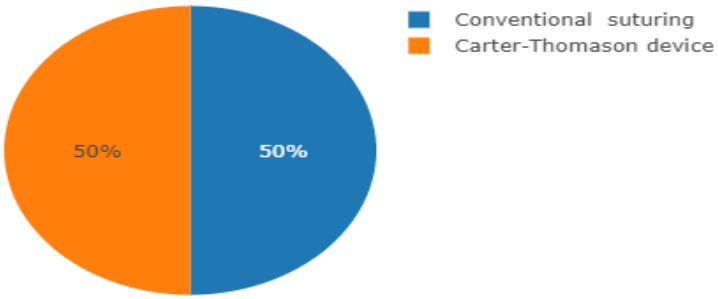

Figure 2: Pie Chart of Method of Closure (N=60)

Table 4: Descriptive analysis of Procedure in the study population (N=60)

Procedure	Frequency	Percentage
LAP APPENDECTOMY	31	51.67%
LAP CHOLECYSTECTOMY	29	48.33%

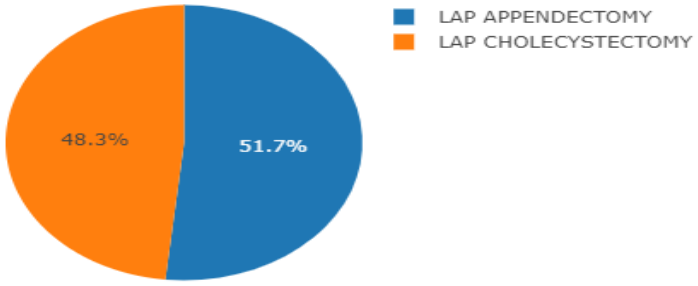

Figure 3: Pie Chart of Procedure (N=60)

Table 5: Descriptive analysis of Closure Duration (Sec) in the study population (N=60)

Parameter	Mean ± SD	Median	Minimum	Maximum	95% CI	
					Lower CI	Upper CI
Closure Duration (Sec)	182.13 ±34.11	179.00	140.00	230.00	173.50	190.76

Table 6: Descriptive analysis of Ease of Technique (Grading) in the study population (N=60)

Ease of Technique (Grading)	Frequency	Percentage
Easy	11	18.33%
Normal	22	36.67%
Difficult	27	45.00%

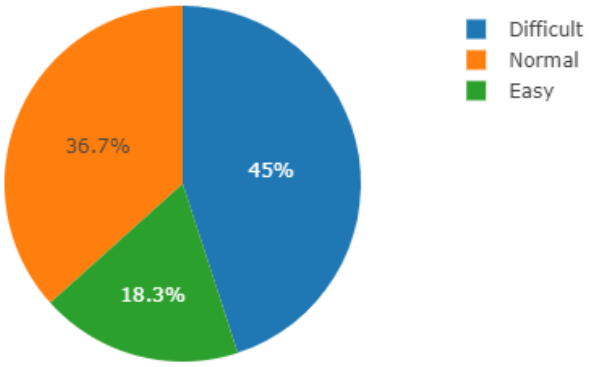

Figure 4: Pie Chart of Ease of Technique (Grading) (N=60)

Table 7: Descriptive analysis of vas score follow-ups in study population (N=60)

Vas Score	Mean ± SD	Median	Minimum	Maximum	95% C.I	
					Lower	Upper
@ 6Hrs	2.88 ± 0.83	3.0	2.0	4.0	2.7	3.1
@ 12Hrs	2.37 ± 0.82	2.0	1.0	4.0	2.2	2.6
@ 24Hrs	2.02 ± 0.89	2.0	1.0	4.0	1.8	2.3
@ 48Hrs	1.9 ± 0.75	2.0	1.0	3.0	1.7	2.1

Table 8: Descriptive analysis of Incidence of SSI in the study population (N=60)

Incidence of SSI	Frequency	Percentage
Present	4	6.67%
Absent	56	93.33%

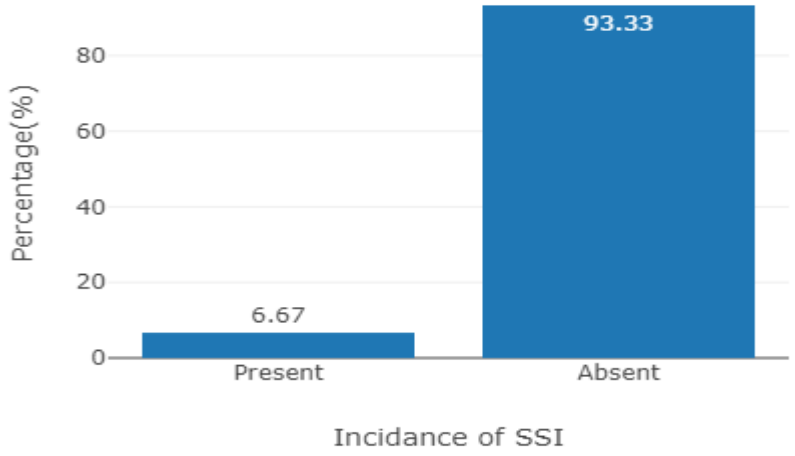

Figure 5: Bar Chart of Incidence of SSI (N=60)

Table 9: Descriptive analysis of Duration of hospital stay (Day) in the study population (N=60)

Name	Mean ± SD	Median	Minimum	Maximum	95% CI	
					Lower CI	Upper CI
Duration of hospital stay (Day)	4.13 ±1.17	4.00	3.00	7.00	3.84	4.43

Table 10: Descriptive analysis of Port site hernia in the study population (N=60)

Port site hernia	Frequency	Percentage
ABSENT	60	100.00%

Table 11: Comparison of mean age across the method of closure (N=60)

Parameter	Method of Closure (Mean ± SD		P Value
	Conventional suturing (N=30)	Carter-Thomason device (N=30)	
Age	38.20 ± 8.56	37.17 ± 8.47	0.6400

Table 12: Comparison of gender across Method of Closure (N=60)

Gender	Method of Closure		Chi-square value	P value
	Conventional suturing (N=30)	Carter-Thomason device (N=30)		
Male	19 (63.33%)	18 (60.00%)	0.07	0.7906
Female	11 (36.67%)	12 (40.00%)		

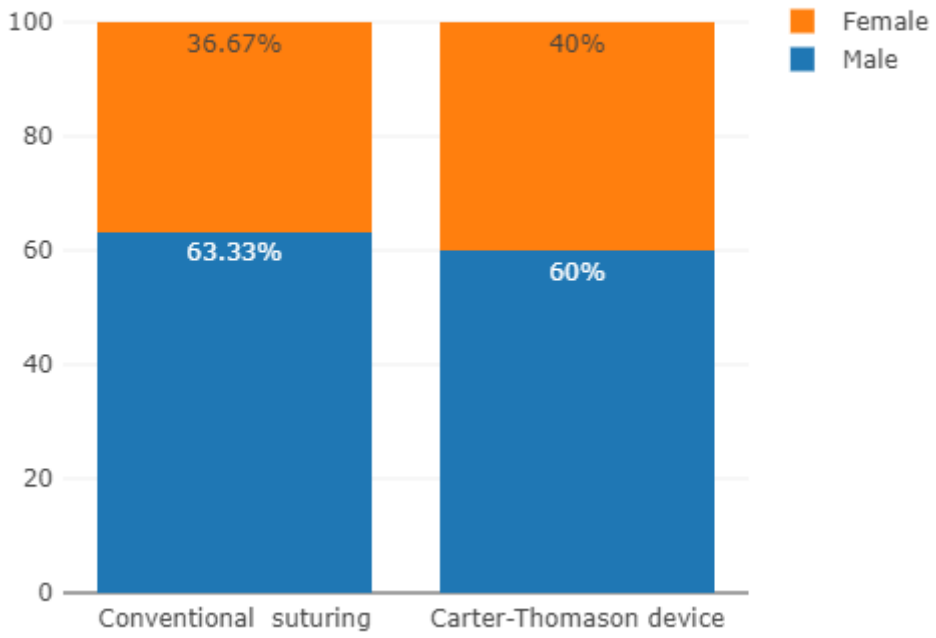

Figure 6: Staked bar chart of comparison of gender Method of Closure (N=60)

Table 13: Comparison of mean Closure duration across method of closure (N=60)

Parameter	Method of Closure (Mean ± SD)		P Value
	Conventional suturing (N=30)	Carter-Thomason device (N=30)	
Closure Duration (Sec)	215.33 ± 8.40	148.93 ± 3.96	<0.001

Table 14: Comparison of Procedure across Method of Closure (N=60)

Procedure	Method of Closure		Chi-square value	P value
	Conventional suturing (N=30)	Carter-Thomason device (N=30)		
LAP APPENDECTOMY	17 (56.67%)	14 (46.67%)	0.60	0.4383
LAP CHOLECYSTECTOMY	13 (43.33%)	16 (53.33%)		

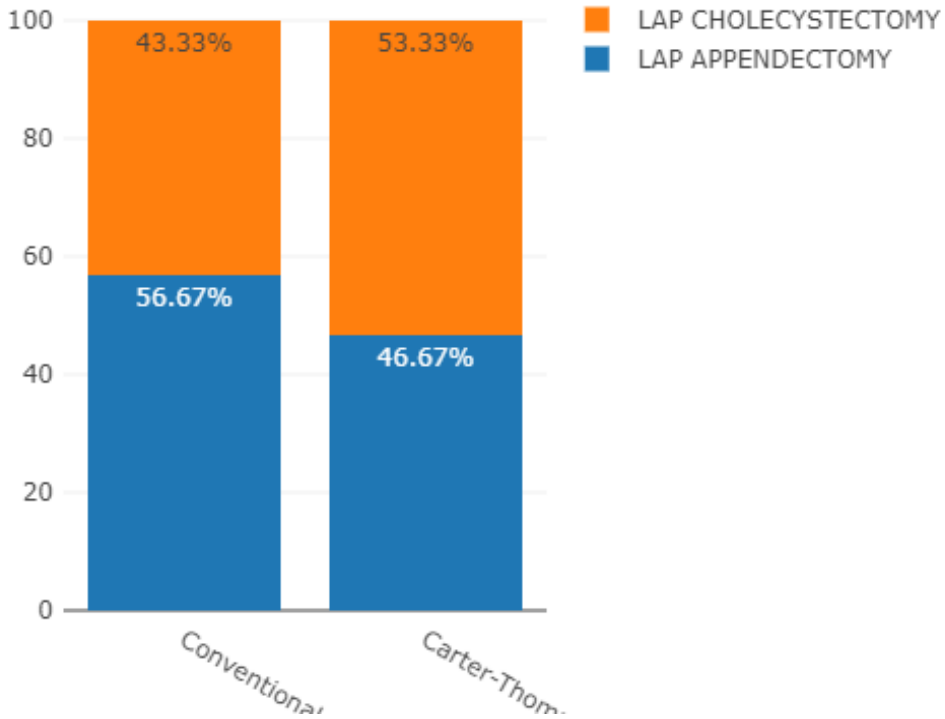

Figure 7: Staked bar chart of comparison of Procedure Method of Closure (N=60)

Table 15: Comparison of Procedure across Method of Closure (N=60)

Ease of Technique (Grading)	Method of Closure		Chi-square value	P value
	Conventional suturing (N=30)	Carter-Thomason device (N=30)		
Easy	1 (3.33%)	10 (33.33%)	10.364	0.005
Normal	11 (36.67%)	11 (36.67%)		
Difficult	18 (60%)	9 (30%)		

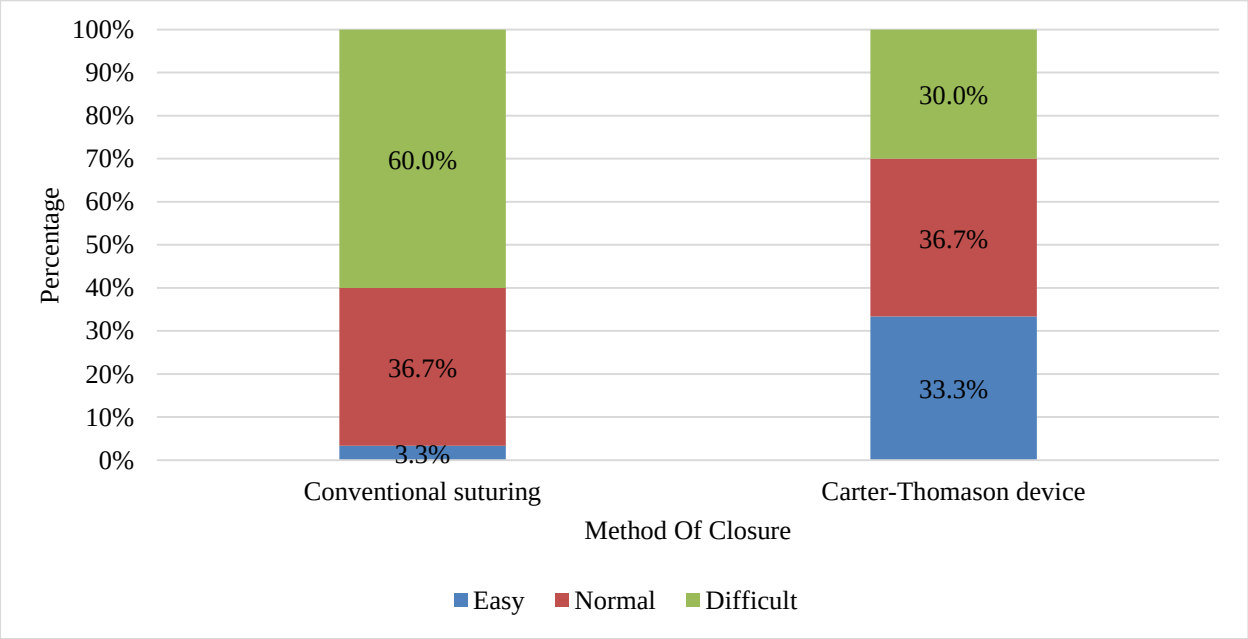

Figure 8: Staked bar chart of comparison of Ease of Technique (Grading) across Method of Closure (N=60)

Table 16: Comparison of between the two groups at different follow-up time periods (N=60)

Vas Score	Method Of Closure Median (IQR)		Mann Whitney U test (P value)
	Conventional Suturing	Carter-Thomason Device	
@ 6Hrs	4 (3,4)	2.00 (2.0, 2.75)	<0.001
@ 12Hrs	3 (3,3)	2 (1,2)	<0.001
@ 24Hrs	3 (2.25,3)	1 (1,1.75)	<0.001
@ 48Hrs	2 (2,3)	1 (1,2)	<0.001

Table 17: Comparison of Incidence of SSI across Method of Closure (N=60)

Incidence of SSI	Method of Closure		Chi-square value	P value
	Conventional suturing (N=30)	Carter-Thomason device (N=30)		
Present	3 (10.00%)	1 (3.33%)	1.07	0.6120
Absent	27 (90.00%)	29 (96.67%)		

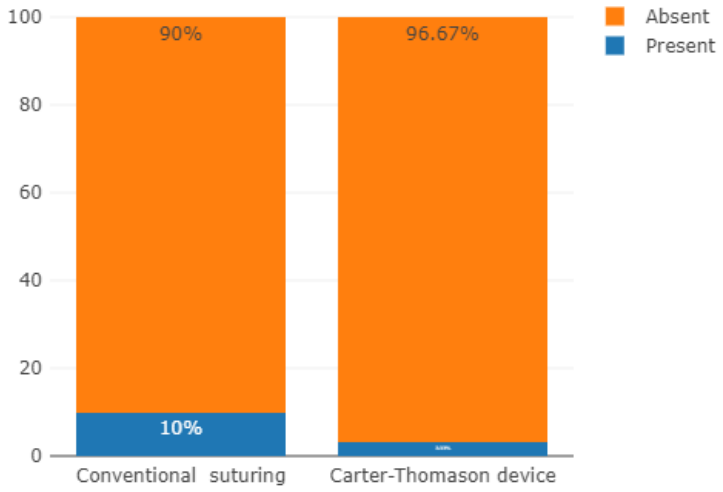

Figure 9: Staked bar chart of comparison of Incidence of SSI across Method of Closure (N=60)

Table 18: Comparison of mean Duration of hospital stay (Days) across method of closure (N=60)

Parameter	Method of Closure (Mean ± SD)		P Value
	Conventional suturing (N=30)	Carter-Thomason device (N=30)	
Duration of hospital stay (Days)	4.57 ± 1.38	3.70 ± 0.70	0.0033

Table 19: Comparison of port site hernia between method of closure (N=60)

Port Site Hernia	Method Of Closure		Chi square	P value
	Conventional Suturing (N=60)	Carter-Thomason Device (N=60)		
Absent	30 (50%)	30 (50%)	*	*

DISCUSSION

DISCUSSION

Complications of port site can be divided as:

1) Access-related complications

2) Postoperative complications

They have been reported in all age groups and in both genders. The literature shows that obesity is associated with increased morbidity related to port site due to various factors like the need for longer trocars, thick abdominal wall, need for larger skin incision to expose fascia adequately, and limitation in mobility of the instrument due to increased subcutaneous tissue.[58] The rapid advancement in science and CCD cameras, the flexible light sources have made the laparoscopic surgery more affordable and widely available. As a result, the use of laparoscopy has expanded to more sophisticated surgeries as well as management of malignancies.[59] In our study we included total of 60 cases, which included 30 in each group, that is conventional suturing group and Carter-Thomason device group.

The total cases taken in conventional suturing group were 30, out of which 19(63.33%) were male and 11(36.67%) were female. And in Carter-Thomason device group out of 30 patients 18(60%) were male and 12(40%) were female. The p value is calculated to be 0.79. In a study conducted by Somukarthik et al[58] total number of cases were 570 which included 307 male and 263 female.[58] In a study conducted by G.G.Ravindranath et al which had 328 patients, 229 (69.8%) were females and 99 (30.2%) were males.[59]

In present study according to age distribution maximum number of patients were seen in 31-40 years in both the groups. Mean of the age was calculated in both the groups, mean age of the conventional suturing group is 38.2 and standard deviation is 8.56 and mean age of Carter Thomason device group is 37.17 with standard deviation of 8.47. The p value

was calculated to be 0.64. In a study conducted by Somukarthik et al, the age of the patients were between 13 to 80 years.[58]

The total number of cases in conventional suturing were 30 out of which maximum number of cases operated were acute appendicitis (n=17) followed by Cholelithiasis (n=13). In Carter- Thomason device group 30 cases were considered out of which maximum number of cases were cholelithiasis (n=16) followed by acute appendicitis (n=14). So in total 31 cases were acute appendicitis and cholelithiasis were 29 cases. The p value showed 0.43 which is insignificant. In a study conducted by Somu Karthik et al[58] it was found that total number of cholelithiasis were 207 whereas appendicitis were 169.[1] Finally in the study total number of surgeries done maximum were laparoscopic appendicectomy n=31(51.6%) followed by laparoscopic cholecystectomy n=29(48.3%).

The mean duration of port closure in conventional suturing is 3.5 minutes and standard deviation is 0.14, whereas in Carter- Thomason device the mean time is 2.4 minutes and standard deviation is 0.06. The p value is <0.001 which is found be significant. In a study conducted by Abijit Shetty et al[60], compared the time taken for port closure using hand closure technique and Carter-Thomason needle which showed mean of 15 minutes in hand closure and 8 minutes in Carter-Thomason, by which he concluded that the time taken is less for Carter- Thomason, which is similar to our study the time taken is more in conventional suturing group.[60].

The ease of technique was calculated by a scoring system containing five grades was formulated indigenously. All the surgeries were performed by single surgeon. In conventional suturing group, around 60% (n=18) was graded to difficult, whereas in Carter-Thomason group 30% (n=9) were graded as difficult. Closure using Carter-Thomason device is graded easy in 33.33% (n=10), whereas only 3.33% (n=1) was noted easy in conventional suturing group. Normal was graded in 36.67% (n=12) in both the study groups respectively. There

were no other studies which has taken ease of technique as a parameter.

VAS score indicated mild pain during first 48 hours of post-operative period which was comparable between two groups. There was statistically significant difference in median VAS score for conventional suturing group and Carter-Thomason device group at 6 hours,12 hours 24 hours and 48 hours with P value < 0.001. In the present study, there was less postoperative pain observed in Carter-Thomason device group compared to conventional suturing group which is statistically significant. Similar findings are observed in Abijit Shetty et al[60] study where less postoperative pain is observed in Carter-Thomason device group compared to conventional suturing in port site closure.

Port site surgical infection was seen in 10% in conventional suturing group and 3.3% in Carter-Thomason device, the p value is 0.612. In a study conducted by Somu Karthik et al which showed 10 cases to have port site infection out of 570 cases, and among 10 cases port site infection was found in laparoscopic cholecystectomy, and total extra peritoneal repair.[58] In a study conducted by Abhijit Shetty et al showed port site infection in 2 cases in hand closure technique and 1 case in Carter-Thomason needle.[60] Similar was the case in a study by Adisa et al,[61,62,63] where 15% of the cases had superficial infections. Similar cases were reported form other studies.[61,62,63]

In our study we did not encounter any intraoperative complications in both case and control groups. In a study conducted by Somu Karthik et al[58] which showed, omentum related complications, which accounted for 0.4%.

These complications are attributed to 1) Prior to removing the port the gas must be deflated completely 2) Inadequate closure 3) Larger incision than port. This can be avoided by

1) All the ports should be removed under vision

2) After release of gas the primary port should be removed with the camera

3) Appropriate size of incision

4) To adequately close the port.

No port site hernia is observed in both of the study groups in present study.

In a study conducted by Abdul Zahra Hussain et al[64] which showed

Sl no	Type of case	Number of cases of port site hernia	Total number of cases
1	Nissen's fundoplication	1	456
2	Laparoscopic cholecystectomy	2	1621
3	Groin hernia repair	5	1833

In other study conducted by Somu Karthik et al[58] which showed 1 port site hernia in laparoscopic appendectomy out of 570 patients. The hernia was seen at umbilical port. [1] In other study conducted by Abhijit Shetty et al[60] which showed port site hernia in only 1 case and p value is to 0.003.

CONCLUSION

CONCLUSION

Port site complications are very minimally associated with laparoscopic surgeries. It is easier to close the site with Carter-Thomason compared to conventional suturing. Time taken for port closure is less for Carter-Thomason. The post-operative port site pain is noted less with Carter-Thomason device closure compared to conventional suturing. Percentage wise only port site infection contributed to the complications noted in our study was less in Carter-Thomason device, there were no intraoperative complications and port site hernia. Over all port site closure with Carter-Thomason device gives best results compared to conventional suturing.

SUMMARY

SUMMARY

This is a hospital based prospective and comparative study conducted from Oct 2019 to June 2021 at Deparment of Surgery on the patients admitted in R.L.Jalappa Hospital & Research Centre attached to Sri Devaraj Urs Higher Education and Research, Tamaka, Kolar.

The aim of present study is to compare the efficacy of Carter-Thomason device with Conventional suturing for port site closure. A total of 60 patients who underwent laparoscopic procedure have been recruited for the study and were stratified by odd and even method into two groups, each group comprises of 30 participants.

The major findings of the study are easier closure of port site with Carter-Thomason device. Closure duration time is less with Carter-Thomason device. VAS score indicated mild pain during first 48 hours of post-operative period which was comparable between the groups. In the present study, this reduction was significant in Carter-Thomason device group. Port site infection is observed more in conventional suturing group compared to Carter-Thomason device group. No port site hernia is noted both the study groups after 6 months of follow-up. Over all port site closure with Carter-Thomason device gives best results compared to conventional suturing.

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ANNEXURES

PARTICULARS OF THE PATIENT

Name:

Age:

Sex:

Occupation:

UHID number :

Phone number:

Address:

Date of admission:

Date of operation:

Date of discharge:

Presenting complaints :

Previous history :

Family history:

Past history :

General physical examination

- Appearance:
- Temperature:
- Pulse:
- Bloodpressure:
- Built and nourishment:
- Pallor :
- Icterus:
- Clubbing:
- Cyanosis:
- Lymphadenopathy:
- Edema:

Systemic examination

- Per abdomen
- Respiratory system
- Cardio vascular system

- Central nervous system
- Diagnosis:

PROCEDURE DONE:

METHOD OF PORT SITE CLOSURE: CARTER-THOMASON DEVICE

CONVENTIONAL SUTURING

DURATION OF CLOSURE:

EASE OF TECHNIQUE: Grading 5-Very easy

4-Easy

3-Normal

2-Difficult

1-Very difficult

POST-OPERATIVE PAIN (VAS SCALE) at 6 , 12, 24 & 48 hours respectively:

SURGICAL SITE INFECTION: **PRESENT**

ABSENT

PORT SITE HERNIA: **PRESENT**

ABSENT

SRI DEVARAJ URS MEDICAL COLLEGE AND RESEARCH CENTER, TAMAKA, KOLAR

PATIENT INFORMED CONSENT FORM

PATIENT UHID NO._____.

TITLE: STUDY COMPARING CARTER-THOMASON DEVICE WITH CONVENTIONAL SUTURING IN PORT SITE CLOSURE

PRINCIPAL INVESTIGATOR:

The contents of the information sheet that was provided have been read carefully by me/explained in detail to me, in a language that I comprehend, and I have fully understood the contents. I confirm that I have had the opportunity to ask questions.

The nature and purpose of the study and its potential risks/benefits and expected duration of the study, and other relevant details of the study have been explained to me in detail. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal right being affected.

I understand that the information collected about me from my participation in this research and sections of any of my medical notes will be confidential & may be looked at by responsible individuals. I give permission for these individuals to have access to my records.

I agree to take part in the above study.

Subject name and signature/ thumb impression:

Date:

Name and signature/ thumb impression of witness:

Date: Place:

Name and signature of principal investigator:

Date: Place:

ರೋಗಿಯ ತಿಳಿವಳಿಕೆಯ ಸಮ್ಮತಿ ನಮೂನೆ

ಅಧ್ಯಯನ ಶೀರ್ಷಿಕೆ : ಕಾರ್ಟರ್-ಥೋಮಸನ್ ಸಾಧನದೊಂದಿಗೆ ಪೋರ್ಟ್ ಸೈಟ್ ಮುಚ್ಚುವಿಕೆ vs ಕನ್ವೆನ್ಷನಲ್ ಹ್ಯಾಂಡ್ ಸೂಚರಿಂಗ್-ಹೋಲಿಕೆ ಅಧ್ಯಯನ '

ನಾನು, ಶ್ರೀ/ಶ್ರೀಮತಿ …… .. ನನ್ನ ಸ್ವಂತ ಅರ್ಥವಾಗುವ ಭಾಷೆಯಲ್ಲಿ ವಿವರಿಸಲಾಗಿದೆ, ಇದು ಕಾರ್ಟರ್-ಥಾಮಸನ್ ಸಾಧನದೊಂದಿಗೆ ಪೋರ್ಟ್ ಸೈಟ್ ಮುಚ್ಚುವಿಕೆ ಮತ್ತು ಸಾಂಪ್ರದಾಯಿಕ ಕೈ ಹೊಲಿಗೆ-ಒಂದು ತುಲನಾತ್ಮಕ ಅಧ್ಯಯನವನ್ನು ನಡೆಸಲಾಗುತ್ತಿದೆ. ಆರ್.ಎಲ್ ಜಲಪ್ಪ ಹಾಸ್ಪಿಟಲ್.

ನನ್ನ ಕ್ಲಿನಿಕಲ್ ಆವಿಷ್ಕಾರಗಳು, ತನಿಖೆಗಳು, ಪೂರ್ವಭಾವಿ ಮತ್ತು ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಯ ನಂತರದ ಸಂಶೋಧನೆಗಳನ್ನು ಮೌಲ್ಯಮಾಪನ ಮತ್ತು ಅಧ್ಯಯನದ ಉದ್ದೇಶಕ್ಕಾಗಿ ದಾಖಲಿಸಲಾಗುತ್ತದೆ ಎಂದು ನನಗೆ ವಿವರಿಸಲಾಗಿದೆ.

ಈ ಅಧ್ಯಯನದಲ್ಲಿ ನನ್ನ ಭಾಗವಹಿಸುವಿಕೆ ಸಂಪೂರ್ಣವಾಗಿ ಸ್ವಯಂಪ್ರೇರಿತವಾಗಿದೆ ಎಂದು ನನಗೆ ವಿವರಿಸಲಾಗಿದೆ, ಮತ್ತು ನಾನು ಯಾವುದೇ ಸಮಯದಲ್ಲಿ ಅಧ್ಯಯನದಿಂದ ಹಿಂದೆ ಸರಿಯಬಹುದು ಮತ್ತು ಇದು ನನ್ನ ವೈದ್ಯರೊಂದಿಗಿನ ನನ್ನ ಸಂಬಂಧ ಅಥವಾ ನನ್ನ ಕಾಯಿಲೆಗೆ ಚಿಕಿತ್ಸೆಯ ಮೇಲೆ ಪರಿಣಾಮ ಬೀರುವುದಿಲ್ಲ. ಅಧ್ಯಯನದ ಅಪಾಯ / ಲಾಭದ ಬಗ್ಗೆ ನನಗೆ ವಿವರಿಸಲಾಗಿದೆ.

ಈ ಅಧ್ಯಯನದಿಂದ ಉತ್ಪತ್ತಿಯಾಗುವ ವೈದ್ಯಕೀಯ ಮಾಹಿತಿಯು ಸಾಂಸ್ಥಿಕ ದಾಖಲೆಗಳ ಭಾಗವಾಗಲಿದೆ ಮತ್ತು ನನ್ನ ಹೇಳಿದ ಸಂಸ್ಥೆಯು ಗೌಪ್ಯವಾಗಿಡುತ್ತದೆ ಎಂದು ನಾನು ಅರ್ಥಮಾಡಿಕೊಂಡಿದ್ದೇನೆ.

ಈ ಅಧ್ಯಯನವು ಉದ್ಭವಿಸುವ ಯಾವುದೇ ಡೇಟಾ ಅಥವಾ ಫಲಿತಾಂಶದ ಬಳಕೆಯನ್ನು ನಿರ್ಬಂಧಿಸದಿರಲು ನಾನು ಒಪ್ಪುತ್ತೇನೆ, ಅಂತಹ ಬಳಕೆಯು ವೈಜ್ಞಾನಿಕ ಉದ್ದೇಶಕ್ಕಾಗಿ ಮಾತ್ರ.
ವಿಚಾರಣೆಗಾಗಿ ನನ್ನ ಬಳಿ ಪ್ರಧಾನ ತನಿಖಾಧಿಕಾರಿ ಮೊಬೈಲ್ ಸಂಖ್ಯೆ ಇದೆ.
ಚಿಕಿತ್ಸೆಯ ಅವಧಿಯುದ್ದಕ್ಕೂ ಗುಣಮಟ್ಟದ ಆರೈಕೆಯನ್ನು ನಿರ್ವಹಿಸಲಾಗುವುದು ಎಂದು ನನಗೆ ತಿಳಿಸಲಾಗಿದೆ.
ನಾನು ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಸ್ವಯಂಪ್ರೇರಣೆಯಿಂದ ಸಮ್ಮತಿಯನ್ನು ನೀಡುತ್ತೇನೆ.

ತನಿಖಾಧಿಕಾರಿ: ಡಾ .ಸೆಟ್ಟಿಗಿರಿ ಅವಿನಾಶ್

ಭಾಗವಹಿಸುವವರ ಸಹಿ / ಹೆಬ್ಬೆರಳು ಅನಿಸಿಕೆ
ಹೆಸರು:

ಸಾಕ್ಷಿಯ ಸಹಿ / ಹೆಬ್ಬೆರಳು ಅನಿಸಿಕೆ: ದಿನಾಂಕ:
ಹೆಸರು:
ರೋಗಿಗೆ ಸಂಬಂಧ:

PATIENT INFORMATION SHEET

TITLE: STUDY COMPARING CARTER-THOMASON DEVICE WITH CONVENTIONAL SUTURING IN PORT SITE CLOSURE

Patient's name:	Age:
Ward and UHID no:	Address:
Gender:	Study no.:

The purpose of the study is explained in detail to us and all information collected is for study purpose only. The data collected is submitted to the Department of surgery, SDUMC ,Kolar and confidentiality ensured. The merits and demerits has been explained briefly to the us.

Minimal access surgeries need small (5mm to 12 mm) incisions for creation of ports for telescope and hand instruments with the help of trocars. The port sites must be closed appropriately in order to prevent incidence of surgical site infection and port site hernia. The incidence of port site hernias are about 1-6 percent which can cause considerable morbidity.

Most of the port site complications are seen at 10-12 mm ports in midline, particularly around the umbilicus for which the accepted surgical practice is to close all the fascial layers at the port. Closing all the fascial layers with conventional suturing may not be possible many times, especially in the obese patients.It is found that when Carter-Thomason device is used, the port site complications are reduced to a maximum extent.

We have been counseled about the aim and methods of research, expected duration of the our participation and the benefits to be expected from the study. We have also been been

explained about the risks involved to the patient under study ,provision of free treatment for research related injury, freedom of individual to participate and to withdraw from the study at any point of time ,the necessity of investigations with cost and source of investigations.

This is a study comparing carter-thomason device with conventional suturing in port site closure It has been explained that we the patients will be divided into two groups as per even odd method. We will be placed either in one of the groups and will be managed with respective technique of port closure.

Person for contact for queries:

Dr.SETTIGIRI AVINASH

Department of general surgery

SDUMC, KOLAR

Ph: 8555834566

ರೋಗಿಯ ಮಾಹಿತಿ ನಮೂನೆ

ಅಧ್ಯಯನ ಶೀರ್ಷಿಕೆ : 'ಕಾರ್ಟರ್-ಥೋಮಸನ್ ಸಾಧನದೊಂದಿಗೆ ಪೋರ್ಟ್ ಸೈಟ್ ಮುಚ್ಚುವಿಕೆ ವಿಎಸ್ ಕನ್ವೆನ್ಷನಲ್ ಹ್ಯಾಂಡ್ ಸೂಚರಿಂಗ್-ಎ ಹೋಲಿಕೆ ಅಧ್ಯಯನ'

ಅಧ್ಯಯನ ಸ್ಥಳ: ಆರ್.ಎಲ್.ಜೆ. ಆಸ್ಪತ್ರೆ ಮತ್ತು ಸಂಶೋಧನಾ ಕೇಂದ್ರ, ಜೋಡಿಸಲಾದ ಶ್ರೀ ದೇವರಾಜ ಅರಸು ವೈದ್ಯಕೀಯ ಕಾಲೇಜು, ಟಮಕ, ಕೋಲಾರ.

ವಿವರಗಳು-

ವಿಷಯ ಆಯ್ಕೆ:

ನೀವು, ರೋಗಿಯನ್ನು ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಆಯ್ಕೆ ಮಾಡಲಾಗಿದೆ ಏಕೆಂದರೆ ನೀವು ಆಧಾರವಾಗಿರುವ ಸ್ಥಿತಿಯನ್ನು ಹೊಂದಿದ್ದೀರಿ.

ಅನಿಯಂತ್ರಿತ ಮಧುಮೇಹಿಗಳು, ಎಚ್ಐವಿ, ರಕ್ತಸ್ರಾವದ ಅಸ್ವಸ್ಥತೆಗಳು, ಸ್ಟೀರಾಯ್ಡ್ ಮತ್ತು ಇಮ್ಯುನೊಸಪ್ರೆಸಿವ್ ಚಿಕಿತ್ಸೆಯಲ್ಲಿ ನೀವು ಈ ಕೆಳಗಿನ ಷರತ್ತುಗಳನ್ನು ಹೊಂದಿದ್ದರೆ ನೀವು ರೋಗಿಯನ್ನು ಈ ಅಧ್ಯಯನದಿಂದ ಹೊರಗಿಡಬಹುದಿತ್ತು.

19-60 ವರ್ಷದೊಳಗಿನ ಲ್ಯಾಪರೊಸ್ಕೋಪಿಕ್ ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಗೆ ಒಳಗಾಗುವ ಎಲ್ಲಾ ರೋಗಿಗಳನ್ನು ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಸೇರಿಸಲಾಗುವುದು. ಈ ಅಧ್ಯಯನದ ರೋಗಿಗಳು ಸಿಬಿಸಿ, ಆರ್ಎಫ್ಟಿ, ಸೀರಮ್ ಎಲೆಕ್ಟ್ರೋಲೈಟ್ ಅಸ್ಸೇ, ರಕ್ತಸ್ರಾವ ಮತ್ತು ಹೆಪ್ಪುಗಟ್ಟುವಿಕೆಯ ಸಮಯ, ಎಚ್ಐವಿ ಮತ್ತು ಎಚ್ಬಿಎಸ್ಎಜಿಗಾಗಿ ಸ್ಕ್ರೀನಿಂಗ್ ಮುಂತಾದ ವಾಡಿಕೆಯ ತನಿಖೆಗೆ ಒಳಗಾಗುತ್ತಾರೆ. ನಿಮ್ಮ ಮುಚ್ಚುವ ವಿಧಾನ, ಮುಚ್ಚುವ ಸಮಯ, ಗಾಯದ ಸ್ಥಳದ ನೋವು ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಯ ನಂತರದ ದಿನ 5. ಅಧ್ಯಯನದ ಮೂಲಕ ಆರೈಕೆಯ ಗುಣಮಟ್ಟವನ್ನು ಕಾಪಾಡಿಕೊಳ್ಳಲಾಗುತ್ತದೆ. ದಯವಿಟ್ಟು ಈ ಕೆಳಗಿನ ಮಾಹಿತಿಯನ್ನು ಓದಿ ಮತ್ತು ನಿಮ್ಮ ಕುಟುಂಬ ಸದಸ್ಯರೊಂದಿಗೆ ಚರ್ಚಿಸಿ. ಅಧ್ಯಯನಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ ನೀವು ಯಾವುದೇ ಪ್ರಶ್ನೆಯನ್ನು ಕೇಳಬಹುದು. ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ನೀವು ಒಪ್ಪಿದರೆ ನಾವು ನಿಮ್ಮಿಂದ ಅಥವಾ ನಿಮ್ಮಿಂದ ಅಥವಾ ಇಬ್ಬರಿಗೂ ಜವಾಬ್ದಾರರಾಗಿರುವ ವ್ಯಕ್ತಿಯಿಂದ ಮಾಹಿತಿಯನ್ನು (ಪ್ರೊಫಾರ್ಮಾದ ಪ್ರಕಾರ) ಸಂಗ್ರಹಿಸುತ್ತೇವೆ. ಸಂಬಂಧಿತ ಇತಿಹಾಸವನ್ನು ತೆಗೆದುಕೊಳ್ಳಲಾಗುವುದು.

ಸಂಗ್ರಹಿಸಿದ ಈ ಮಾಹಿತಿಯನ್ನು ಪ್ರಬಂಧ ಮತ್ತು ಪ್ರಕಟಣೆಗೆ ಮಾತ್ರ ಬಳಸಲಾಗುತ್ತದೆ.

ನಿಮ್ಮಿಂದ ಸಂಗ್ರಹಿಸಲಾದ ಎಲ್ಲಾ ಮಾಹಿತಿಯನ್ನು ಗೌಪ್ಯವಾಗಿಡಲಾಗುತ್ತದೆ ಮತ್ತು ಯಾವುದೇ ಹೊರಗಿನವರಿಗೆ ಬಹಿರಂಗಪಡಿಸುವುದಿಲ್ಲ. ನಿಮ್ಮ ಗುರುತು ಬಹಿರಂಗಗೊಳ್ಳುವುದಿಲ್ಲ. ಈ ಅಧ್ಯಯನವನ್ನು ಸಾಂಸ್ಥಿಕ ನೈತಿಕ ಸಮಿತಿಯು ಪರಿಶೀಲಿಸಿದೆ ಮತ್ತು ನೀವು ಸಾಂಸ್ಥಿಕ ನೈತಿಕ ಸಮಿತಿಯ ಸದಸ್ಯರನ್ನು ಸಂಪರ್ಕಿಸಲು ಮುಕ್ತರಾಗಿದ್ದೀರಿ.

ಈ ಅಧ್ಯಯನವನ್ನು ಒಪ್ಪಿಕೊಳ್ಳಲು ಯಾವುದೇ ಬಲವಂತವಿಲ್ಲ. ನೀವು ಭಾಗವಹಿಸಲು ಬಯಸದಿದ್ದರೆ ನೀವು ಪಡೆಯುವ ಕಾಳಜಿ ಬದಲಾಗುವುದಿಲ್ಲ. ಭಾಗವಹಿಸಲು ನೀವು ಸ್ವಯಂಪ್ರೇರಣೆಯಿಂದ ಒಪ್ಪಿಕೊಂಡರೆ ಮಾತ್ರ ನೀವು ಹೆಬ್ಬೆರಳು ಅನಿಸಿಕೆಗೆ ಸಹಿ / ಒದಗಿಸುವ ಅಗತ್ಯವಿದೆ.

ಎಡ ಹೆಬ್ಬೆರಳು ಅನಿಸಿಕೆ / ರೋಗಿಯ ಸಹಿ:

ಎಡ ಹೆಬ್ಬೆರಳು ಅನಿಸಿಕೆ / ಸಾಕ್ಷಿಯ ಸಹಿ:

ಹೆಚ್ಚಿನ ಮಾಹಿತಿಗಾಗಿ ಸಂಪರ್ಕಿಸಿ:

ಡಾ.ಸೆಟ್ಟಿಗಿರಿ ಅವಿನಾಶ್, (ಸ್ನಾತಕೋತ್ತರ ಪದವಿ),
ಸಾಮಾನ್ಯ ಶಸ್ತ್ರಚಿಕಿತ್ಸೆ ಇಲಾಖೆ
ಎಸ್ ಡಿ ಯು ಎಮ್ ಸಿ.
ಟಮಕ, ಕೋಲಾರ
ಸಂಪರ್ಕ ಸಂಖ್ಯೆ: 8555834566

MASTER CHART

SL NO	UHID	AGE	SEX	METHOD OF CLOSURE	PROCEDURE	CLOSURE DURATION(Min Sec)	EASE OF TECHNIQUE(Grading)	POST-OP PAIN IN VAS SCORE(6 12 24 48)				INCIDENCE OF SSI	DURATION OF HOSPITAL STAY	PORT SITE HERNIA
								6HRS	12HRS	24HRS	48HRS			
1	337413	30	M	CS	LAP APPENDECTOMY	210	3	4	4	4	3		4	ABSENT
2	405411	51	F	CS	LAP CHOLECYSTECTOMY	220	2	2	3	3	3		3	ABSENT
3	405651	28	M	CS	LAP APPENDECTOMY	226	3	4	3	3	3		4	ABSENT
4	402468	49	M	CS	LAP CHOLECYSTECTOMY	200	4	4	4	3	3		6	ABSENT
5	408048	35	F	CS	LAP CHOLECYSTECTOMY	230	2	3	3	3	3		3	ABSENT
6	375500	43	F	CS	LAP CHOLECYSTECTOMY	220	3	3	3	3	3		7	ABSENT
7	413177	24	M	CS	LAP APPENDECECTOMY	210	4	2	3	3	3		3	ABSENT
8	431702	46	F	CS	LAP CHOLECYSTECTOMY	215	4	4	3	3	3		4	ABSENT
9	436572	49	F	CS	LAP CHOLECYSTECTOMY	230	4	4	3	3	3	PRESENT	6	ABSENT
10	441169	24	M	CS	LAP APPENDECTOMY	225	3	3	3	3	3		3	ABSENT
11	440569	36	M	CS	LAP CHOLECYSTECTOMY	226	4	4	3	3	3		4	ABSENT
12	446325	44	M	CS	LAP APPENDECTOMY	223	4	3	3	3	3		5	ABSENT
13	500356	28	F	CS	LAP CHOLECYSTECTOMY	228	3	4	3	3	3		6	ABSENT
14	504913	29	M	CS	LAP APPENDECTOMY	226	3	3	3	3	3		3	ABSENT
15	525292	50	F	CS	LAP CHOLECYSTECTOMY	215	4	4	2	3	2		4	ABSENT
16	517431	39	M	CS	LAP APPENDECTOMY	210	3	3	3	3	2		6	ABSENT
4	555002	35	M	CS	LAP APPENDECTOMY	208	4	4	3	3	2		5	ABSENT
18	574161	41	F	CS	LAP CHOLECYSTECTOMY	206	4	4	4	3	2		7	ABSENT
19	589884	46	M	CS	LAP APPENDECTOMY	204	4	4	3	3	2		6	ABSENT
20	619466	48	F	CS	LAP CHOLECYSTECTOMY	210	3	4	3	3	2	PRESENT	3	ABSENT
21	401187	42	M	CS	LAP APPENDECTOMY	210	2	3	3	3	2		3	ABSENT
22	399611	27	M	CS	LAP APPENDECTOMY	208	2	4	3	3	2		3	ABSENT
23	401188	37	M	CS	LAP APPENDECTOMY	215	2	4	3	2	2		4	ABSENT
24	407592	31	F	CS	LAP CHOLECYSTECTOMY	210	3	3	3	2	2		5	ABSENT
25	386557	46	M	CS	LAP APPENDECTOMY	216	2	4	3	2	2		4	ABSENT
26	358528	35	M	CS	LAP APPENDECTOMY	215	3	3	3	2	2		5	ABSENT
27	412532	44	M	CS	LAP APPENDECTOMY	220	2	4	3	2	2	PRESENT	3	ABSENT
28	407995	48	M	CS	LAP APPENDECTOMY	210	2	3	3	2	2		5	ABSENT
29	406481	32	M	CS	LAP APPENDECTOMY	208	2	4	3	2	2		7	ABSENT
30	439432	29	F	CS	LAP CHOLECYSTECTOMY	206	3	3	3	2	2		6	ABSENT
31	443114	26	M	CT	LAP CHOLECYSTECTOMY	150	2	2	2	1	1		4	ABSENT
32	444745	36	M	CT	LAP APPENDECTOMY	156	3	2	2	1	1		3	ABSENT
33	497549	28	F	CT	LAP APPENDECTOMY	148	2	2	2	2	1		4	ABSENT
34	504745	45	M	CT	LAP APPENDECTOMY	140	2	3	2	2	1		4	ABSENT
35	515202	30	M	CT	LAP APPENDECTOMY	150	3	3	1	2	1		3	ABSENT
36	517437	48	M	CT	LAP APPENDECTOMY	148	2	3	1	1	1		4	ABSENT

SL NO	UHID	AGE	SEX	METHOD OF CLOSURE	PROCEDURE	CLOSURE DURATION(Min Sec)	EASE OF TECHNIQUE(Grading)	POST-OP PAIN IN VAS SCORE(6 12 24 48)				INCIDENCE OF SSI	DURATION OF HOSPITAL STAY	PORT SITE HERNIA
								6HRS	12HRS	24HRS	48HRS			
37	544051	40	F	CT	LAP CHOLECYSTECTOMY	152	2	2	1	1	1		3	ABSENT
38	555648	48	M	CT	LAP APPENDECTOMY	146	3	2	1	1	2		5	ABSENT
39	307474	29	M	CT	LAP CHOLECYSTECTOMY	150	2	2	1	1	2		3	ABSENT
40	601466	26	F	CT	LAP APPENDECECTOMY	152	2	2	1	2	2		4	ABSENT
41	809397	33	M	CT	LAP CHOLECYSTECTOMY	154	2	2	1	2	2		3	ABSENT
42	822844	50	M	CT	LAP CHOLECYSTECTOMY	146	3	2	1	2	2		3	ABSENT
43	781853	47	F	CT	LAP CHOLECYSTECTOMY	144	2	2	1	1	2		4	ABSENT
44	785465	45	F	CT	LAP CHOLECYSTECTOMY	148	3	2	2	1	1		5	ABSENT
45	784453	23	M	CT	LAP APPENDECECTOMY	146	2	2	2	1	1		3	ABSENT
46	826341	42	F	CT	LAP CHOLECYSTECTOMY	150	3	2	2	2	1		3	ABSENT
47	803989	27	M	CT	LAP APPENDECECTOMY	152	2	2	2	2	2		4	ABSENT
48	793047	29	F	CT	LAP APPENDECECTOMY	154	2	2	2	1	2		4	ABSENT
49	793093	41	F	CT	LAP CHOLECYSTECTOMY	158	2	2	2	1	1		3	ABSENT
50	804485	43	M	CT	LAP CHOLECYSTECTOMY	144	3	3	2	1	1		3	ABSENT
51	828117	36	M	CT	LAP APPENDECECTOMY	142	2	3	2	1	2		4	ABSENT
52	792627	39	M	CT	LAP CHOLECYSTECTOMY	148	3	2	2	1	1		3	ABSENT
53	773117	45	F	CT	LAP CHOLECYSTECTOMY	146	4	3	2	1	2		4	ABSENT
54	764204	48	F	CT	LAP CHOLECYSTECTOMY	150	3	2	2	1	1	PRESENT	4	ABSENT
55	771295	29	M	CT	LAP APPENDECECTOMY	150	2	3	2	1	1		3	ABSENT
56	745850	27	M	CT	LAP APPENDECECTOMY	152	3	2	2	1	1		5	ABSENT
57	726463	36	F	CT	LAP CHOLECYSTECTOMY	148	2	3	2	1	1		4	ABSENT
58	726533	41	M	CT	LAP CHOLECYSTECTOMY	146	2	2	2	1	1		5	ABSENT
59	703103	30	F	CT	LAP APPENDECECTOMY	148	2	2	2	1	1		4	ABSENT
60	644465	48	M	CT	LAP CHOLECYSTECTOMY	150	3	2	1	1	1		3	ABSENT