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Study of clinical features of incisonal hernia

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ABSTRACT

BACKGROUND: Incisional hernia is the hernia that presents at the site of a previous incision. It is one true iatrogenic hernia. Study of its clinical presentation and management may help its prevention. This study was performed to review clinical profile and management of incisional hernia in our institute.

METHODS: This study was conducted in the Department of General Surgery at KIMSDU, Karad. 60 patients underwent surgery for incisional hernia. Data on clinical presentation, type of operative procedure, and post-operative complications were collected.

RESULTS: 60 cases underwent surgery for an incisional hernia, female predominance, and age group of 35-45 years and 56-65 were common, about 9(15%) of patients had pre-operative pain, the most common previous surgery was LSCS 23(38.33%), the most common surgical incision was Pfannenstiel 27(45%), more common in the infraumbilical region (83.33%), 7(11.67%) had post op SSI, major comorbidity was obesity, most common operative management was sublay (preperitoneal) meshplasty.

CONCLUSION: Incisional hernia is more common in females.. In our study most of the incisional hernia occurred in infraumbilical incisions. Patients with comorbidities such as obesity, diabetes mellitus, COPD had higher chances of hernia occurrence.

KEYWORDS: Incisional hernia, mesh repair,

INTRODUCTION

Incisional hernia is a common post-operative complication and its incidence is 5-11% post abdominal surgery[1,2]. Incisional hernia is the a type of iatrogenic hernia. Definition of incisional hernia is a protrusion of abdominal contents through a weak scar. Sex, age, previous incision, comorbidities and previous wound infection are some factors that may cause incisional hernia (most important being wound infection)[3].

Incisional hernia occurs after surgery when the abdominal wall fails to close along the line of incision. If not treated, it may cause pain, incarceration, obstruction or strangulation

Modern surgical management helps prevent morbidity, mortality and recurrence associated with incisional hernias. Use of meshplasty has revolutionized management of hernias. Armed with the knowledge of clinical presentation of hernias and novel guidelines, we may be able to prevent and treat incisional hernia.

This study has been undertaken to assess the magnitude of this problem, various factors leading to development of this condition and the different modalities of treatment practiced in our set up at Krishna Hospital, Karad.

AIM AND OBJECTIVES

AIM: - To study the clinical features and surgical management of incisional hernia

OBJECTIVES: - The objectives of this study are to study the following aspects of incisional hernia.

1) To identify and ascertain various modes of presentation.

2) To study surgical modalities of treatment.
3) To draw a conclusion from above data about the risk factors which may cause incisional hernia

RESEARCH METHODOLOGY

Materials

The present study was conducted under the Department of General Surgery, Krishna Institutes of Medical Sciences, Deemed to be University, Karad

Source of data

This study was conducted at Krishna Institute of Medical Sciences in Karad. Maharashtra after approval from the Institutional Ethical Committee. It was conducted in the Department of General Surgery, KIMSDU, Karad.

Patients were included in the study by applying the following inclusion and exclusion criteria.

Inclusion criteria

1) All patients presenting with incisional hernia
2) Both elective and emergency operated cases of incisional hernias

Exclusion criteria

1) Moribund patients
2) Pregnant patients with incisional hernia

Sample Size

Articles cite the incidence of incisional hernias at 11-20%. Thus assuming 20 % incidence sample size calculated by

$$n = \frac{z^2}{L^2}\text{pq}$$

z= standard normal variation at 90% confidence interval=1.96
p= prevalence of incisional hernia=20%
q= patients with no incisional hernia=80%
L= allowable error at 90%=105

Thus, from above equation the sample size comes around to 61≈60

Hence the sample size is 60 at 90% confidence level.

Methodology

60 Incisional Hernia patients admitted in KRISHNA HOSPITAL were recruited into the study based on the inclusion and exclusion criteria mentioned .
A detailed history of the patient was taken. The history included the complete details of the illness leading to the previous surgery leading to incisional hernia, including the diagnosis, surgical management, intraoperative and postoperative complications.
Complete examination of the defect was done, followed by plan of management.
Routine investigations were done pre operatively.
Surgical management of the defect was done. The above data was tabulated in accordance with parameters including age, sex, comorbidities, type of previous surgery, incision of previous surgery, post-operative complications of previous surgery, nutritional status, occupation, and personal habits such as smoking.

ANALYSIS

Statistical Analysis: -

The collected data was coded and put into a Microsoft Excel Worksheet. The statistical analysis was performed using the Statistical Package for Social Sciences (SPSS) version 21 for Windows. Data were expressed as mean values ± standard deviations (SD) for continuous variables. Frequency and proportions were reported for categorical variables. The p-value < 0.05 was considered statistically significant using unpaired 't' test and Chi-square test. All tests were two tailed and 95% confidence interval and an alpha level of 5% and a probability value of <0.050 was considered as statistically significant.

Section 1

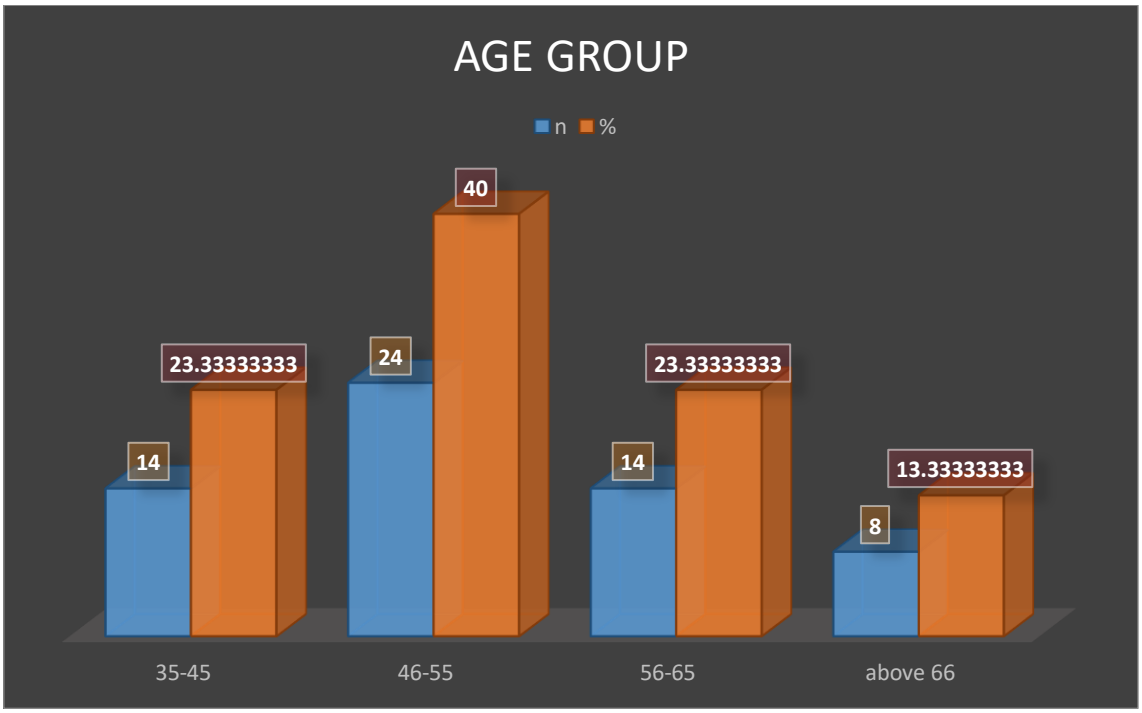
Description of Demographical variables

In terms of age, gender, occupation, hernia location, initial incision, swelling, previous surgery, obesity, comorbidities, smoking, mesh placement, operation type, types of surgery, obstruction, pre-operative pain, previous hernia surgery, post-operative complications, complications of previous surgery, defect size (cm)

Table: 1 Frequency and percentage distribution of patients according to age group

Age Group	n	%
35-45	14	23.33333
46-55	24	40
56-65	14	23.33333
above 66	8	13.33333

Table No: 1 Distribution of age group according to majority of the patients 24(40%) in age group of 46-55, 14(23.33%) patients are similarly, in age group of 35-45 years and 56-65 years and minority of the patients 8(13.33%) are age group of above 66 years.

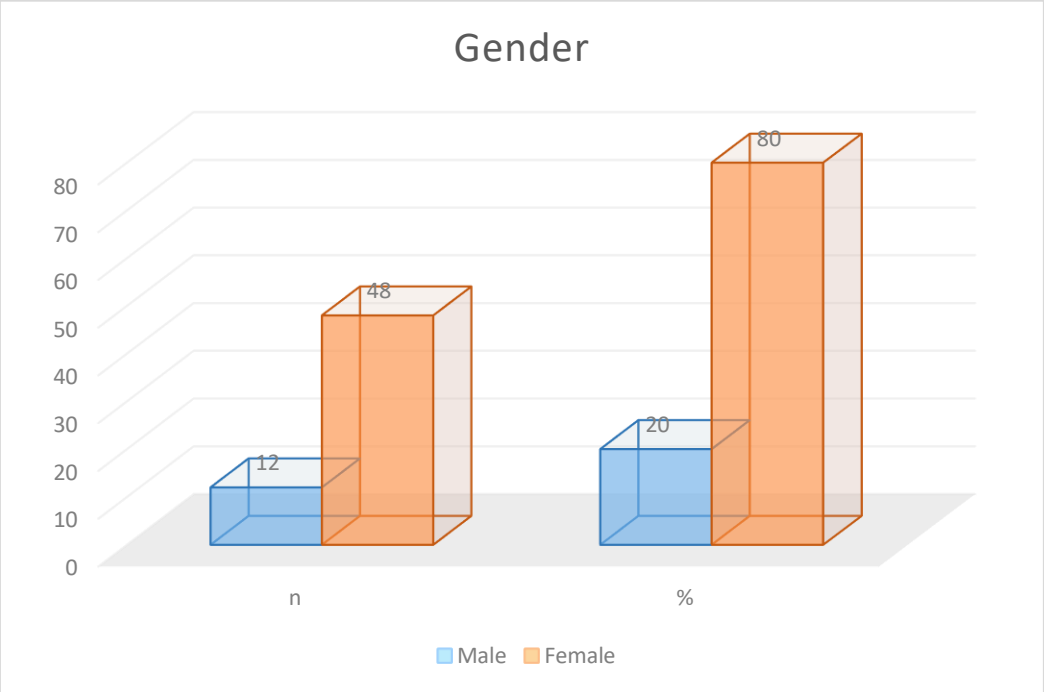


Graph:1 Frequency and percentage distribution of patients according to age group

Table: 2 Frequency and percentage distribution of patients according to Gender

Gender	n	%
Male	12	20
Female	48	80

Table no: 2 Distribution of the samples according to the gender shows that majority of the patients 48(80%) are female and minority of the patients 12(20%) are male.

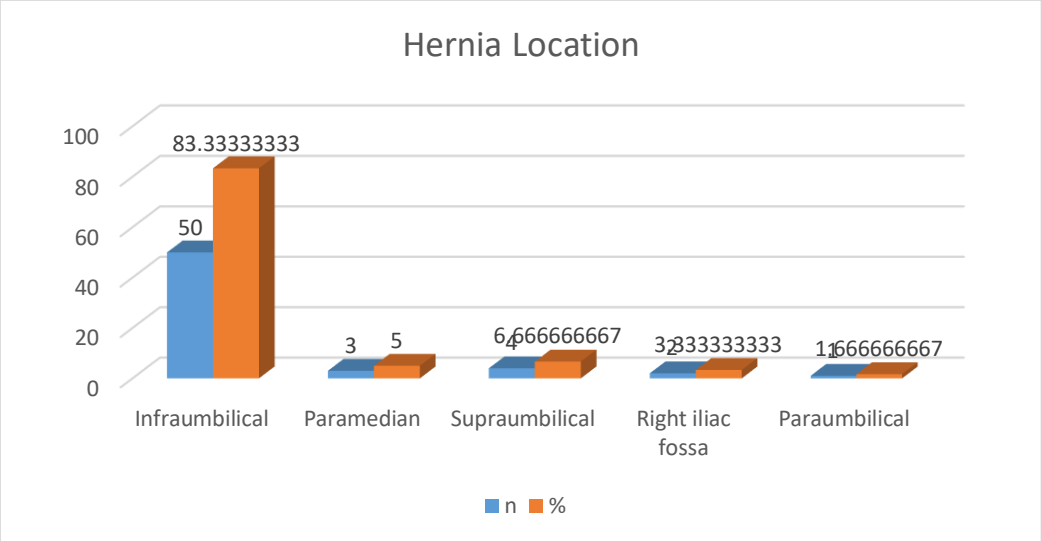


Graph:2 Frequency and percentage distribution of patients according to gender

Table: 3 Frequency and percentage distribution of patients according to hernia location

Hernia Location	n	%
Infraumbilical	50	83.33333
Paramedian	3	5
Supraumbilical	4	6.666667
Right iliac fossa	2	3.333333
Paraumbilical	1	1.666667

Table no: 3 Distribution of the samples according to the hernia location shows that majority of the patients 50 (83.33%) are infraumbilical, 4(6.67%) supraumbilical, 3(5%) paramedian, 2(3.33%) right iliac fossa and minority of the patients 1(1.67%) are paraumbilical.

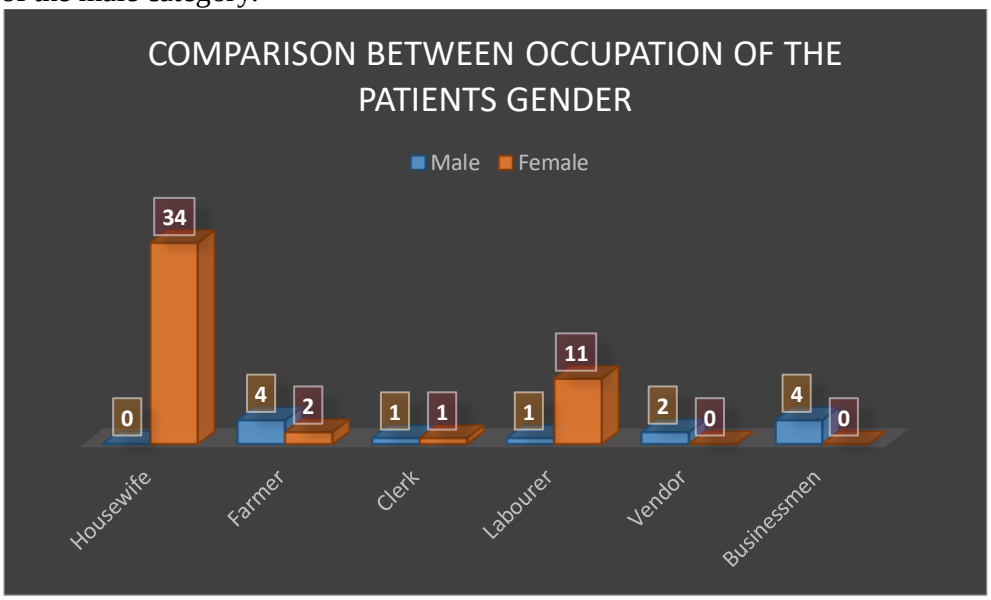


Graph: 3 Frequency and percentage distribution of patients according to hernia location

Table: 4 Frequency and percentage distribution of patients according to occupation

Occupation			**t value**	**p value**
	Male	**Female**		
Housewife	-	34(70.83%)	**42.81**	**<0.0001 (Significant)**
Farmer	4(33.33%)	2(4.167%)		
Clerk	1(8.33%)	1(2.083%)		
Labourer	1(8.33%)	11(22.9175)		
Vendor	2(16.67%)	0		
Businessmen	4(33.33%)	0		

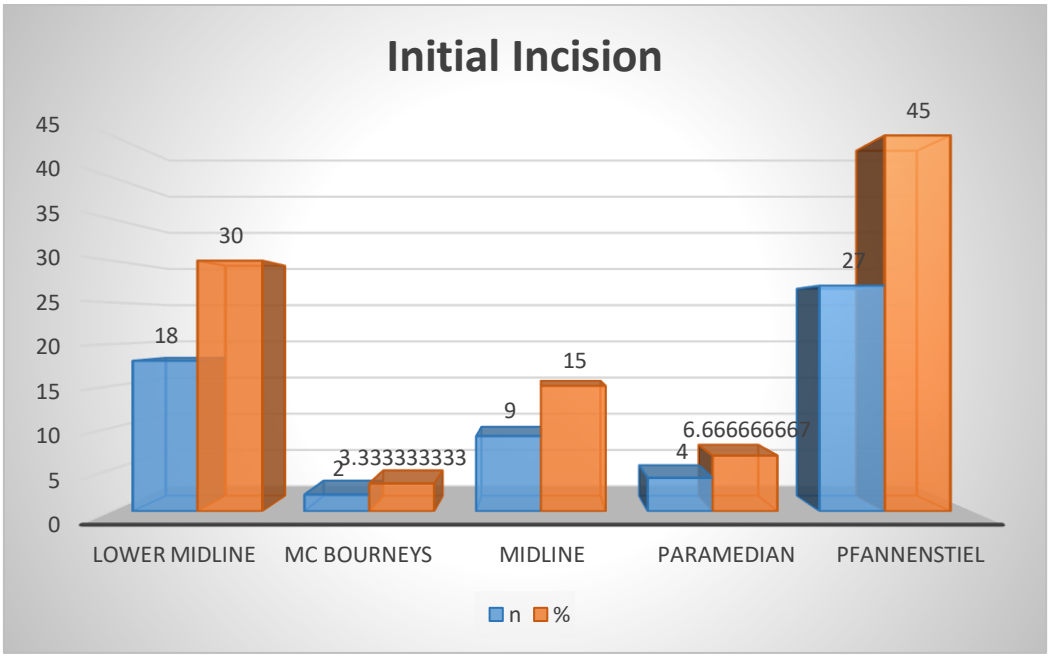
Table no: 4 Distribution of the samples according to the occupation comparison between male and female shows that majority of the patients 34 (70.83%) are housewife, 11(22.92%) are labourer of the gender category and 4(33.33%) are both farmer and businessmen, 2(16.67%) are vendor of the male category.



Graph: 4 Frequency and percentage distribution of patients according to occupationTable: 5 Frequency and percentage distribution of patients according to initial incision

Initial Incision	n	%
Lower midline	18	30
Mc Burney's	2	3.333333
Midline	9	15
Paramedian	4	6.666667
Pfannenstiel	27	45

Table no: 5 Distribution of the samples according to the initial incision shows that majority of the patients 27(45%) are Pfannenstiel, 18(30%) are lower midline, 9(15%) are midline, 4(6.67%) are paramedian and 2(3.33%) are Mc. Burney's.

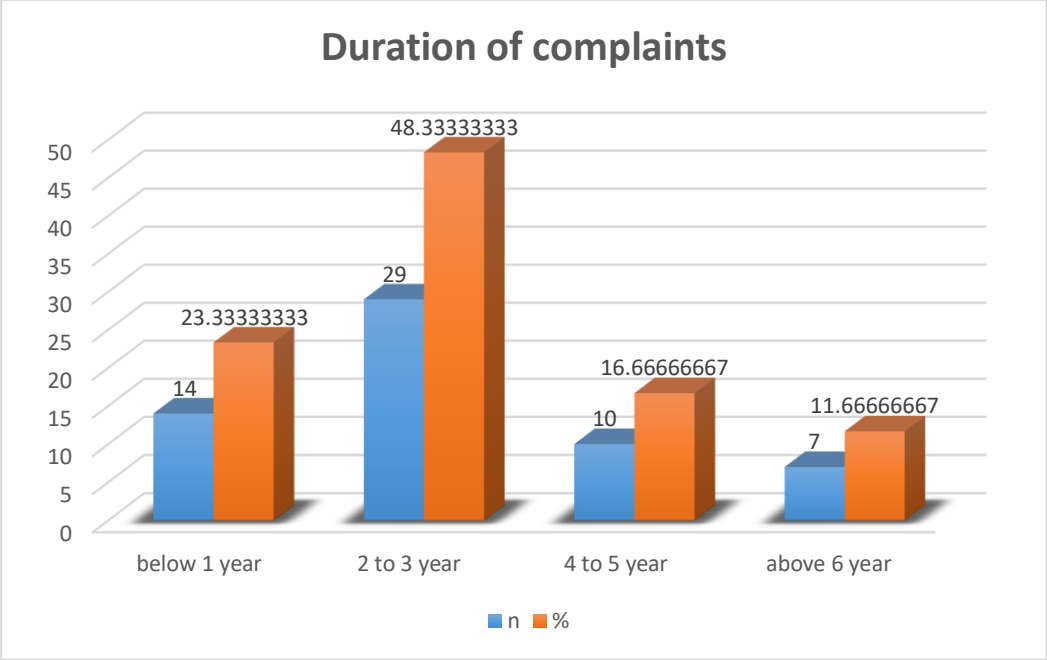


Graph: 5 Frequency and percentage distribution of patients according to initial hernia

Table: 6 Frequency and percentage distribution of according to patients' duration of complaints

Swelling since in year	n	%
below 1 year	14	23.33333
2 - 3 years	29	48.33333
4 - 5 years	10	16.66667
above 6 years	7	11.66667

Table no: 6 Distribution of the samples according to patients swelling since year shows that majority of the patients 29(48.33%) are 2-3 years, 14(23.33%) below 1 year,10(16.67%) are 4-5 years and minority of the patients 7(11.67%) are above 6 years.

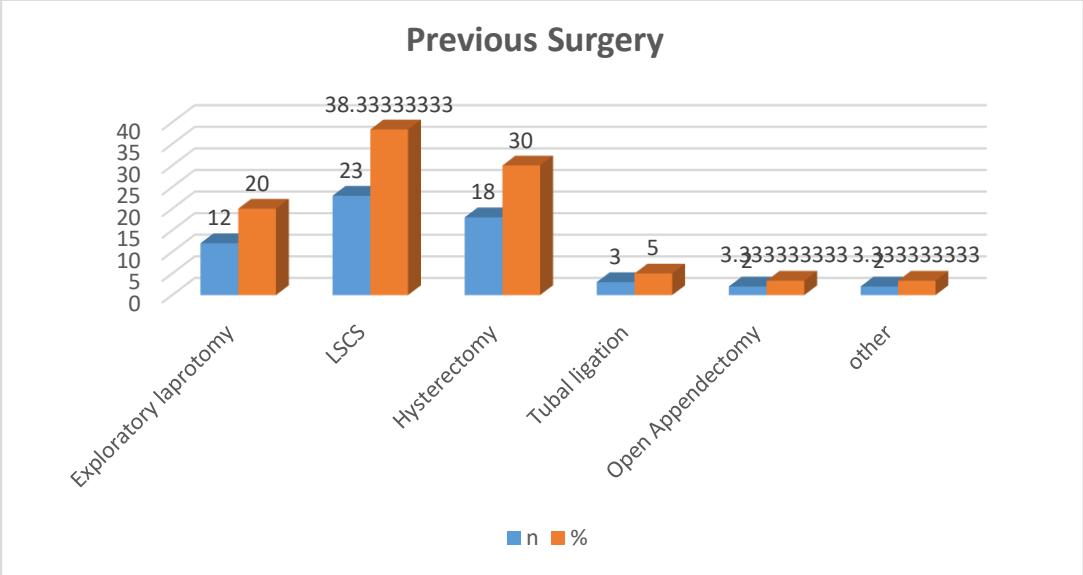


Graph: 6 Frequency and percentage distribution of according to duration of complaints in years

Table: 7 Frequency and percentage distribution according to patients' previous surgery

Previous surgery	n	%
Exploratory laparotomy	12	20
LSCS	23	38.33333
Hysterectomy	18	30
Tubal ligation	3	5
Open Appendectomy	2	3.333333
other	2	3.333333

Table no: 7 Distribution of the samples according to patients' previous surgery shows that majority of the patients 23(38.33%) are LSCS, 18(30%) are hysterectomy, 12(20%) are exploratory laparotomy, 3(5%) are tubal ligation and minority of the patients 2(3.33%) are open appendectomy and other previous surgery respectively.

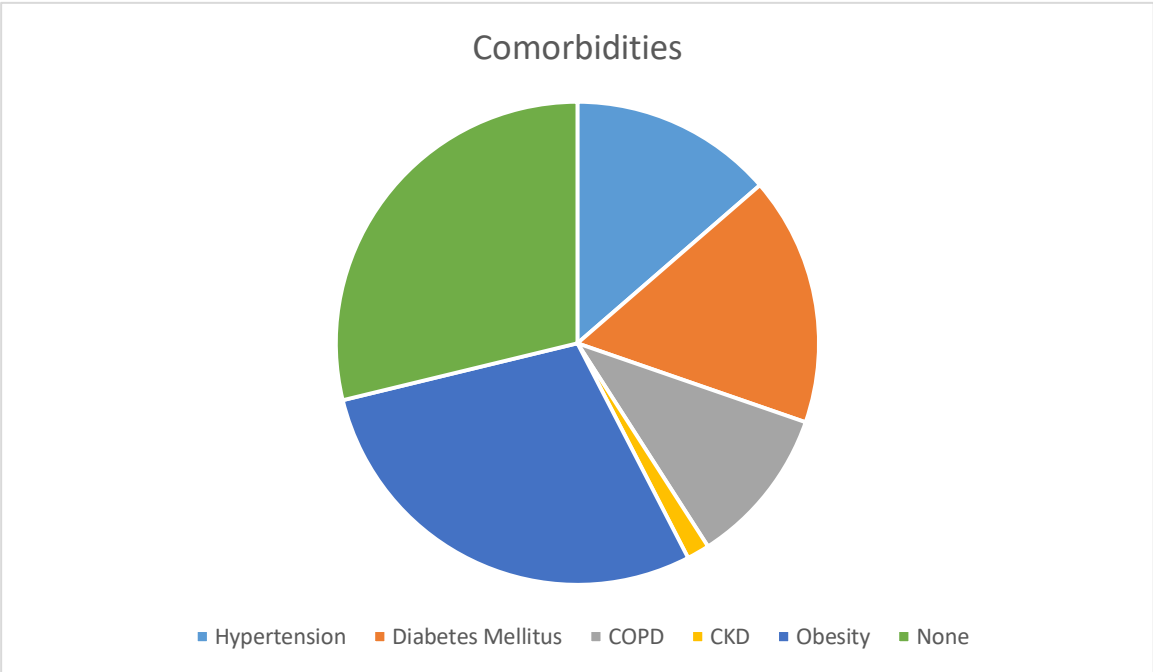


Graph: 7 Frequency and percentage distribution according to patients' previous surgery

Table: 9 Frequency and percentage distribution according to patients' comorbidities

Comorbidities	n
Hypertension	9
Diabetes Mellitus	11
COPD	7
CKD	1
Obesity	19
None	25

Table no: 9 Distribution of the samples according to patients' comorbidities

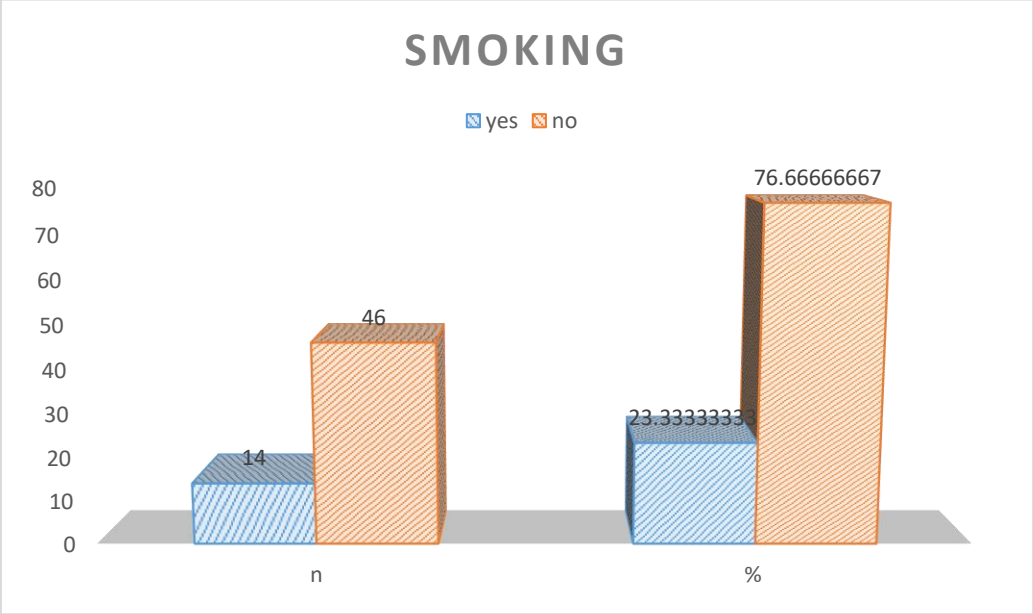


Graph: 9 Data according to patients' comorbidities

Table: 10 Frequency and percentage distribution according to patients' smoking

Smoking	N	%
Yes	14	23.33333
No	46	76.66667

Table no: 10 Distribution of the samples according to patients' tobacco intake shows that majority of the patients 46(76.67%) are no tobacco intake and minority of the patients 14(23.33%) are tobacco intake.



Graph: 10 Frequency and percentage distribution according to patients' tobacco intake

Table: 12 Frequency and percentage distribution according to Mesh Placement

Mesh placement	n	%
None	28	46.66667
Onlay	4	6.666667
Preperitoneal(Sublay)	28	46.66667

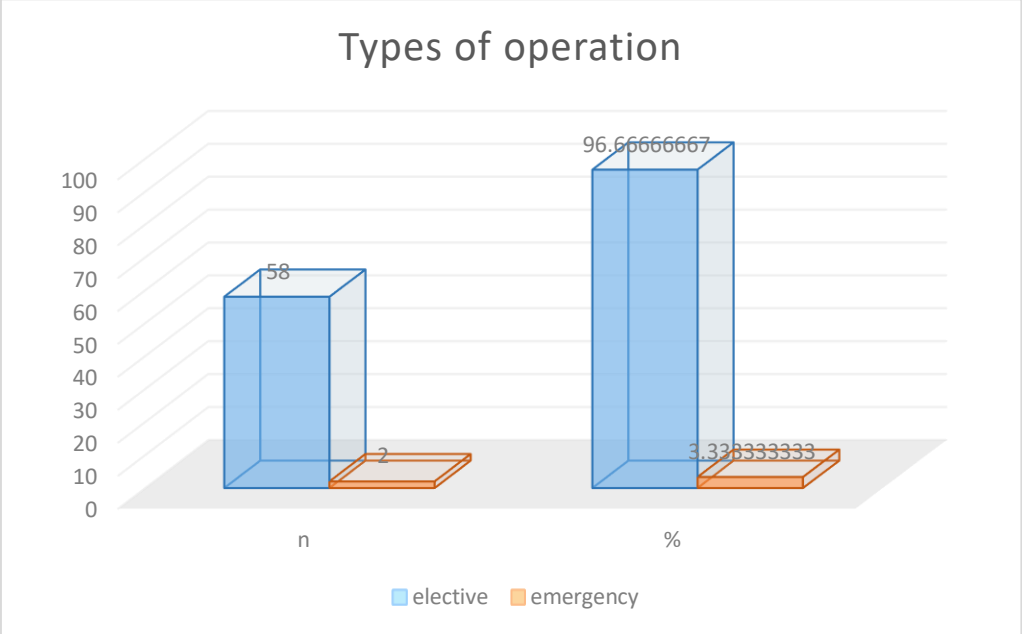
Table no: 12 Distribution of the samples according to patients' Mesh placement majority of the patients 28(46.67%) are no mesh placement and preperitoneal and minority of the patients 4(6.67%) are onlay.

Graph: 12 Frequency and percentage distribution according to Mesh Placement

Table: 13 Frequency and percentage distribution according to types of operation

Types of operation	N	%
elective	**58**	**96.66667**
emergency	**2**	**3.333333**

Table no: 13 Distribution of the samples according to patients' types of operation majority of the patients 58(96.67%) are elective operated and minority of the patients 2(3.33%) are emergency operated.

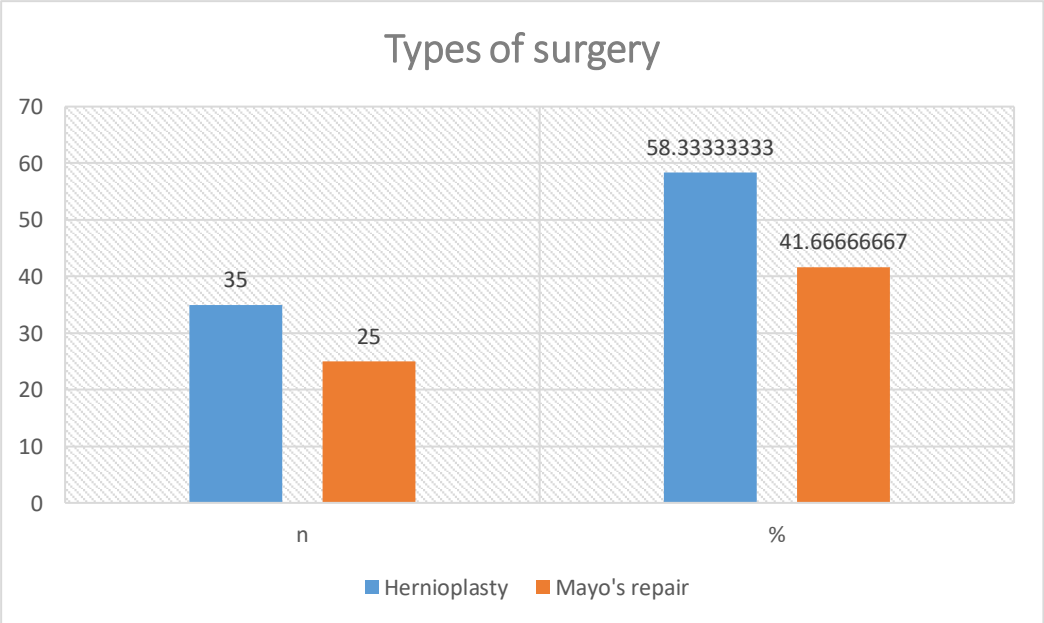


Graph: 13 Frequency and percentage distribution according to types of oper

Table: 14 Frequency and percentage distribution according to types of surgery

Types of surgery	N	%
Meshplasty	**35**	**58.33333**
Mayo's repair	**25**	**41.66667**

Table no: 14 Distribution of the samples according to patients' types of surgery majority of the patients 35(58.33%) are hernioplasty and minority of the patients 25(41.67%) are Mayo's repair.

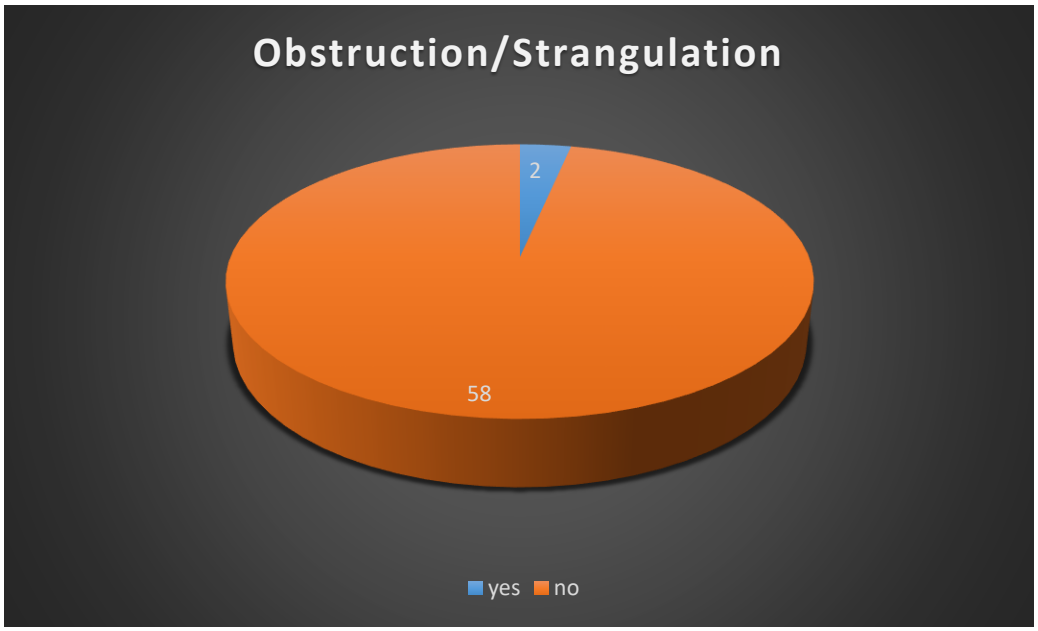


Graph: 14 Frequency and percentage distribution according to types of surgery

Table: 15 Frequency and percentage distribution according to patients Obstruction/Strangulation

Obstruction/Strangulation	n	%
yes	2	3.333333
no	58	96.66667

Table no: 15 Distribution of the samples according to patients' obstruction/strangulation shows that majority of the patients no obstruction in 58(96.67%) and minority of the patients 2(3.33%) obstruction/strangulation.



Graph: 15 Frequency and percentage distribution according to patients Obstruction/Strangulation

Table: 16 Frequency and percentage distribution according to patients' pre-operative pain

Pre-Operative Pain	N	%
Present	9	15
Absent	31	51.66667

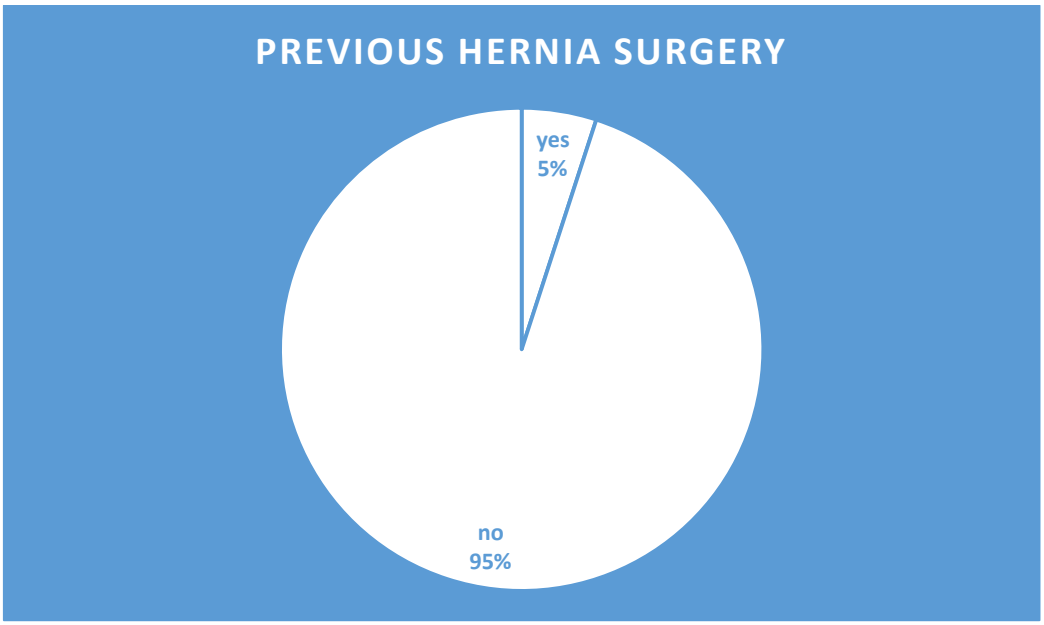
Table no: 16 Distribution of the samples according to patients' pre-operative pain shows that majority of the patients no pre-operative pain in 31(51.67%) and minority of the patients 9(15%) are in pre-operative pain.

Graph: 16 Frequency and percentage distribution according to patients' pre-operative pain

Table: 17 Frequency and percentage distribution according to patients' previous hernia surgery

Previous hernia surgery	n	%
Yes	3	5
No	57	95

Table no: 17 Distribution of the samples according to patients' previous hernia surgery shows that majority of the patients no previous hernia surgery in 57(95%) and minority of the patients only 3(5%) are in previous hernia surgery.

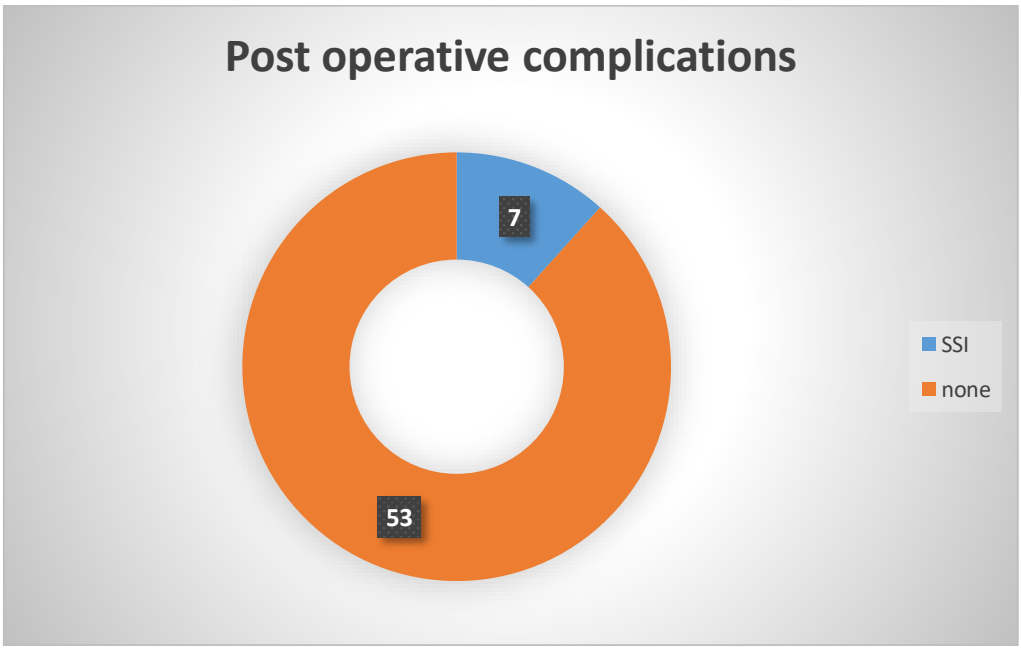


Graph: 17 Frequency and percentage distribution according to patients' previous hernia surgery

Table: 18 Frequency and percentage distribution according to patients' post operative complication

post operative complication	n	%
SSI	**7**	**11.66667**
None	**53**	**88.33333**

Table no: 18 Distribution of the samples according to patients' post operative complications shows that majority of the patients no post operative complications in 53(88.33%) and minority of the patients SSI 7(11.67%) are in SSI.



Graph: 18 Frequency and percentage distribution according to patients' post operative complication

Table: 19 Frequency and percentage distribution according to patients' complications of previous surgery

Complications of previous surgery	n
Emergency surgery	12
None	40
Burst Abdomen	1
SSI	12

Table no: 19 Distribution of the samples according to patients' complications of previous surgery

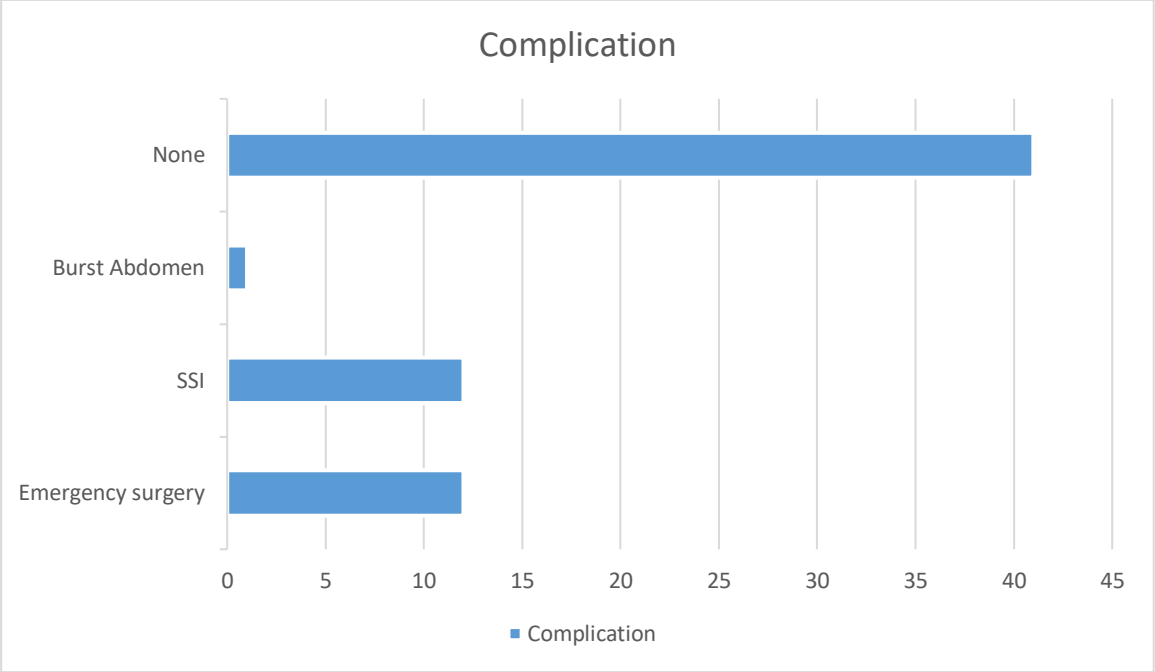
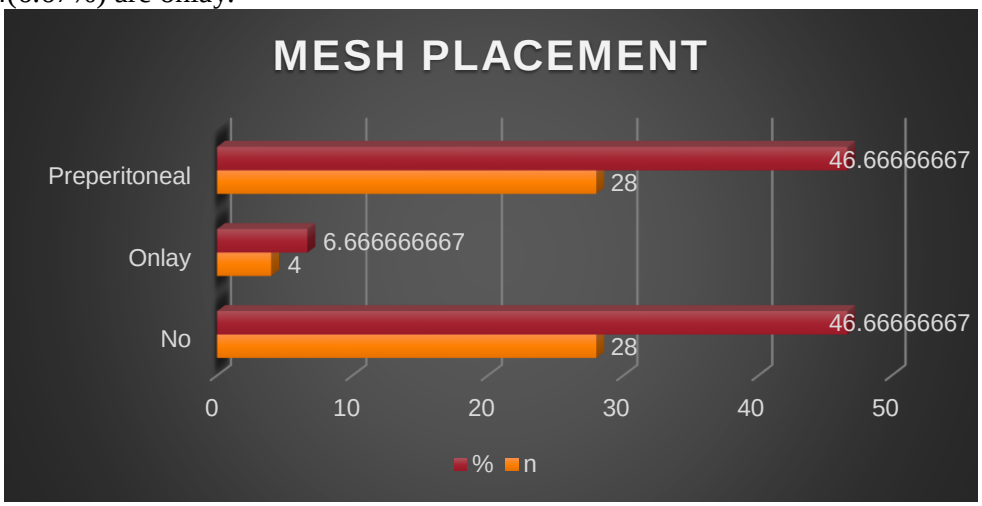


Table: 19 Frequency and percentage distribution according to patients' complications of previous surgery

Table: 21 Frequency and percentage distribution according to patients' mesh placement

Mesh placement	**n**	**%**
No	28	46.66667
Onlay	4	6.666667
Preperitoneal	28	46.66667

Table no: 21 Distribution of the samples according to patients' mesh placement shows that majority of the patients 28(46.67%) are no mesh placement and preperitoneal and minority of the patients 4(6.67%) are onlay.



Graph: 21 Frequency and percentage distribution according to patients' mesh placement

DISCUSSION

60 cases of incisional hernia admitted in KIMSDU and Medical College Hospital and Research Centre, Karad presented in this dissertation. Incisional hernia is second most common hernia operated after inguinal hernias at our institution.

The mean age patients with incisional hernia in this study has been 54.75 years. Ellis, Gajraj and George in their study reported a mean age of 49.4 years[4]. The youngest patient in our study was 35 years and the oldest was above 66 years.

The sex incidence of incisional hernia among the 60 cases studied is 1:4 (M: F) approximately showing a female preponderance. This is because of laxity of abdominal muscles due to multiple pregnancies. Other factors include low serum haemoglobin, albumin and early initiation of work after surgery. Ellis, Gajraj and George reported an incidence of 64.6% female population in their study of 383 patients[4]. Parekh et al have reported ratios of 1:4[5].

The patients had complaints of abdominal swelling with or without pain. 9 patients (15%) presented with pain along with swelling. 2 (3.33%) patients presented with strangulation as complication. In our study 83.33% of the incisional hernia occurred in infraumbilical region. Parekh et al. reported it to be around 68%[5].

Kunche and Kumar in their study noted incidence of 70% of total incisional hernias due to a previous gynaecological procedure[6]. Our study reports incidence of 75% of all previous surgeries.

In our study 12(20%) patients had history of SSI post operatively after previous surgery. The other risk factors observed were obesity (31.67%), Diabetes Mellitus (18.33%), Hypertension (15%), and COPD (10%). This is comparable with that of Bose et al studies in which obesity (33/110-30%), COPD (23/110 – 20.90%). 3 patients (5%) had undergone surgery for recurrent hernia. our study which can be compared with Kockerling series (1.6-32%)[7]. Another finding that may be related to preponderance of incisional hernia is that the previous surgery was undertaken as an emergency in 12(20%) patients.

The choice of surgical technique was dependent on surgeon preference. Generally, defects less than 3*3cm in size were closed with anatomical repair while anything larger was repaired with polypropylene mesh placement. The placement of mesh was again according to surgeon's preference with preperitoneal sublay mesh placement preferred. 28(46.66%) patients were repaired with anatomical repair while rest with mesh placement. Among them 4(6.66%) were repaired with onlay mesh placement while rest 28(46.6%) were repaired with Preperitoneal sublay placement.All patients had a vaccum drain kept over the mesh/repair site for 3-5 days The only post-operative complication was surgical site infection in 7 (11.67%) patients and 4 of them were diabetic.

Midline incision and Pfannenstiel were the most common previous incision with 27 patients(45%) each. Hendrix et al corroborate this showing almost equal incidence in both incisions citing wound infection was more important cause of wound dehiscence[8].

In our study we had no recurrences, however the follow-up period was limited due constraints of academic duration of the M.S. course. Usher reported zero percent recurrence in 48 patients who were treated by polypropylene mesh repair[9]. Jacobus W.A et al. reported a 10-year cumulative rate of recurrence of 63% in anatomical repair and 32% in mesh repair[10]. The recurrence rate thus varies in different studies but all studies favour mesh repair to decrease the recurrence rate.

With prosthetic mesh, defects of any size can be repaired without tension. The polypropylene mesh, by inducing inflammatory response sets up scaffolding that in turn induces the synthesis of collagen. Thus, the superiority of mesh repair over suture repair can be accounted for.

SUMMARY

In the present study titled "**STUDY OF CLINICAL FEATURES AND MANAGEMENT OF INCISIONAL HERNIAS**". We have to study the clinical features and surgical management of incisional hernia.

A total of 60 patients of surgical procedures under general Surgery. Incisional hernia was the 2nd most common hernia at KIMSDU, KARAD.

- It was more common in females than in males with a ratio of approximately 4:1.
- Incidence of incisional hernia was highest in the age group ranging from 46-55 years.
- All patients presented with swelling (100%) and only few had pain.(15%).
- Incisional hernia was more common in patients with previous history of gynaecological operations (75%).
- The incisional hernia was more common in the infraumbilical region (83.33%).
- Majority of the patients 35(58.33%) underwent Hernioplasty surgery.
- The major risk factors were obesity and COPD.
- In majority of patients 58(96.67%) underwent elective surgery.
- The only postoperative complication was SSI(7 patients).
- There was no recurrence in our study though the period of follow- up was not adequate to make correct assessment of recurrence.
- There was no mortality related to surgery.
- 12(20%) patients had previous surgical complication of SSI while 12(20%) underwent emergency surgery previously.

CONCLUSION

- Incisional hernia is more common in females. Incisional hernias occur more often in females as they are more likely to undergo lower abdominal surgeries.
- In our study most of the incisional hernia occurred in infraumbilical incisions. This may be because of higher infraumbilical hydrostatic pressure in erect position (20cm of water erect vs 8cm of water supine) and absence of posterior rectus sheath below arcuate line.
- In patients with comorbidities such as obesity, diabetes mellitus, COPD; lifestyle modification (obesity, smoking) can help prevent occurrence of hernia. It is also common in patients with surgical site infection during previous surgery or those who underwent emergency surgery.

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