

# An observational Study on Post Operative Complications in Multi Speciality Hospital

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## ABSTRACT

**Background:** Many people have complications postoperatively, some may be transient other may be serious, but all complications are important and need to be managed. The post operative complications are influenced by the type of surgery performed, the past medical history, preexisting comorbidities, social and habitual history, pre operative care. Anesthesia may cause some complications post operatively and related to the type of anesthesia, amount of anesthesia, condition of the patient. Anesthesia management may exert a numerous long-term effect in post operative outcome.

**Methods:** An observational study on post operative complications in 210 patients, who underwent surgeries on five surgical departments in a multispecialty hospital, Guntur. The observational study was conducted on Ortho surgery, general surgery, neuro surgery, uro surgery and E.N.T, to study the incidence of post operative complications related to their age, gender, social history, their comorbidities and correlation of post operative complications with the type of anesthesia and type of surgery. Data were analyzed by using GraphPad prism 9.3.1 (471). P value <0.005 was considered as statistically significant.

**Results:** The incidence of post operative complications are higher proportion in patients who underwent orthopedic surgery was 34.92%, followed by general surgery 26.98%, neuro surgery 17.46%, E.N.T 11.11%, uro surgery 6.35% and mortality 3.18%.

**Keywords:** Surgery, Postoperative Complications, Anaesthesia complications, clavien-Dindo classification.

## INTRODUCTION:

Surgery is a medical invasive technique with the fundamental postulate of physical involvement and to treat pathological symptoms such as a disease or injury to an organ or an organ system or on tissues for therapeutic or diagnostic reasons [1].

## TYPES OF OPERATIVE PROCEDURES

### 1. Based on Timing

- A. **Elective surgery:** These types of procedures are performed on non-life-threatening conditions on request of patient.
- B. **Semi Elective Surgery:** These types of surgeries are performed to prevent permanent disability or death.
- C. **Emergency Surgery:** These types of surgeries are performed with no delay in time to prevent death or any other serious complications.

### 2. Based on Purpose

- A. **Exploratory surgery:** These are performed to make certain about particular diagnosis.

**B. Cosmetic Surgery:** These are performed to reconstruct the physical appearance of normal structure.

### 3. Based on type of Procedure

**A. Amputation:** This is removal of a body part usually a digit or a limb

- It is further classified into Resection, Excision, Extirpation.

**B. Replantation:** These are performed to reattach an injured body part.

**C. Reconstructive surgery:** These are performed to reconstruct the damaged or injured body part

**D. Transplant surgery:** These are performed to replace a damaged body part or an organ of patient with a healthy organ from a donor.

### 4. Based on body part

- These are performed on a particular organ system or structure Ex- Cardiac surgery.

**5. Based on Degree of Invasiveness of surgical Procedures**

- A. **Minimally Invasive surgery:** These are performed by insertion of instruments within a body through a smaller incision. As like in laparoscopic surgery.
- B. **Pen Surgical procedure:** These requires a larger incision to perform a surgical procedure as like in laparotomy.

C. **Robotic Surgery:** These are performed by using surgical robots under the monitoring of surgeons.

**6. Based on Equipment's used:**

- A. **Laser Surgery:** These are performed by laser for cutting tissues or body parts instead of other surgical instruments like scalpel.
- B. **Micro Surgery:** These are performed by using microscope to identify the miniature structure.

**POST OPERATIVE COMPLICATIONS**

An Undeliberate event or events which may show up later to the surgery or a surgical procedure. They increase the severity of the condition and also increase the length of hospital stay. In some instances, they may lead to death. The occurrence of post operative complications can be influenced by patient's past comorbidities, type of surgery, peri operative management. Based on time post operative complications are divided into early, intermediate, late .

Based on therapy used to minimize a specific complication, the clavien-Dindo classified complications into 5 grades including subclasses.

**Table 1: Representing clavien-Dindo classification**

Grades	Definition
<b>Grade I</b>	Any Deflection from the general postoperative period without requirement of any therapy or surgical, radiological and endoscopic intervention. Antipyretics, analgesics, diuretics, electrolytes, antiemetics, physiotherapy are the acceptable treatment regimens.
<b>Grade II</b>	Pharmacological management with medications other than grade I. TPN (Total Parenteral Nutrition), blood transfusion is included.
<b>Grade III</b>	Surgical, radiological, endoscopic interventions are included.
<b>III a</b>	Interventions not included under general anaesthesia.
<b>III b</b>	All interventions under general anaesthesia.
<b>Grade IV</b>	All life-threatening complications, which requires ICU management.
<b>IV a</b>	Any single organ dysfunction.
<b>IV b</b>	Multiple organ dysfunction.
<b>Grade V</b>	Death

**ANAESTHESIA:**

Anaesthesia is a state of controlled loss of sensation. which can be achieved by the use of certain drugs (anesthetics) to prevent pain during invasive medical procedures or surgeries.

Types of anaesthesia includes

- A. General Anaesthesia.
- B. Local Anaesthesia.
- C. Regional Anaesthesia.

**POST OPERATIVE ANAESTHESIA COMPLICATIONS:**

Some patients experience some of the complications after surgery related to the anaesthesia which are used during the surgical procedures. These complications are differentiated into types, based on the anaesthesia used.

**Table 2: Representing complications of various anaesthesia's.**

General Anaesthesia	Local Anaesthesia	Regional Anaesthesia
<ul style="list-style-type: none"> <li>o Pain.</li> <li>o Nausea &amp; vomiting, can extent to 30% [12].</li> <li>o Sore throat &amp; laryngeal damage.</li> <li>o Anaphylaxis to anesthetics agents approximately 1 in 3000 [13].</li> <li>o Cardiovascular</li> </ul>	<ul style="list-style-type: none"> <li>o Pain.</li> <li>o Bleeding &amp; Hematoma formation.</li> <li>o Direct nerve injury.</li> <li>o Infection.</li> <li>o Ischemic necrosis.</li> </ul>	<ul style="list-style-type: none"> <li>o Spinal infection.</li> <li>o Aseptic meningitis.</li> <li>o Hematoma of spinal cord.</li> <li>o Anaphylaxis.</li> <li>o Urinary retention.</li> <li>o Anesthetic intoxication.</li> </ul>

<ul style="list-style-type: none"> <li>○ collapse.</li> <li>○ Respiratory Depression.</li> <li>○ Aspiration Pneumonia</li> <li>○ Hypothermia.</li> <li>○ Backache.</li> <li>○ Headache.</li> <li>○ Brain damage due to Hypoxia.</li> <li>○ Nerve injury.</li> <li>○ Pneumothorax.</li> <li>○ Death.</li> </ul>		
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## MATERIALS & METHODS

### Study Population:

It is an observational study on Post operative complications of patients, admitted in hospital for surgical intervention. The data and consent of the patients to use in publication were collected in TULASI MULTISPECIALITY HOSPITAL, Gunturuvarithota, Kothapeta, Guntur, Andhra Pradesh. The total calculated study sample population were 210(n=210) using single population proportion formula.

### Selection and Description of Patients

The entire study was retrieved from clinical data base of Tulasi multispecialty hospital, for a time period of 6 months from 1 September 2021 to 28 February 2022. The Patients of above 1 year (approximately 1-90 years of age) were included in this study. Patients from Orthopedic, General surgery, Neuro surgery, Uro surgery, E. N. T were incorporated in the study. The total number of patients who underwent surgeries were recorded and tabulated. The entire data was distributed

with respective to their age and gender separately and detail history on smoking and alcohol intake, comorbidities like diabetes, hypertension, thyroid, coronary artery disease, asthma were recorded. Also, their surgical procedure performed according to their departments, comorbidities of the patient, post operative complications, types of number of complications were represented separately in tabulated format. Pregnant and lactating women, COVID 19 patients are excluded from the study. A clinical examination and other biochemical investigations which are required for the surgical profile and other investigations for the final diagnosis were done.

### Statistical data analysis

Data were analyzed by using GraphPad prism 9.3.1 (471). Simple statistical analysis was conducted. Characteristics of patients were presented with certain statistics such as frequency and percentage. P value <0.005 was considered as statistically significant.

## RESULTS & DISCUSSION

**Table 3: Representing total no of subjects.**

Total No. of Males	Total percentage of Males(%)	Total No. of Females	Total percentage of Female (%)
134	63.80	76	36.20

In this study total number of subjects included were 210. Out of 210 the male subjects were 134 (63.80%) and female subjects were 76 (36.20%) and the results were discussed by Irfan Parvez Qureshi et al.,(2018) in which total subjects were 100 and male subjects were 80 (80%) and female subjects were 20 (20%)<sup>[15]</sup>. The incidence of post operative complications was more in patients operated with general anaesthesia (48.38% and

12.9% respectively). The morbidity and mortality in patients who are operated under spinal anaesthesia was lower than general anaesthesia, but morbidity was higher in patients who are operated under epidural anaesthesia, but mortality was lower than epidural. The statistical analysis of total no. of subjects (males & females) was found to be non-significant (P = 0.1716) by one sample t test (two tailed).

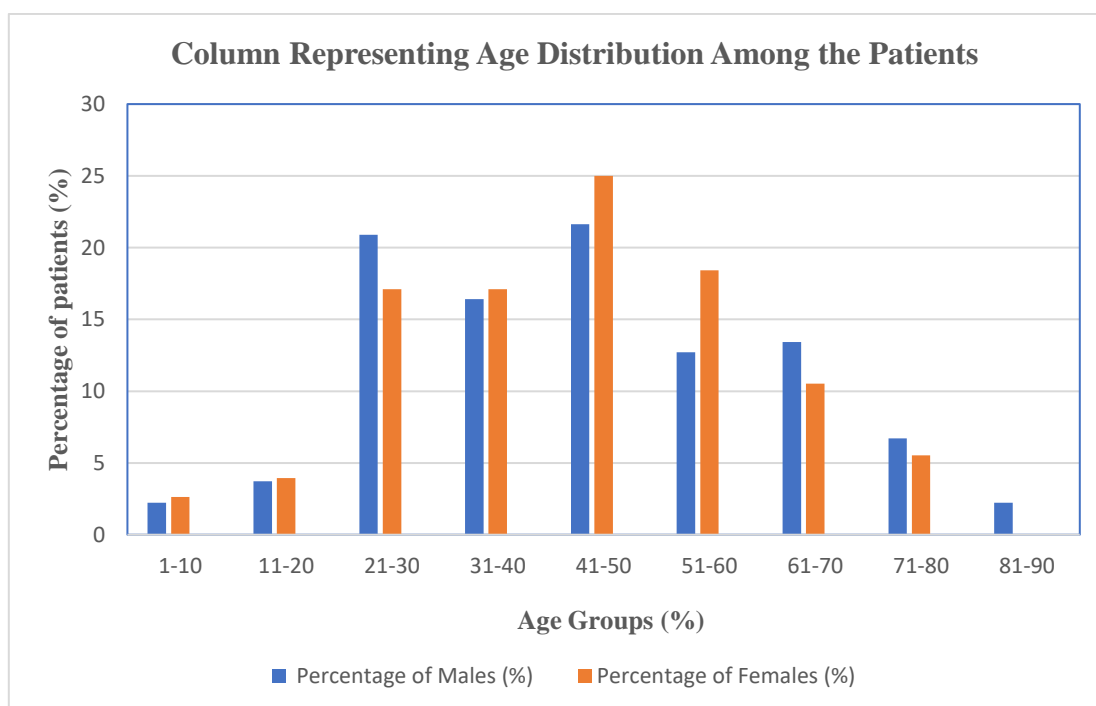
Descriptive analysis of age among Male & Female Patients

**Table 4: Representing Age distribution among males & females.**

Age Distribution (Years)	Males (n=134)	Females (n=76)	Total	Percentage of Male (%)	Percentage of Female (%)
1-10	3	2	5	2.23	2.63
11-20	5	3	8	3.73	3.94
21-30	28	13	41	20.90	17.11
31-40	22	13	35	16.41	17.11
41-50	29	19	50	21.64	25
51-60	17	14	31	12.70	18.42
61-70	18	8	26	13.43	10.52
71-80	9	4	13	6.71	5.52
80-90	3	0	3	2.23	0
<b>Total</b>	<b>134</b>	<b>76</b>	<b>210</b>	<b>100</b>	<b>100</b>

Table 4 represents the data about age distribution among males and female’s patients. In this study, the age group between 41-50 years were found to be significantly in higher proportion with male subjects 29 (21.64%) and female subjects 19 (25%). The lowest proportion is between 80-90 years with males 3 (2.23%) and female subjects were 0 (0%). Apart from that proportion of 11-20 years with males 5 (3.73%) and female 3 (3.94%), proportion of age group 21-30 years with males 28 (20.90%) and females 13 (17.11%), proportion of age group 31-40 years with males 22 (16.41%) and females 13 (17.11%), proportion of age group 51-60 years with males 17 (12.70%) and females 14

(18.42%), proportion of age group 61-70 years with males 18 (13.43%) and females 8 (10.52%), proportion of age group 71-80 with males were 9 (6.71%) and females 4 (5.52%). The results were discussed by BadhaasaaBayissa et al.,(2021) in which total subjects were 352, among these subjects the highest proportion is between 15-24 years with total subjects of 80 (23.6%) and lowest proportion of subjects is between more than 55 years of age with subjects 44 (12.5%)<sup>[16]</sup>. The data was depicted in figure 1 as column. The analysis of age groups among males P = 0.009 and females P = 0.016 was found to be significant by using t test (two tailed).



**Fig.1: Representing Age Distribution Among post operative Patients.**

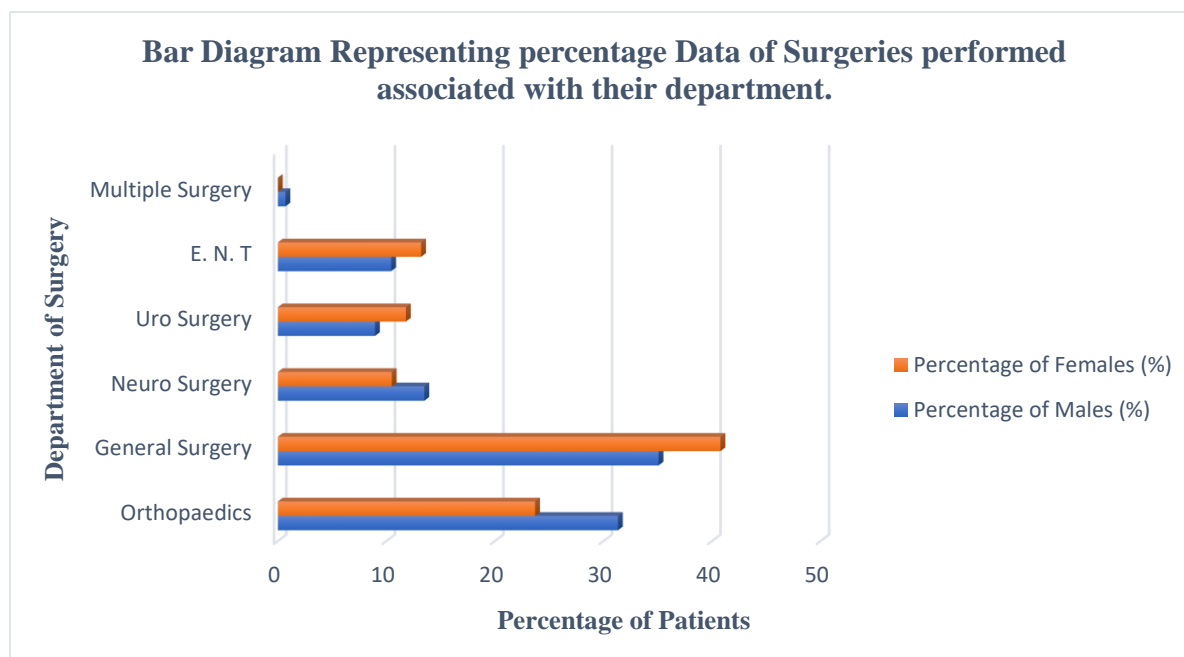
Descriptive analysis of Data of surgeries performed according to their departments

**Table 5: Representing data of surgical patients associated with their departments.**

Department of surgery	Male (n=134)	Percentage of Male (%)	Females (n=76)	Percentage of Female (%)
Orthopaedics	42	31.34	18	23.70
General Surgery	47	35.07	31	40.78
Neuro surgery	18	13.50	8	10.50
Uro Surgery	12	8.95	9	11.80
E.N.T	14	10.44	10	13.20
Multiple surgery	1	0.70	0	0
<b>Total</b>	<b>134</b>	<b>100</b>	<b>76</b>	<b>100</b>

Table 5 represents data of surgeries performed according to their departments. In this study, subjects were under five surgical departments of orthopaedics, general surgery, neuro surgery, uro surgery, E. N. T. The highest proportion of subjects belongs to the department general surgery with male subjects were 47 (35.07%) and female subjects were 31 (40.78%). The lowest proportion of subjects belongs to the department of uro surgery with male subjects were 12 (8.95%) and female subjects were 9 (11.80%). Apart from that the remaining departments include orthopaedics with male subjects of 42 (31.34%) and female subjects were 18 (23.70%),

department of neuro surgery with male subjects include 18 (35.07%) and female subjects were 8 (10.50%), department of E. N. T with male subjects were 14 (10.44%) and female subjects were 10 (13.20%), multiple surgery include a male subject (0.70%) who underwent orthopaedic surgery and neuro surgery. The results of this study were not related to any previous study. The data was depicted in figure 2 as Bar diagram. The analysis of data of surgeries performed based on their departments was found to be significant of Males ( $P = 0.03$ ) and females ( $P = 0.03$ ) by using t test (two tailed).



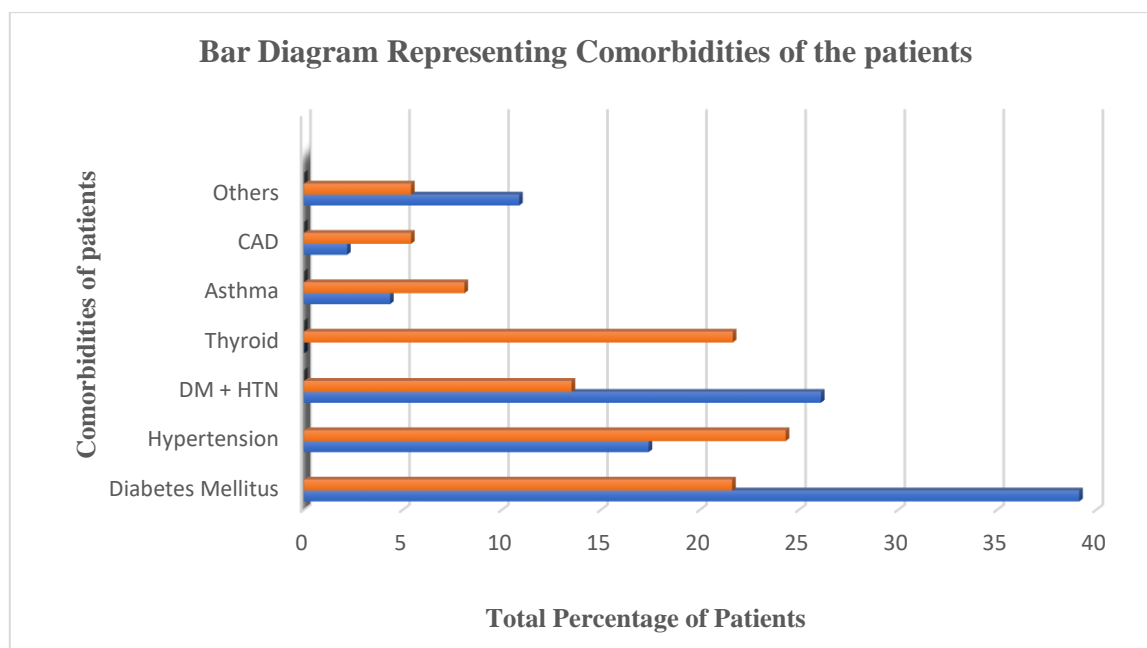
**Fig.2: Bar diagram representing percentage data of surgeries performed associated with their departments**

**Table 6: Representing data based on their comorbidities of the patient.**

Past Medical History	Males	Females	Total	Percentage of Male (%)	Percentage of Female (%)
Diabetes mellitus	18	8	26	39.13	21.62
Hypertension	8	9	17	17.40	24.32
D.M + HTN	12	5	17	26.10	13.51
Thyroid	0	8	8	0	21.65
Asthma	2	3	5	4.34	8.10
CAD	1	2	3	2.17	5.40
Others	5	2	7	10.86	5.40
<b>Total</b>	<b>46</b>	<b>37</b>	<b>83</b>	<b>100</b>	<b>100</b>

Table 6 represents the data based on the comorbidities of the patients. In this study out of 210 subjects, the data was analysed based on their comorbidities of the patients. The total subjects having comorbidities were 83 (100%), in which the highest proportion of subjects belongs to DM with total subjects of 26, in which male subjects were 18 (39.13%) and female subjects were 8 (21.62%). The lowest proportion of subjects belongs to CAD with total subjects of 3, in which Male subjects were 1 (2.17%) and female subjects were 2 (5.40%). Apart from that the proportion of HTN subjects 17 in which males were 8 (17.40%) and females were 9 (24.32%). The proportion of DM + HTN were 17, in which males were 12 (26.10%) and females 5 (13.51%). The proportion of thyroid 8, in which males were 0 and females were 8 (21.65%). The proportion of asthma 5, in which males were 2 (2.17%) and

females were 3 (8.10%). The proportion of other comorbidities 7, in which males were 5 (10.86%) and females 2 (5.40%). Other comorbidities were gastritis 1 male (2.173%), obesity 1 male (2.173%), CVA 1 male (2.173%), TB 1 male (2.173%), UTI 1 female (2.70%), obesity 1 female (2.70%). Results were discussed by Badhaasaa Bayissa et al., (2021) in this study they denoted overall comorbidities as a single value without gender distribution. The proportion of subjects having comorbidities were 337 (95.8%) and the proportion of subject's absence of comorbidities were 15 (4.2)<sup>[16]</sup>. The data was depicted in figure 3 as Bar diagram. The analysis of comorbidities of the patients was found to be males non-significant (P = 0.668) and females significant (P = 0.0045) by using t test (two tailed).



**Fig.3: Bar diagram representing comorbidities of the patient.**

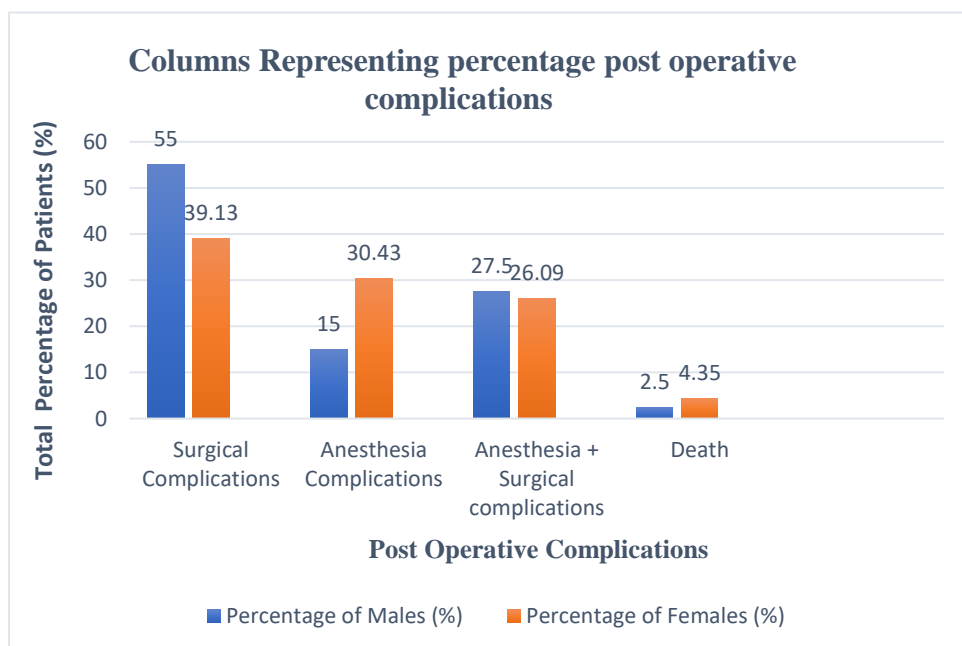
Descriptive analysis of Data based on their Postoperative complications

**Table 7: Representing data based on post operative complications.**

Post Operative complications	Males (n=40)	Females (n=23)	Total	Percentage of Male (%)	Percentage of Female (%)
Surgical Complications	22	9	31	55	39.13
Anaesthesia complications	6	7	13	15	30.43
Surgical + Anaesthesia complications	11	6	17	27.5	26.09
Death	1	1	2	2.5	4.35
Total	40	23	63	100	100

Table 7 represents the data based on their post operative complications. In this study, the data was analysed based on their post operative complications. The total proportion of surgical complications 31 subjects in which males were 22 (55%) and females were 9 (39.13%). Anaesthesia complications 13 subjects in which males were 6 (15%) and females were 7 (30.43%). Surgical + Anaesthesia complications 17 subjects in which males were 11 (27.5%) and females were 6 (26.09%). Mortality (death) were 2 subjects in which male 1 (2.5%) and female 1 (2.5%). In our study surgical complications, total 31 in which 10 (8 males, 2 females) belongs to department of orthopaedics, general surgery total 13 (7 males, 5 females), neurosurgery total 6 (6 males, 0 females), urosurgery includes 0 and department of E.N.T includes total 3 (1 male, 2 females).

Anaesthesia complications total 11 subjects, in which department of orthopaedics 4 (2 males, 2 females), general surgery 2 (1 male, 1 female), neurosurgery 2 (1 male, 1 female), uro surgery 1 (0 male, 1 female), E.N.T 1 (0 male, 1 female). Surgical + anaesthesia complications 17 subjects, in which department of orthopaedics 8 (5 males, 3 females), general surgery 3 (1 male, 2 females), neuro surgery 1 (1 male, 0 female), uro surgery 2 (1 male, 1 female), E.N.T includes 2 (2 males, 0 females). The results of this study were not related to any previous study The data was depicted in **figure 4** as column. The analysis of post operative complications of subjects was found to be males non-significant (P = 0.1123) and females significant (P = 0.0431) by using t test (two tailed).



**Fig.4: Column Representing post operative complications**

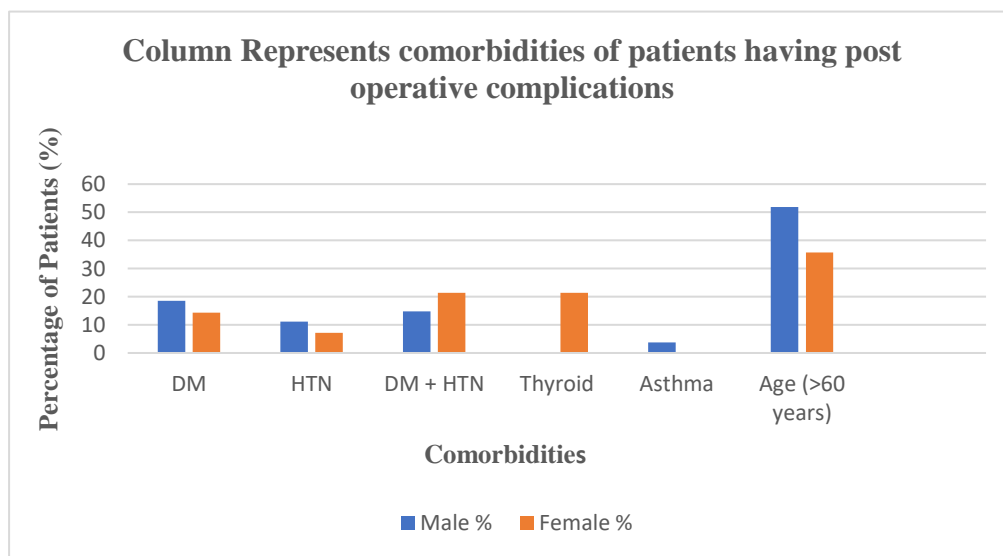
Descriptive analysis of data based on comorbidities of patients having post operative complications

**Table 8: Representing comorbidities of patients having post operative complications.**

Comorbidities	Males (n=27)	Females (n=14)	Total (n=41)	Male %	Female %
DM	5	2	7	18.52	14.29
HTN	3	1	4	11.11	7.14
DM + HTN	4	3	7	14.81	21.43
Thyroid	0	3	3	0	21.43
Asthma	1	0	1	3.70	0
Age (>60yrs)	14	5	19	51.86	35.71
Total	27	14	41	100	100

Table 8 represents the data based on comorbidities of patients having post operative complications. In this study, the overall proportion of subjects having comorbidities were 41. The highest proportion of subjects belongs to age > 60, in which males were 14 (51.86%) and females were 5 (35.71%). The lowest proportion is asthma, male 1 (3.70%) and females were 0. Apart from that the proportion of subjects belongs to DM were 7, in which males were 5 (18.52%) and females were 2 (14.29%). Subjects belongs to HTN were 4, in which males were 3 (11.11%) and

females were 1 (7.14%). Subjects belongs to DM + HTN were 7, in which males were 4 (14.81%) and females were 3 (21.43%). Subjects belongs to thyroid were 3, in which males were 0 and females were 3 (21.43%). The results of this study werenot related to any previous study. The data was depicted below in figure 5 as column. The analysis of comorbidities of patients having post operative complications was found to be males non-significant (P = 0.0791) and females significant (P = 0.0224) by using t test (two tailed).



**Fig.5: Representing comorbidities of patients having post operative complications.**

Descriptive analysis of data based on social history of patients having post operative complication

**Table 9: Representing comorbidities of patients having post operative complications.**

Social History	No of Male Patients (n=21)	Percentage of Male patients (%)
Tobacco Smoking	4	19.04
Alcohol	6	28.57
Smoking + Alcohol	10	47.62
Tobacco Chewable	1	4.77
Total	21	100



Table 9 represents the data based on social history of male subjects having post operative complications. In this study, the subjects represent the total males having post operative complications were 40. In this the data of social history related to their habits like smoking, alcohol consumption, smoking + alcohol consumption, tobacco chewable were recorded. The highest proportion of subjects belongs to the category of smocking + alcohol were 10 (47.62%) subjects. The lowest proportion of

subjects belongs to the category of tobacco chewable were 1 (4.77%) subject. Apart from that the subjects with individual tobacco smoking were 4 (19.04%) and individual alcohol consumption were 6 (28.57%). This study is not related to any previous study. The data was depicted in figure 6 as clustered column. The analysis of social history of male subjects having post operative complications was found to be non-significant (P = 0.0689) by using t test (two tailed).

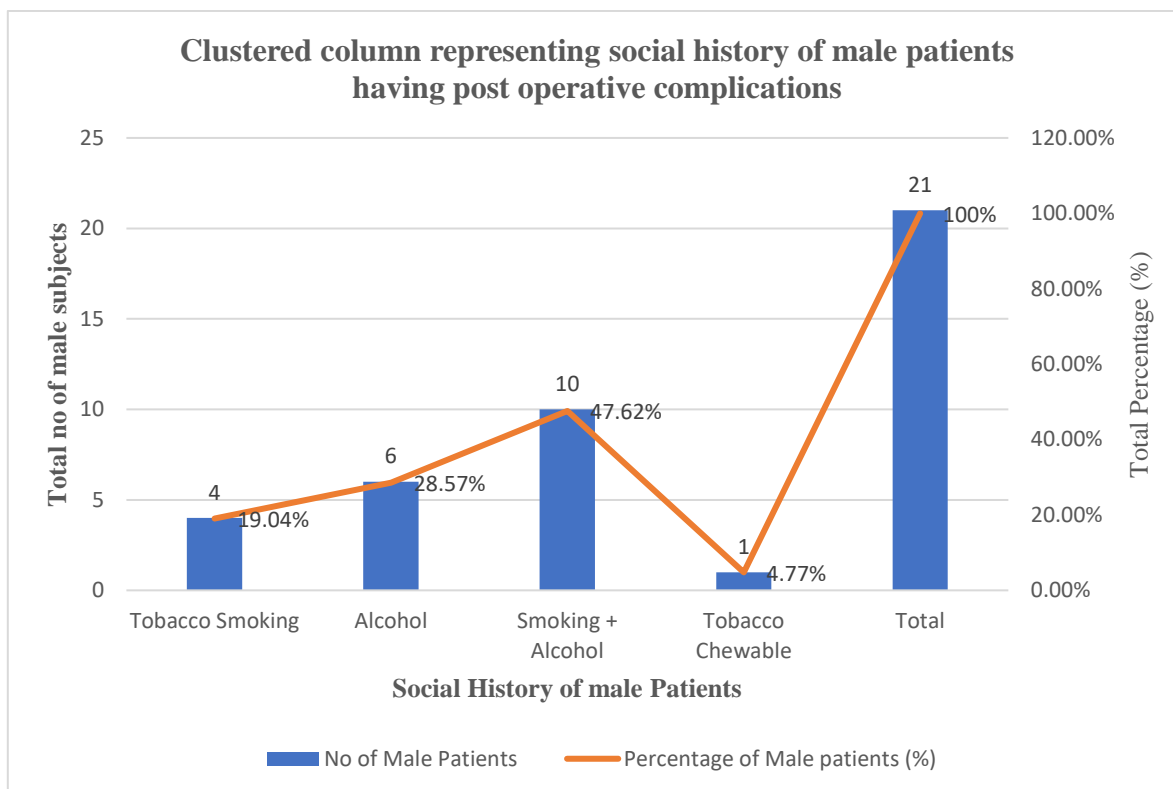


Fig.6: Clustered column representing social history of male patients having post operative complications.

#### Descriptive analysis of types of anaesthesia used during surgical procedure

Table 10: Representing data of types of anaesthesia used during surgical procedure.

Types of Anaesthesia	Total no of surgeries (n=210)	Percentage of total surgeries (%)
General anaesthesia	117	55.71
Spinal anaesthesia	44	20.96
Local anaesthesia	33	15.71
General + spinal anaesthesia	16	7.62
Total	210	100

Table 10 represents the data based on types of anaesthesia used during surgical procedure. In this study, the data was analysed based on types of anaesthesia used during surgical procedure. The highest proportion of anaesthesia used is

general anaesthesia with subjects of 117 (55.71%) and lowest proportion of anaesthesia used is general + local anaesthesia with subjects of 16 (7.62%). Apart from that the proportion of spinal anaesthesia were 44 (20.96%) subjects and Local anaesthesia with 33 (15.71%) subjects. The

results were discussed by Qureshi IP et al.,(2018) in which post-operative complications was more in patients operated with general anaesthesia 48.38% and mortality 12.9% the morbidity and mortality in patient who were operated under spinal anaesthesia was lower than general anaesthesia, but morbidity was higher in patients

who were operated under epidural anaesthesia, but mortality was lower than epidural [15]. The data was depicted in figure 7 as pie diagram. The analysis of types of anaesthesia used during surgical procedure was found to be non-significant (P = 0.0995) by using t test (two tailed).

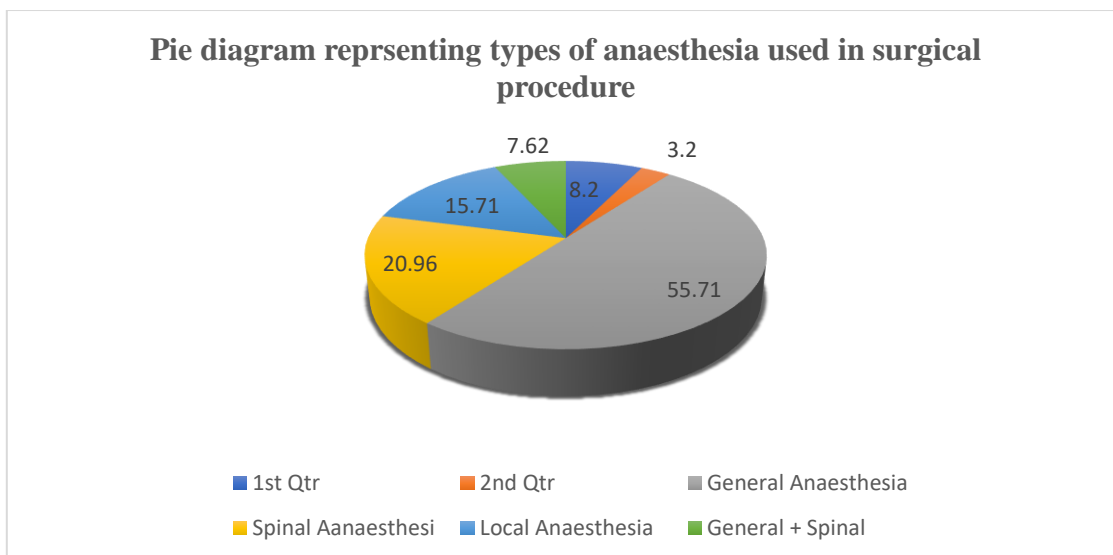


Fig.7: Representing types of anaesthesia used in surgical procedure.

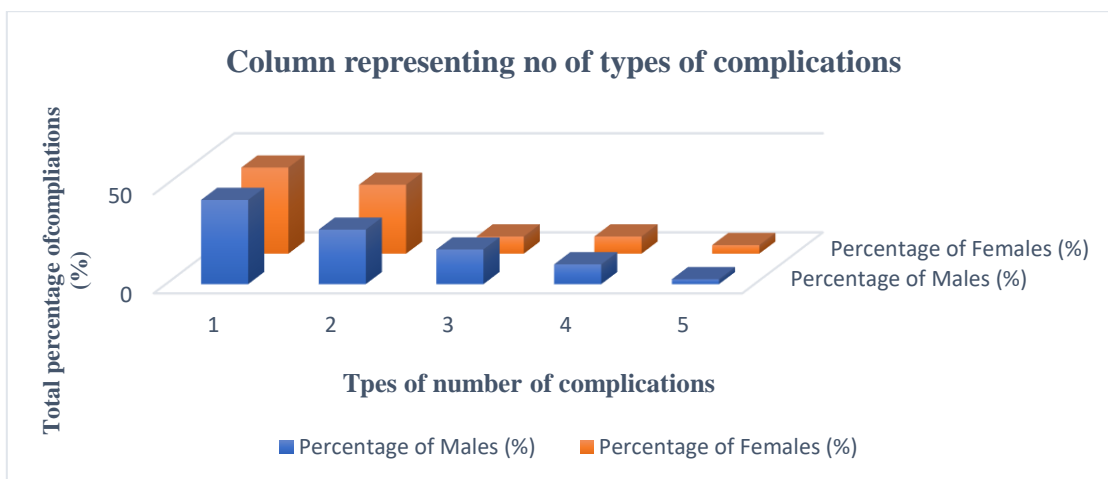
Descriptive analysis of data based on the no of complications

Table 11: Representing no of types of complications.

No of Complications	Males (n=40)	Females (n=23)	Total	Percentage of Males (%)	Percentage of Females (%)
One complication	17	10	27	42.5	43.47
Two complications	11	8	19	27.5	34.79
Three complications	7	2	9	17.5	8.70
More than three complications	4	2	6	10	8.70
Mortality	1	1	2	2.5	4.34
Total	40	23	63	100	100

Table 11 represents the data based on number of complications postoperatively. In this study, the data was analysed and represented based on number of complications postoperatively. The highest proportion of subjects belongs to one complication with males were 17 (42.5%) and females were 10 (43.47%). The lowest proportion of subjects belongs to mortality with males were 1 (2.5%) and females were 1 (4.34%). Apart from mortality the lowest proportion belongs to more than three complications with males were 4 (10%) and females were 2 (8.70%). The results were

discussed by Qureshi IP et al.,most of the people 52.5% developed single complication and 2 or more complications were seen in a smaller number of patients. This also shows that there was high mortality in patients who have more than one complication than in patients with single complication [15]. The data was depicted below in figure 8 as column. The analysis of no. of types of complications was found to be males significant (P = 0.0457) and females non-significant (P = 0.0661) by using t test (two tailed).



**Fig.8: Representing types of no of complications.**

**ABBREVIATIONS**

Initialism

**Table 12: Representing Abbreviations.**

TPN	Total Parenteral Nutrition
ICU	Intensive Care Unit
ENT	Ear Nose Throat
DM	Diabetes Mellitus
HTN	Hypertension
CAD	Coronary Artery Disease

**CONCLUSION**

Generally, Complications may occur after any surgical procedure. These complications cause suffering and mortality and duration of hospital stay and increase in hospital cost of treatment. Many complications may be prevented pre operatively by thorough evaluation and best surgical techniques and proper follow up care. Patient must be informed of complete possible risks, clear advice on what complications is expected post operatively, early detection and reporting of adverse events to start management related to the particular complication. In this study of 210 subjects, the early post operative complications occur in significant number in major surgeries, the maximum proportion wheresingle complications include post procedural pain (post operative pain) of total 44.48% subjects, followed by delirium 22.22%, sore throat and post operative nausea and vomiting 7.40%, aspiration pneumonitis and cough with scanty expectorant and back ache and vertebrobasilar atherosclerosis and constipation all together 3.70%. Apart from single complications multiple complications are also included in this study. Apart from different comorbidities more subjects with post operative complications include age >60 with male subjects 51.86% and female subjects 35.71%. Apart from different social history of

malessubjectsmajor proportion of subjects include were smoking and alcohol with 47.62%.The statistical analysis of age group among total subjects, types of departments of surgery performed was found to be significant.Statistical analysis of comorbidities of patients, post operative complications, comorbidities of patients having post operative complications, social history, anaesthesia used in surgical procedure, no. of types of complications was found to be non-significant.The some of the statistical analysis was found to be non-significant because, the sample size (n) is low for the significant statistical analysis.From this study we concluded that irrespective of department of surgery included the major proportion of complications are recorded in elder aged (>60Yrs) subjects and subjects with social history of combined smoking and alcohol were subjected with post operative complications. Complications must be detectable and preventive actions must be taken in early post operative period. Early detection and proper intervention are the best way to manage post operative complications.

**ETHICAL COMMITTEE APPROVAL**

The study protocol was submitted for Ethical committee approval.ethical committee accepted protocol with protocol identifying number NIPS/PROTOCOL/0002/2021.

#### FUNDING

No funding is provided.

#### CONFLICT OF INTEREST

No conflict of interest declared.

#### INFORMED CONSENT

Free consent was provided to patients. Free consent was obtained from patients.

#### AUTHORSHIP CONTRIBUTIONS

Dr. Y. Rakesh Kiran <sup>1</sup>, G. Y. Srawan Kumar <sup>2</sup>, B. Prasanna Kumar <sup>3</sup>, D. Lakshman Chaturvedhi <sup>4</sup>, Dr. D. R. Brahma Reddy <sup>5</sup>

1- Hospital guide and chief Orth surgeon. Provided all facilities in hospital regarding the study. Clarified doubts regarding the study.

2- Institutional guide. Under his guidance study was carried out.

3&4- students who carried out the study.

5- Head of the institution.

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