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# A Study on Clinical Assessment and Management of Hernia Patients in A Tertiary Care Hospital

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## ABSTRACT

A hernia is an out pouching of the parietal peritoneum through a preformed or secondarily established hiatus. If the hernia extends beyond the abdominal cavity and is thus visible on the surface of the body, it is defined as an external hernia. Incisional hernias arise through a defect in the musculofascial layers of the abdominal wall in the region of a post-operative scar. Thus they may appear anywhere in the abdominal surface. The prospective observational study was carried out for a period of 6 months. The study was conducted in General medicine department in a tertiary care hospital. A written and informed consent was obtained from the recruited patients. A Total of 75 patients were enrolled in the study. The present study aimed to assess the risk factors for Hernia, clinical profile and its management in a tertiary care hospital. Site of hernia includes Upper abdomen Site of hernia patients were more 23(30.66%). Hernia complication patients were more 53 (70.66%) as compared to without complication patients. Duration of Hernia diagnosis includes 1-6 days Duration of Hernia diagnosis patients were more 36(48%) as compared to other Duration of Hernia patients. Surgical treatment patients were more 55 (73.33%) as compared to conservative treatment patients were 20 (26.33%). The burden of inguinal hernia among the young and middle-aged patients in our practice is huge, with many patients having a family history of the disease and evidence of complications at presentation. Incisional hernia is one of the most prevalent complications of abdominal surgery and frequently causes morbidity which raises healthcare costs.

**Keywords:** Hernia, abdominal cavity, post-operative scar, abdominal surface, abdominal surgery, healthcare costs.

## ARTICLE INFO

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## 1. Introduction

A hernia is an outpouching of the parietal peritoneum through a preformed or secondarily established hiatus. If the hernia extends beyond the abdominal cavity and is thus visible on the surface of the body, it is defined as an external hernia. If the outpouching is limited to peritoneal pockets, it is known as an internal hernia. An intermediate position is taken by the interparietal hernias of the

abdominal wall. Hernias may include intra- and retroperitoneal organs, either permanently or intermittently. Depending on the size of the outpouching, we speak of complete (total) or incomplete (partial) hernias. Based on their formation, we distinguish between congenital (e.g., umbilical hernias and indirect inguinal hernias, if the

processusvaginalis is open) and acquired hernias (e.g., direct, femoral, and incisional hernias).

### History

The first description of an inguinal hernia appears in the Ebers papyrus (1555 B.C.). Hippocrates (460–375 B.C.) mentions hernias of the pubic and umbilical regions. The first anatomical studies of the inguinal region date back to Galen (131–210 A.D.).

Disregarding the historical precursors of inguinal hernia management by barbers, rupture cutters, and bathing masters, the real history of inguinal hernia surgery begins at the end of the nineteenth century. The first attempts to reduce the hernial orifice were made by Marcy (1871), Steele (1874), and Czerny (1887). It was Bassini in 1890 who introduced and established tactical surgical principles with excellent results by repairing the posterior wall of the inguinal canal and reducing of the internal inguinal ring. It was only in the middle of the twentieth century that Bassini's concept was improved by Shouldice (1945) and McVay and Anson (1942), showing the importance of the fascia transversalis. The use of fascia grafts to close large hernial orifices and recurrent hernias dates back to Halsted (1903), Kirschner (1908), Rehn (1914), and Koontz (1926). The use of alloplastic material was introduced by Stock (1954) and Usher (1962). Preperitoneal mesh-implantation was first described by Rives (1965) for unilateral hernias and by Stoppa (1968) for bilateral inguinal hernias. In 1970, it was Lichtenstein who advocated and used mesh to bolster the repair of both direct and recurrent hernias<sup>1-11</sup>.

The first laparoscopic hernia repair was performed by Ger (1982), by simply closing the peritoneal opening with staples without dissection, ligation, or reduction of the sac. In 1989, it was Bogojavalensky to revived this procedure by introducing the mesh-plug technique. The first series of laparoscopic herniorrhaphies were published by Schultz in 1990. Since that time, three laparoscopic procedures have been established: intra-abdominal onlay mesh- (IPOM, Fitzgibbons and Toy 1990), the transabdominal preperitoneal mesh- (TAPP, Arregui 1991), and total extraperitoneal mesh- (TEP, Dulucq 1991) implants.

### Pathogenesis

The pathogenesis of hernias is multifactorial. Congenital hernias are preformed hernial openings caused by incomplete closure of the abdominal wall (e.g., persistent processusvaginalis), while, in acquired hernias, the cause is increasing dehiscence of fascial structure with accompanying loss of abdominal wall strength. The develop typically in locations where larger blood vessels or the spermatic cord lie, or where previous incisions were made. Different etiological factors, such as increased intra-abdominal pressure (in pregnancy, intra-abdominal tumors, chronic obstructive lung disease, ascites, chronic intestinal obstruction, and adiposity), or pathological changes in connective tissue of the abdominal wall, are blamed, without conclusive significance. New material for understanding the pathogenetics has been provided by recent studies on collagen metabolism disorder, in which an increase of collagen III was proven in patients with hernia.

### Epidemiology

The incidence of inguinal hernia in the population varies between 2% and 4%, increasing with age up to 20%. In 95% of cases, hernias are external, and in 5% they are internal. Of all hernias, 75% are inguinal (two thirds indirect and one third direct); 10% are incisional, and 5–7% are umbilical, femoral, or in other, rare locations. Whereas about 80–90% of inguinal hernias occur in males, 75% of all femoral hernias are found in females. With over 750,000 inguinal hernia operations per year in the USA, inguinal hernia repair is the most common operation for general surgeons.

### Diagnosis

History, local examination with inspection and palpation of the hernial opening, auscultation, and diaphanoscopy are employed for hernia diagnosis. In case of uncertain clinical findings, sonography is the best means for confirming the hernial opening and content. Radiographic diagnosis of hernias is rarely required. The imaging techniques that can be used are plain abdominal film, upper gastrointestinal series and/or contrast enema, intravenous pyelography and cystography, herniography, and CT-scan or MRI. Differential diagnosis include: lymphadenitis, lipoma, varicose nodules of the saphenous vein, hydrocele, tumors, abscesses, cysts, endometriosis, and inguinal testis.

### Classification

Until now, a general classification system that includes all kinds of hernias is not available. For inguinal hernias, several classifications take into consideration hernia-size and/or anatomical position.

### Symptoms and Complications

To what extent a hernia represents a disease entity rarely depends on the fact of the hernia itself, but rather on the fate of hernial contents. Giant hernias may cause significant bodily discomfort by weight alone; Hernias may cause complaints from restriction of physical activity develop surface ulceration, or be displeasing on aesthetic and cosmetic grounds alone. But changes in the contents lead more commonly to the hernia's becoming a true disease entity. These include nutritional (perfusion) problems of the mesentery, bowel, and omentum or/and interference in propulsion and incarceration of intestinal contents (partial or complete intestinal obstruction)<sup>29-35</sup>.

### Surgical Procedures

Since the first Bassini procedure at the end of the last century, many different operative techniques have been introduced, most recently laparoscopic procedures. At present, two different major principles of repair are established: mesh-free hernia repair and tension-free hernia repair with mesh. These can be performed using an open approach or laparoscopically with an anterior or posterior approach<sup>12-16</sup>.

Today, there is a great variety of surgical procedures available for the repair of inguinal hernia. Each procedure has its own advantages and complications. As an open anterior procedure, the Shouldice repair with local anesthesia is the standard mesh-free procedure for uncomplicated primary, unilateral hernias. In centers specializing in hernioplasty, the incidence of recurrence in a

follow-up over 10 years could be reduced to 2%, although the overall recurrence rate remains at approximately 10–15% in general hospitals.

The development of different laparoscopic techniques (TAPP/IPOM, and TEP) adds another new field of hernia repair. Although limited by small study size with short follow-up periods, the preliminary results published are quite promising, with an incidence of recurrence between 0,1–3,6%. Variations in the laparoscopic approach to the preperitoneal space and differences in dissection and fixation techniques reflect that the procedure is still evolving, and there is still no consensus on the best laparoscopic herniorrhaphy. Besides the routine use of general anesthesia and procedure-related increased costs, the cumulating long-term mesh complications as shrinkage, erosion of neighboring structures such as blood vessels, spermatic cord, or bladder, adhesion- and fistula-formation, and a possible reduction of the abdominal wall mobility, make final evaluation of these surgical procedures impossible for the time being.

### Prevention

Whether and how hernias can be prevented depends on the type of hernia. To prevent incisional hernias, it's a good idea to avoid strain due to things like carrying heavy objects following surgery at first. If the risk of recurrence is very high, a synthetic mesh can be used as a preventive measure. Losing weight can lower the risk of incisional and umbilical hernias ("after surgery" and "belly button" hernias). But weight loss won't lower the risk of inguinal (groin) hernias. It's not clear whether carrying heavy objects makes inguinal hernias more likely.

Stopping smoking can help surgical wounds heal better, which probably lowers the risk of incisional hernias. It is also important to make sure that medical conditions like diabetes and anemia are treated properly because they can affect how well wounds heal too.

### Treatment

Surgery is the only treatment option for hernias. It involves pushing the hernia sac back into the abdomen or removing it, and closing the gap in the abdominal wall with stitches. A fine synthetic mesh is usually placed on the affected area too, to strengthen the abdominal wall and prevent the hernia from coming back. In open surgery, the operation is carried out through a larger cut where the hernia is. In minimally invasive surgery (also called laparoscopic or keyhole surgery), several smaller cuts are made. The abdomen or abdominal wall are operated on by inserting surgical instruments and a fine tube with a camera attached to it (laparoscope) through the cuts. The camera enables the surgeon to see the inside of the abdomen on a screen. The surgery options will depend on things like the type and size of the hernia. Hernias don't always have to be operated on. If they aren't causing any problems and the risk of complications is low, surgery isn't needed. This is also true in people who are very old, weak or seriously ill and have a hernia that doesn't pose an acute risk. People who have an inguinal hernia, on the other hand, are usually advised to have surgery. Hernia supports or hernia belts (tight, belt-like bandages) were often used in the past to try to stop

hernias from bulging out of the abdomen. This is not recommended nowadays, though, because they don't make the hernia go away and can have side effects such as pressure ulcers (bedsores).

## 2. Methodology

The prospective observational study was carried out for a period of 6 months. The study was conducted in General medicine department in a tertiary care hospital. A written and informed consent was obtained from the recruited patients. A Total of 75 patients were enrolled in the study.

**Study Design:** It was Prospective observational study.

**Study Period:** The Present study was conducted for a period of six months.

**Study site:** The Present study was conducted in department of General medicine department in a tertiary care hospital.

**Sample size:** It was 75 Patients.

### Inclusion criteria

- Patients with age of more than 18 years.
- Patients of either sex, diagnosed with Hernia
- Patients who are willing to give consent.
- Patients receiving treatment for Hernia associated other clinical conditions.

### Exclusion criteria

- Patients below 18 years.
- Patients who were not willing to join in the study.
- Special population including pregnant women and lactating women.
- Psychiatric abnormalities.

### Institutional ethics committee (IEC) consideration:

The research protocol was submitted to ethical committee and ethical Committee was permitted to perform the research work in the selected department of a tertiary care hospital.

### Patient data collection and management:

The data collection form contains information regarding age, sex, diagnosis, past medical history, laboratory data, and diagnostic results. The information about risk factors of dermatological infections, clinical laboratory reports, dose and frequency of administration and duration of therapy was collected from the patients treatment chart.

### Statistical analysis:

The data was represented as percentages. The  $P < 0.05$  was considered to indicate a statistically significant difference.

## 3. Results and Discussion

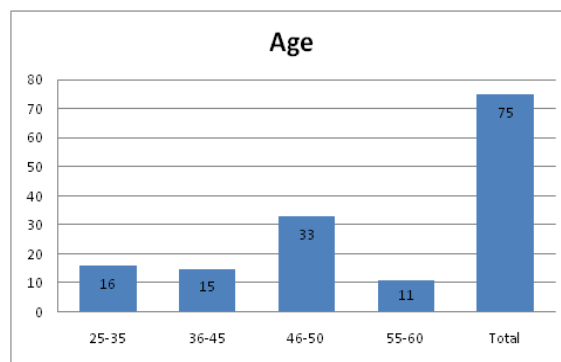


Figure 1: Age

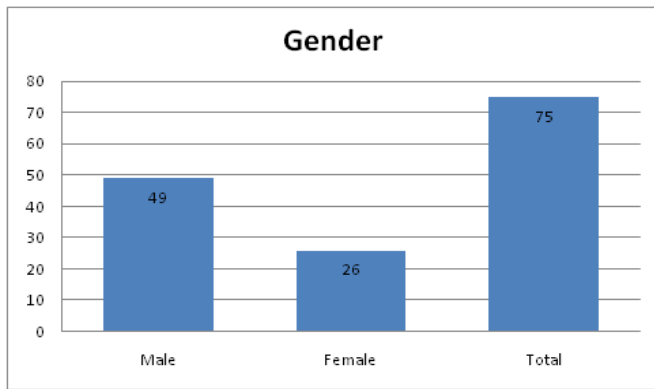


Figure 2: Gender

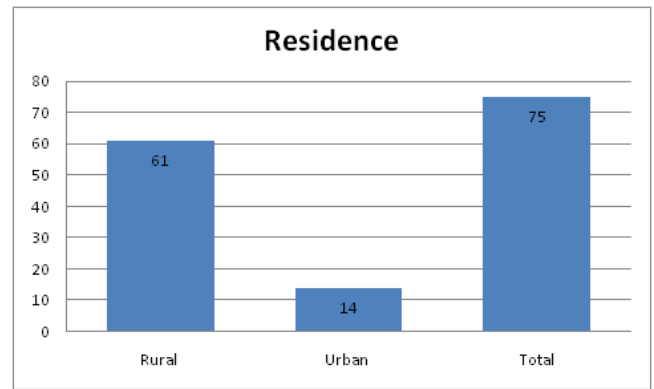


Figure 6: Distribution of Residence

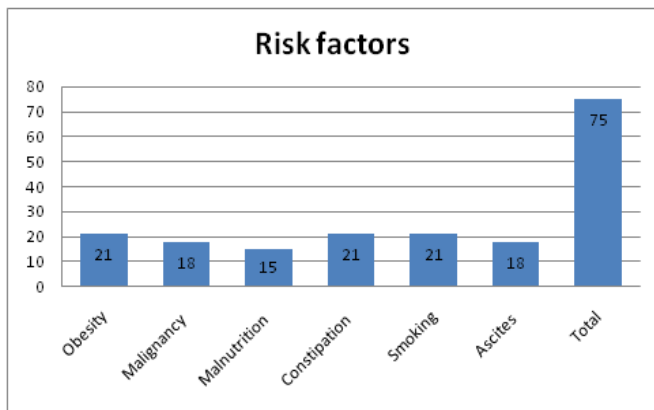


Figure 3: Risk factors for developing inguinal hernia in adults

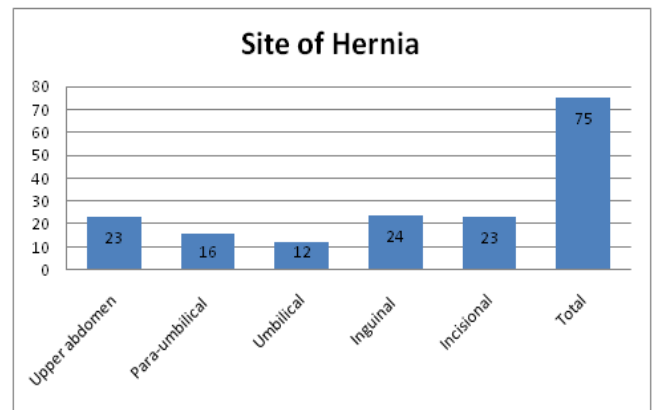


Figure 7: Site of hernia

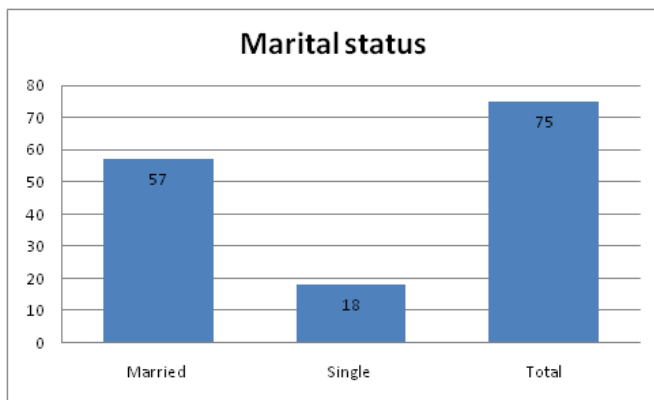


Figure 4: Marital status

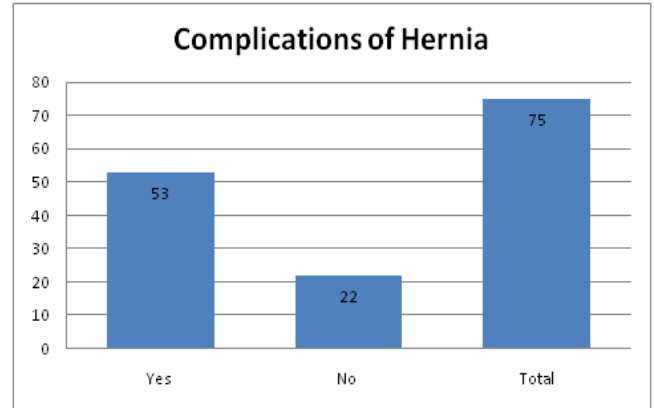


Figure 8: Complications of Hernia

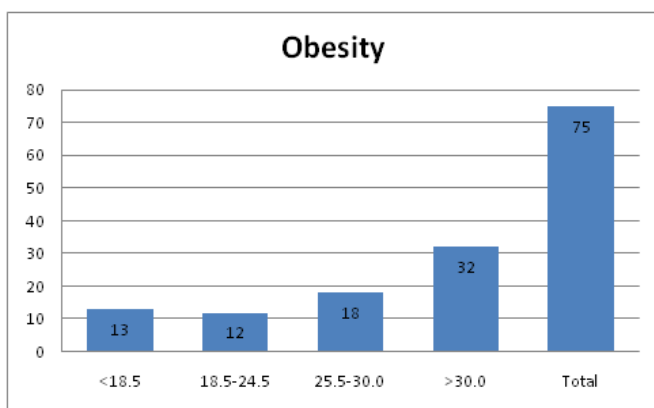


Figure 5: Obesity

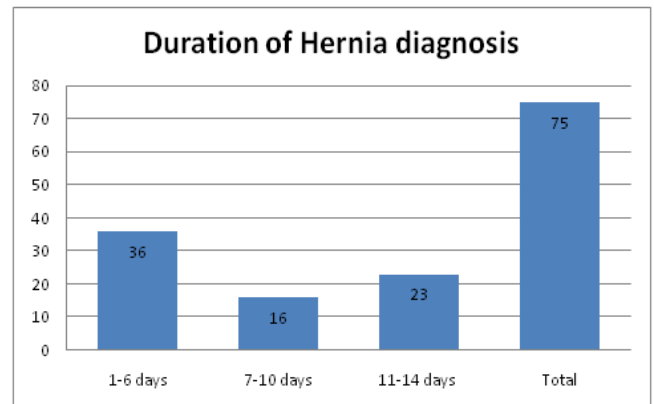


Figure 9: Duration of Hernia diagnosis

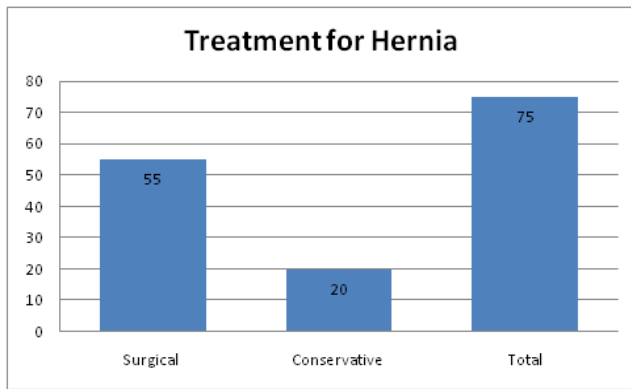


Figure 10: Treatment for Hernia

**Discussion**

- 46-50 years age patients were more 33(44%) as compared to other age group patients.
- In our study Male patients were more 49 (65.33%), as compared to females.
- Risk factors for developing inguinal hernia in adults includes Obesity risk factor patients were

- more 21(28%), as compared to other risk factor patients.
- Married patients were more 57 (76%) as compared to single patients.
- Obesity >30.0 patients were more 32(42.66%) as compared to other obesity categories.
- The distribution of place of residence includes rural area patients were more 61 (81.33%) as compared to urban area patients.
- Site of hernia includes Upper abdomen Site of hernia patients were more 23(30.66%).
- It includes Hernia complication patients were more 53 (70.66%) as compared to without complication patients.
- Duration of Hernia diagnosis includes 1-6 days Duration of Hernia diagnosis patients were more 36(48%) as compared to other Duration of Hernia patients<sup>17-23</sup>.
- It includes surgical treatment patients were more 55 (73.33%) as compared to conservative treatment patients were 20 (26.33%).

**Table 1: Age**

25-35 years age patients were 16(21.33%), 36-45 years age patients were 15(20%), 46-50 years age patients were 33(44%), 55-60 years age patients were 11(14.66%).

S.No	Age	Total N=75	Percentage (%)
1.	25-35	16	21.33
2.	36-45	15	20
3.	46-50	33	44
4.	55-60	11	14.66
	<b>Total</b>	<b>75</b>	

**Table 2: Gender**

In our study Male patients were 49 (65.33%), Female patients were 26 (34.66 %).

S.No	Gender	Total N=75	Percentage (%)
1	Male	49	65.33
2	Female	26	34.66
	<b>Total</b>	<b>75</b>	

**Table 3: Risk factors for developing inguinal hernia in adults**

Risk factors for developing inguinal hernia in adults includes Obesity risk factor patients were 21(28%), Malignancy risk factor patients were 18(24%), Malnutrition risk factor patients were 15(20%), Constipation risk factor patients were 21(28%), Smoking risk factor patients were 21(28%), Ascites risk factor patients were 18(24%).

S.No	Risk factors	Total N=75	Percentage (%)
1	Obesity	21	28
2	Malignancy	18	24
3	Malnutrition	15	20
4	Constipation	21	28
5	Smoking	21	28
6	Ascites	18	24
	<b>Total</b>	<b>75</b>	

**Table 4: Marital status**

Married patients were 57 (76%) and single patients were 18 (24%).

S.No	Marital status	Total N=75	Percentage (%)
1.	Married	57	76
2.	Single	18	24

	<b>Total</b>	<b>75</b>	
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**Table 5: Obesity**

Obesity categories includes <18.5 patients were 13(17.33%), 18.5-24.5 patients were 12(16%), 25.5-30.0 patients were 18(24%), >30.0 patients were 32(42.66%).

S.No	Obesity	Total N=75	Percentage (%)
1	<18.5	13	17.33
2	18.5-24.5	12	16
3	25.5-30.0	18	24
4	>30.0	32	42.66
	<b>Total</b>	<b>75</b>	

**Table 6: Distribution of Residence**

The distribution of place of residence includes rural area patients were 61 (81.33%), urban area patients were 14 (18.66%).

S.No	Place of residence	Total N=75	Percentage (%)
1.	Rural	61	81.33
2.	Urban	14	18.66
	<b>Total</b>	<b>75</b>	

**Table 7: Site of hernia**

Site of hernia includes Upper abdomen Site of hernia patients were 23(30.66%), Para-umbilical Site of hernia patients were 16(21.33%), Umbilical Site of hernia patients were 12(16%), Inguinal Site of hernia patients were 24(32%), Incisional Site of hernia patients were 23(30.66%).

S.No	Site of hernia	Total N=75	Percentage (%)
1	Upper abdomen	23	30.66
2	Para-umbilical	16	21.33
3	Umbilical	12	16
4	Inguinal	24	32
5	Incisional	23	30.66
	<b>Total</b>	<b>75</b>	

**Table 8: Complications of Hernia**

It includes Hernia complication patients were 53 (70.66%), and without hernia complication patients were 22 (29.33%).

S.No	Complications	Total N=75	Percentage (%)
1	Yes	53	70.66
2	No	22	29.33
	<b>Total</b>	<b>75</b>	

**Table 9: Duration of Hernia diagnosis**

Duration of Hernia diagnosis includes 1-6 days Duration of Hernia diagnosis patients were 36(48%), 7-10 days Duration of Hernia diagnosis patients were 16(21.33%), 11-14 days Duration of Hernia diagnosis patients were 23(30.66%).

S.No	Diagnosis	Total N=75	Percentage (%)
1	1-6 days	36	48
2	7-10 days	16	21.33
3	11-14 days	23	30.66
	<b>Total</b>	<b>75</b>	

**Table 10: Treatment for Hernia**

It includes surgical treatment patients were 55 (73.33%) and Conservative treatment patients were 20 (26.33%).

S.No	Treatment	Total N=75	Percentage (%)
1	Surgical	55	73.33
2	Conservative	20	26.66
	<b>Total</b>	<b>75</b>	

**4. Conclusion**

The burden of inguinal hernia among the young and middle-aged patients in our practice is huge, with many patients having a family history of the disease and evidence

of complications at presentation. Incisional hernia is one of the most prevalent complications of abdominal surgery and frequently causes morbidity which rises healthcare costs.

Several factors may explain this wide variability, such as heterogeneity of the cohort of patients included into the studies, the performed surgery and the length of follow-up. Laparoscopic abdominal approach seems to have a positive impact with a marked reduction in the rate of incisional hernia even if this surgical procedure is not immune to complications. A careful consideration of risk factors, related to the development of incisional hernia, may improve outcomes in terms of costs and complications. In our opinion should be considered the risk factors related to the elderly patients, those related to the abdominal surgery and, in addition, those related to the surgery of the abdominal wall defects. Reparative surgery of the abdominal wall, to date uniquely characterized by the use of the mesh, should in fact be considered an additional risk factor for the occurrence of incisional hernia. Among the risk factors related to the elderly patient should be emphasized the most common medical comorbidities associated with the advanced age. Should also be considered the potential disorders of connective tissue, which are widely present in the elderly population and their implications in the mechanisms of repair after abdominal surgery.

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