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Frequency Of Anterior Abdominal Wall Hernia Diagnosed On Ultrasound In Population Of Gujrat

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ABSTRACT

Background: *Sonography is a significant noninvasive imaging modality to diagnose types of abdominal wall hernias. Ultrasound imaging could be effective in creating a diagnosis as well as determining the type of hernia and providing additional details like the contents of the hernia and how much of it can be reduced. These findings may influence surgical procedures and reconstruction.*

OBJECTIVE: *The purpose of this research was to identify the frequency of anterior abdominal wall hernias in Gujrat, Pakistan.*

Material And Method: *A retrospective study was conducted at the diagnostic clinical setup Azeem ultrasound & digital X-Ray center Gujrat. . A total of 377 female patients who meet the inclusion criteria were enrolled in present study. The duration of the study was 4 months i.e. September 2021 to December 2021.*

Results: *We observed 377 patients, among these participants age ranged from 1 year as minimum age and 70 years as maximum with mean age was 39±15.7. The maximum frequency of patients 111(29.4%) was found in the age range of 31-40 years following 79(21%) in 21-30 years. Out of these, there were 109 males (28.9%), and 268 females (71.1%). Among 377 patients, there were 59 (15.6%) positive cases who showed anterior wall abdominal hernia where paraumblical hernias and umbilical hernias were the most frequently occurring hernia 20(5.3%) and 19 (5%) patients respectively.*

Conclusion: *According to the current study, there were more females than men , male dominance was demonstrated in inguinal hernias and female dominance in paraumbilical hernias. In the management plan for patients in whom the diagnosis of an abdominal wall hernia is uncertain, abdominal wall ultrasonography is a useful tool. The ultrasound results can have an impact on treatment choices, allowing for a more rapid and cost-effective clinical procedure.*

Keywords : Para umbilical hernia, Umbilical hernia, frequency, Sonography

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INTRODUCTION

The wall of anterior abdomen is made out of three layers: skin and fat tissues; the myofascial layer, comprising of muscles and their fascial envelopes; and a profound layer, comprising of the transversalis belt, preperitoneal fat, and the parietal peritoneum. The front stomach divider has many capacities, like regulation, backing, and assurance for the intraperitoneal items and contribution in breathing and movements. Hernia is a word driven from a Greek word 'heron', meaning a branch or projection. Ahernia is the projection of the piece of the typical items in the stomach cavity by means of a weakness in the stomach wall.[1] Hernias may be inherited or acquired. The first occurs during pregnancy or in newborns, and it is caused by a congenital flaw that creates a hole in the stomach cavity. The second may result from an accident, prior surgery (incisional hernia), situations that increase pressure in the

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stomach cavity (weight, stress, coughing), or all three. External, diaphragmatic, and internal hernias are the three broad types into which they can be categorized.An opening in the stomach wall permits the external stomach herniation's bulge to occur. while interior herniation occurs across mesenteric or peritoneal gaps. The third category, diaphragmatic herniation, also causes stomach discomfort.[2]

The finding of hernias isn't generally clear and may require extra insightful modalities. Real-time ultrasound is precise, painless, somewhat inexpensive, and promptly accessible of herniation. Ultrasound imaging is a technique used in healthcare to diagnose conditions by using high-frequency sound waves (ultrasound) to produce dynamic visual images of inside organs, tissues, or blood vessels. The term "ultrasound test" or "ultrasound imaging" is widely used to refer to this type of technology. Sonography is a quick, effortless, economical, and broadly accessible instrument typically viewed as a first-line imaging methodology for examination of hernias in abdominal wall. Computed tomography and magnetic resonance imagings may likewise show bigger stomach wall hernias.

They are every now and again experienced in surgical works on representing 15% - 18% of all surgeries.[3] In the developing nations they are not treated on need premise in view of their harmless nature overall and because of monetary reasons. In spite of the recurrence of this methodology the ideal predominance, related etiological variables, results, complication, repetition are not same all over and it keep on being quite difficult for the surgeons.[4'5]

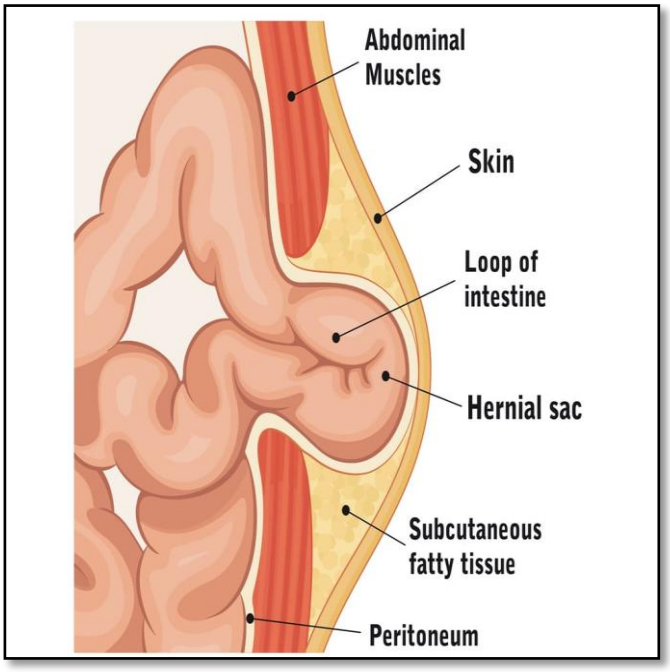


Figure 1: Showing anatomy of hernia

Abdominal walls hernias are named external, whenever the hernial sac is statistically significant and occult outer when the disease is due to the association of ansae within the stomach wall that are not visible on the surface and may be inherent or acquired (through injury or surgically).[6,7]

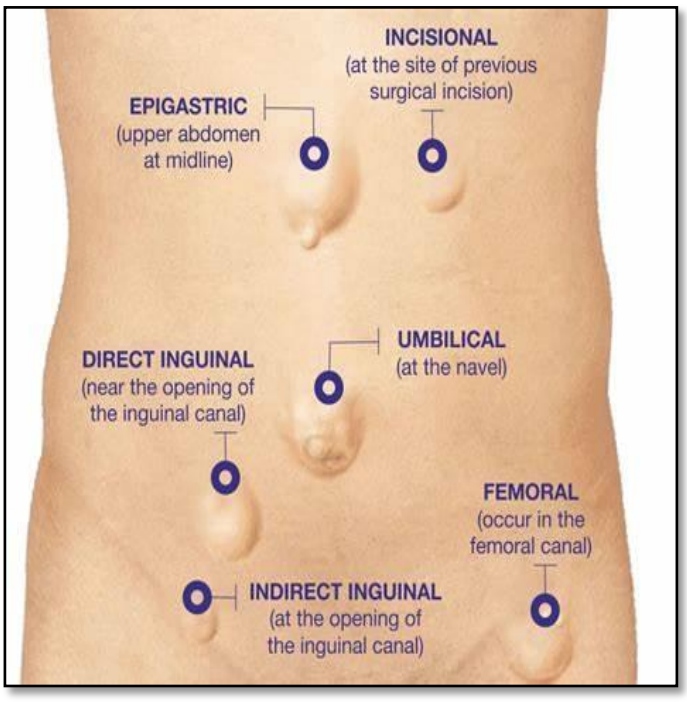


Figure 2: Showing types of hernia.

Inguinal hernia is more common in males. In grown-ups the most widely recognized type is indirect or external hernia, because of gained weakness and enlargement of the inside inguinal ring. This kind of hernia is located along the side of inferior epigastric vessels and anteromedially to the spermatic string, though in females it follows the round ligament.[8, 9]. Direct inguinal hernia shows up between 30-40 years old, particularly in times of more serious working activities, and is frequently bilateral. This hernia goes through medial inguinal fossa, arranged over the inguinal ligaments, between inferior epigastric vessels medially and the remaining parts of the decimated umbilical artery. Dissimilar to indirect hernias, the sac in direct hernia is isolated from the spermatic line by the transverse fascias, and is mostly unlikely to arrive at the scrotum. [8-10]

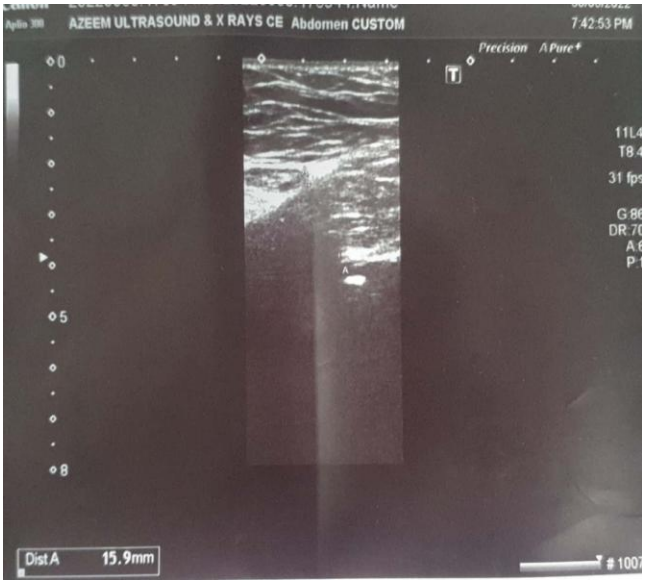


Figure 3: Showing Inguinal hernia on ultrasound

Umbilical hernias happen close to the bellybutton or navel, which has a characteristic weakness from the veins of the umbilical cords. These hernias might happen in newborn children at or soon after birth and might resolve by three or four years old. Notwithstanding, the weak spot can endure over the course of life and can happen in everyone whenever. In grown-ups, umbilical hernias won't resolve and may logically worsen after some time. They are often made by stomach pressure due to being overweight, unreasonable coughing, or even pregnancy. [3,5,11.]

Rarer epigastric hernias emerge along the xipho-umbilical axis through extending of the linea alba.[12] Epigastric hernias are more normal in men than in women. They happen because of a weakness, hole, or opening in the muscles or ligaments of the upper stomach wall, on a line between the breasts bone and the navel or umbilicus.[13]

Figure 4: Showing epigastric hernia on ultrasound

Postpartum hernias typically result from laparoscopic surgery and manifest some few months after the operations.[5,14] Old age, prior sicknesses, like diabetes, cirrhosis, and chronic obstructive pulmonary disease and excessive weight, are general gamble circumstances. Surgical wounds illnesses are localised potential risks, particularly whenever brought about by anaerobic microorganisms; however, lengthy vertical cuts are all the more regularly the reason for this kind of hernia, instead of transverse cuts. In 5-10% of cases, individuals who are overweight, develop benign growths, or even have painful abdomens cannot get a medical assessment.[3'14]

A supraumbilical hernia is a hernia simply over the bellybutton. The bellybutton skin is frequently regularly fastened however at that point swells out on its top side. A supraumbilical hernia is really a particular kind of epigastric hernia instead of a sort of

umbilical hernia. Supraumbilical hernias are probably not going to fix themselves at whatever stage in life and corrections by surgery is typically suggested.

[15] A similar general risk factor that adds to hernia development somewhere else on the ventral walls (collagen deficiencies and expanded intra-stomach pressure, regardless of earlier medical procedure) add to hernia formation in this area. [16]

MATERIAL AND METHOD

A retrospective study was conducted at the diagnostic clinical setup Azeem ultrasound & digital X-Ray center Gujrat. A total of 377 female patients who meet the inclusion criteria were enrolled in present study. The duration of the study was 4 months i.e. September 2021 to December 2021.

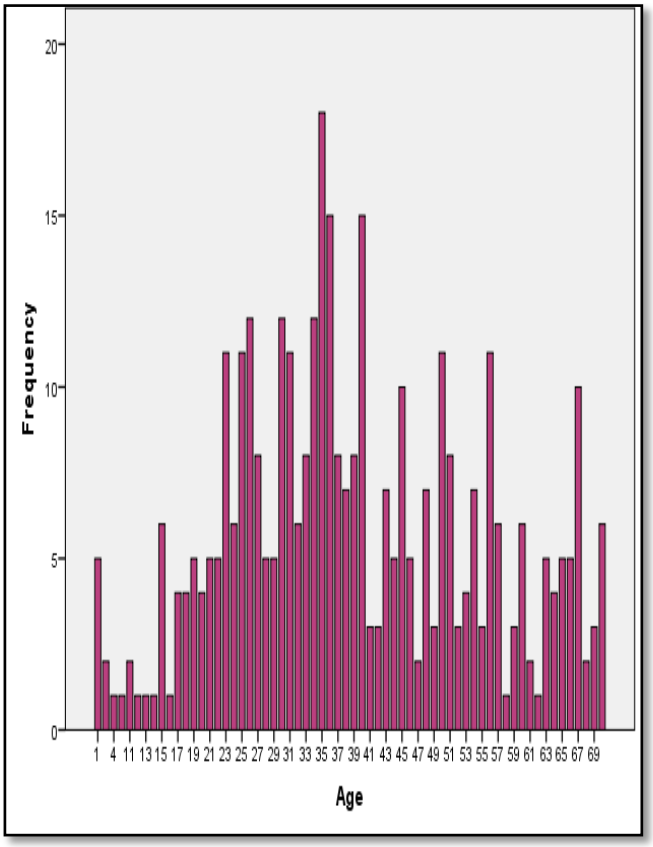
SPSS (statistical package for Social Sciences) version 20. was used to analyze the data. Frequency of abdominal wall hernia was found out. These were then graphically portrayed in the form of tables and graphs.

RESULTS

Total 377 cases of all age group were enrolled in this study. The mean value of the age was calculated as 39.0± 15.70 with minimum age of 01 years and 70 years as maximum of age.

Table 1: Showing descriptive statistics for age.

	N	Minimum	Maximum	Mean	Std. Deviation
Age (Year)	377	01	70	39.0	15.70

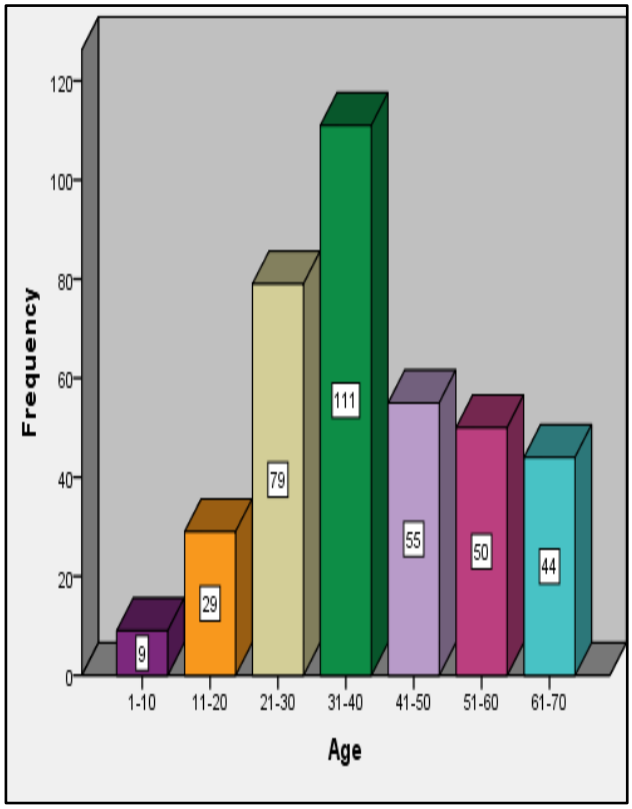


Graph 1: Bar chart showing description of age.

Among 377 patients, we noted the highest incidence of patients in 31–40-year age group (29.4%) followed by 21-30 year age group (21%) and 41-50 year age group (14.6%) with minimal incidence was seen in 1-10 year age group (2.4%).

Table 2: Showing descriptive statistics for age group.

Age Group	Frequency	Percent %
1-10	9	2.4
11-20	29	7.7
21-30	79	21.0
31-40	111	29.4
41-50	55	14.6
51-60	50	13.3
61-70	44	11.7
Total	377	100.0

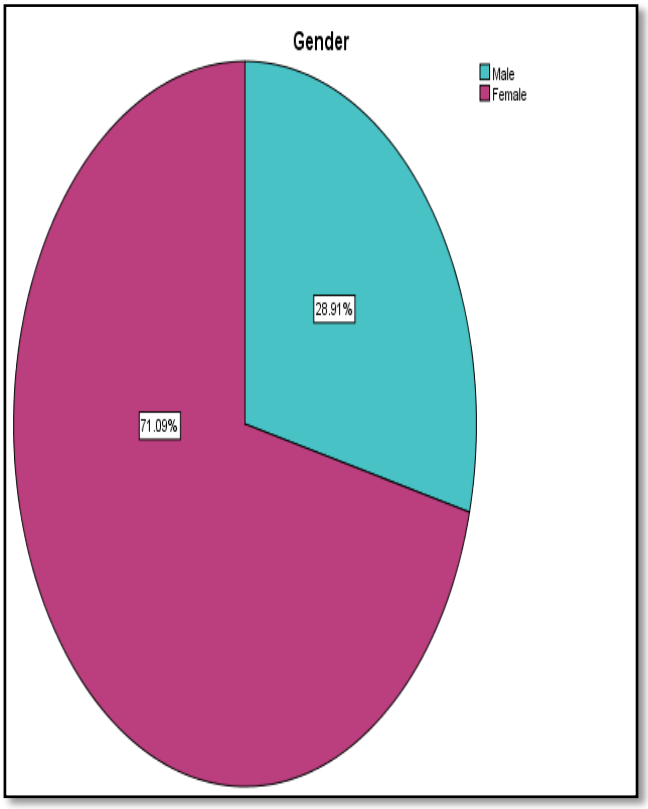


Graph 2: Bar chart showing description of age group.

Among 377 cases, in the distribution of subjects by gender 109 (28.9%) were male and 268 (71.1%) were females.

Table 3: Showing descriptive statistics for gender.

Gender	No. of Subjects	Percentage%
Female	268	71.1
Male	109	28.9
Total	377	100.0

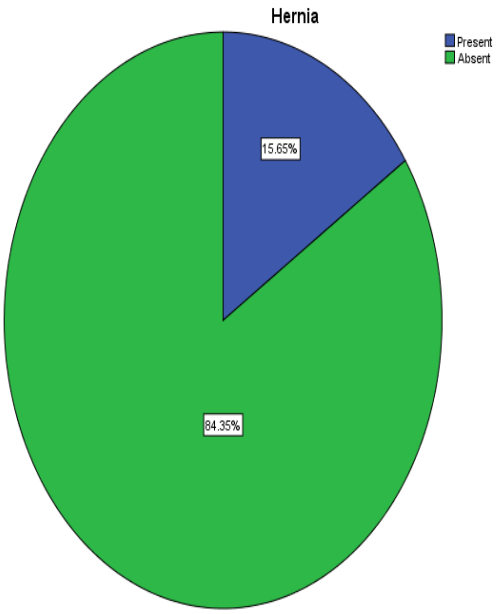


Graph 3: Pie chart showing description of gender distribution.

Among 377 cases, in the distribution of subjects by hernia presence 59(15.6%) were have hernia while in 318 (84.4%) hernia of any type was not documented.

Table 4: Showing descriptive statistics for status of hernia presence.

Hernia of any type	No. of Subjects	Percentage%
Present	59	15.6
Absent	318	84.4
Total	377	100.0

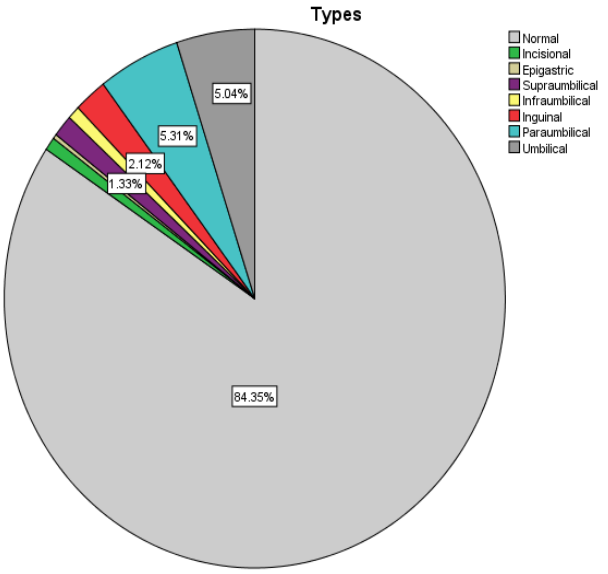


Graph 4: Pie chart showing patient with hernia presence status.

Among 377 patients, there were 59 (15.6%) positive cases who showed anterior wall abdominal hernia where paraumblical hernias and umbilical hernias were the most frequently occurring hernia 20(5.3%) and 19 (5%) observed in patients respectively.

Table 5: Showing descriptive statistics for types of hernia.

Type of Hernia	Frequency	Percent
Normal	318	84.4
Incisional	3	.8
Epigastric	1	.3
Supraumbilical	5	1.3
Infraumbilical	3	.8
Inguinal	8	2.1
Paraumbilical	20	5.3
Umbilical	19	5.0
Total	377	100.0



Graph 5: Pie chart showing percentage of hernia types

Among 377 patients, there were 59 (15.6%) positive cases who showed anterior wall abdominal hernia, male dominancy was seen in inguinal hernia 8 (2.1%) and female in paraumbilical hernia 18 (4.8%).

Table 6: Showing descriptive statistics for types of hernia in relation to gander

Types of Hernia	Gender		Total
	Male	Female	
Heernia Absent	92 (24.4%)	226 (59.9%)	318 (84.4%)
Incisional	1 (0.3%)	2 (0.5%)	3 (0.8%)
Epigastric	1 (0.3%)	0 (0.0%)	1 (0.3%)
Supraumbilical	1 (0.3%)	4 (1.1%)	5 (1.3%)
Infraumbilical	0 (0.0%)	3 (0.8%)	3 (0.8%)
Inguinal	8 (2.1%)	0 (0.0%)	8 (2.1%)
Paraumbilical	2 (0.5%)	18 (4.8%)	20 (5.3%)

Umbilical	**4 (1.1%)**	**15 (4.0%)**	**19 (5.0%)**
Total	**109 (28.9%)**	**268 (71.1%)**	**377 (100%)**

DISCUSSION

This research looked retrospectively at the prevalence of abdominal wall hernias in Gujrat. We concentrated on a group of people of all ages (70years). We employed clinical examination and, in cases of diagnostic doubt, ultrasound imaging to detect hernias. We were able to investigate a sizable portion of a broadly speaking, ethically uniform group.

377 patients with Diagnosis of anterior abdominal wall hernia abnormalities evaluated clinically and confirmed by ultrasound were included in this study. Age ranges from 1 months to 70 years, with the fifth decade (41–50 years) having the highest incidence of presentations. This is a result due to the abdominal wall's aging-related weakening. Our research's mean age ± SD was 43 years ±20.6006 close to the mean age of 47 years reported in a recent survey by **Young et al**. [18] There were 377 patients in all who have been in pain, of which 268 were female and 108 were male. Positive abdominal wall hernia diagnosis confirmed 59 (15.6 percent). There were more females than males who had anterior abdominal wall hernias (42 versus 17). This can be explained by the increased number of female surgical procedures, such as the C-section, that is the most frequently performed medical procedure in the literary history. **Young et al**[18] reported a majority of male patients in their study, which may be owing to the high sample size and distinct study methodology compared to **Devareddy et al**[19] **and Baz et al**[20] reports of a similar female predominance.

According to clinical information, the primary complaints were discomfort, nausea, and the existence of a palpable lump that fluctuated in size and shape depending on the situation.These results agreed with results of **Baz et al**.[20] and **lee et al**.[22]

According to the current study, paraumbilical hernias account for the majority of hernias (5.3 percent), followed by umbilical hernias (5.0 percent), inguinal hernias (2.1 percent), supraumbilical hernias (1.3 percent), infraumbilical hernias (0.8 percent), incisinal hernias (0.8 percent), and epigastric hernias (0.8 percent) (0.3 percent), all 54 hernia patients have underlying flaws and +ve reducible fatty contents. This results was totally disagreed with the result reported by **Baz et al**[20] who has documented that ventral hernia was frequent one 48.3% followed by inguinal type 38.7%.

The advantage of ultrasound research is that it is dynamic. High-frequency transducers provide the greatest images of the abdominal wall's muscular and fascial layers. In some instances, it may be required to compare the abdominal wall to the side that is asymptomatic in order to define the anatomy of the normal abdominal wall. The variation in sonographic appearances is caused by variations in fat echogenicity and muscle thickness. Patients with substantial anterior abdominal wall muscle loss show the most pronounced variation in this trait. In this case, various masses, such as hematomas, desmoid tumours, and other soft-tissue tumours, are included in the differential diagnosis. [17]

We were able to confirm the diagnosis in a quick and easy manner due to the usg approach. Additionally, the information offered by US technique enables the surgeons to exclude some patients, select the best management strategy, and even postpone some emergency surgeries. **Young et al**[18]stated that both the erect and supine postures should be used for the Valsalva manoeuvre during the US evaluation. Our research measures the defect's size to evaluate different hernia types. The use of US as a major imaging technique is favoured by its simplicity as a quick modality with a safe procedure and needing a little amount of time (the time required in our study was approximately 3-5 min).

CONCLUSION

Present study indicates most of the patients presented between 2nd to 4th decades of life. Females were more in number but Male dominance was seen in inguinal hernia and female in paraumbilical hernia. Abdominal wall ultrasound is a valuable tool in the scheme of management of patients in whom the diagnosis of abdominal wall hernia is unclear. Therapeutic decisions can be influenced by the ultrasound findings that can provide more efficient and economical treatment by expediting their clinical management.

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