

Prevalence Of Hernia Among Fishermen Population In Kutch District, India

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Abstracts: Background & Objective: To assess the Prevalence of hernia among fishermen population in Kutch District, India. Methodology: A descriptive cross-sectional study was conducted among 553 adults living in Kutch District, Gujarat, India, during July to August 2014. Chi-square test was used for comparisons. Confidence level and p-value were set at 95% and 5%, respectively. Results: Lingual hernia had highest prevalence (21.8%) followed by Incisional (15.7) and paraumbelical (13.7%). Hernia of right-direct had 45.9% of prevalence which was highest among all followed by left direct (30.1%) and right-indirect (12.1). Conclusion: The prevalence of hernia among fishermen population was higher than general populations. Early diagnosis, easily accessible health facilities and health education are important to prevent complications. [Rao G NJIRM 2015; 6(4):44-51]

Key Words: cross-sectional, fishermen, hernia, Kutch.

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Introduction: A hernia occurs when an organ pushes through an opening in the muscle or tissue that holds it in place. It is protrusions of body parts through defects in the anatomic structures that normally contains it and are most common in the abdomen. The hernial orifice is the defect in the innermost layer of the abdomen, and the hernia sac is an outpouch of the peritoneum. Abdominal wall hernias only occur in certain areas – namely, where aponeurosis and fascia are devoid of the protecting support of striated muscle. Many such areas are present in the ‘normal’ individual but others may be acquired through muscular atrophy, surgery or trauma. Because of these anatomical relationships, common sites of hernia include the groin, umbilicus and the linea alba. However, they can also appear in the upper thigh, belly button, and groin regions. Though the majority of hernias are not immediately life threatening, they will not go away on their own and will require surgical correction to prevent potentially dangerous complications. Groin hernia and hydrocele are two of the most common surgical conditions globally. Hernia is derived from a latin word meaning “a rupture”. Abdominal wall hernias are frequently encountered in surgical practice accounting for 15% - 18% of all surgical procedures.^{1,2} Worldwide, more than 20 millions hernias are operated per year.³

The high prevalence of hernia, for which the lifetime risk is 27 % for men and 3 % for women,⁴ has resulted in this condition inheriting one of the

longest traditions of surgical management. The word “hernia” is derived from the Greek (hernios), meaning a bud or shoot. The Hippocratic school differentiated between hernia and hydrocele—the former was reducible and the latter transilluminable.⁵ Hernias are caused by a combination of muscle weakness and strain. A hernia can develop quickly or over a long period of time, depending on its cause. More than 750,000 hernias in USA and approximately 125,000 hernias in United Kingdom are operated per year.⁷ The incidence of abdominal wall hernia in different countries varies from 100 - 300/100000 per year.³

Types of hernia⁸

Some of the common types of hernia are described below.

Inguinal hernias: Inguinal hernias occur when fatty tissue or a part of your bowel pokes through into your groin at the top of your inner thigh. This is the most common type of hernia and it mainly affects men. It is often associated with ageing and repeated strain on the abdomen.

Femoral hernias: Femoral hernias also occur when fatty tissue or a part of your bowel pokes through into your groin at the top of your inner thigh. They are much less common than inguinal hernias and tend to affect more women than men. Like inguinal hernias, femoral hernias are also associated with ageing and repeated strain on the abdomen.

Umbilical hernias: Umbilical hernias occur when fatty tissue or a part of your bowel pokes through your abdomen near your belly button (navel). This type of hernia can occur in babies if the opening in the abdomen through which the umbilical cord passes doesn't seal properly after birth. Adults can also be affected, possibly as a result of repeated strain on the abdomen.

Hiatus hernias: Hiatus hernias occur when part of the stomach pushes up into your chest by squeezing through an opening in the diaphragm (the thin sheet of muscle that separates the chest from the abdomen). This type of hernia may not have any noticeable symptoms, although it can cause heartburn in some people.

Other types of hernia

Other types of hernia that can affect the abdomen include:

- Incisional hernias – these occur when tissue pokes through a surgical wound in your abdomen that has not fully healed.
- Epigastric hernias – these occur when fatty tissue pokes through your abdomen, between your navel and the lower part of your breastbone (sternum).
- Spigelian hernias – these occur when part of your bowel pokes through your abdomen at the side of your abdominal muscle, below your navel.
- Diaphragmatic hernias – these occur when organs in your abdomen move into your chest through an opening in the diaphragm. This can affect babies if their diaphragm does not develop properly in the womb, but can also affect adults.
- Muscle hernias – these occur when part of a muscle pokes through your abdomen. They can also occur in leg muscles as the result of a sports injury

Although males are affected more commonly (7:1), the incidence of femoral hernia is four times higher in females.⁹ The incidence of hernia increases with advancing age. Indirect hernia is twice as common as direct hernia. Inguinal hernias are more common on right side.

Kutch is the largest District in India with a total area of 45652 km.² Kutch has 400 km coastline that

constitute one-fourth of the Gujarat coastline and one-twentieth of India's coastline. The Kutch coast and fishing community are not well known in India. The relative remoteness of the Kutch coast and the low social, economic and political power of the fishing community have contributed to this state of affairs.¹⁰

It's not exactly clear what causes hiatus hernias, Hernias are caused by a combination of muscle weakness and strain. A hernia can develop quickly or over a long period of time, depending on its cause.

Common causes of muscle weakness include: a) failure of the abdominal wall to close properly in the womb (congenital defect), age, chronic coughing, damage from injury or surgery.

Factors that strain your body and may cause a hernia include: being pregnant, being constipated, heavy weight lifting, fluid in the abdomen, suddenly gaining weight, persistent coughing or sneezing.

Since fishermen have Heavy lifting work this may contribute to some types of hernias, as well as Chronic coughing which are common in fishermen that may increase the risk of a hernia in fishermen population. owing to the paucity of literature the present study has been undertaken with an objective to assess the prevalence of hernia in fishermen population Kutch, Gujarat, India.

Methodology:

Study design, study setting and study population

A descriptive cross-sectional study was conducted among 553 adults living in Kutch District, Gujarat, India, during July to August 2014.

Ethical considerations : Before the beginning of the study, ethical approval was obtained from the ethical committee of Gujarat Adani Institute of medical science Bhuj, Gujarat. Written informed consent was obtained from person's who participated in the study.

Sampling design: Multistage random sampling was employed to select the study population. Kutch coast is divided into 4 a zone from which 1 zone (Anjar, Mundra) was randomly selected. The principal unit of administration in India is the

district under a Collector. Most districts are divided into 2 or more subdivisions. Each subdivision is again divided into Tehsils. Each Tehsil comprises of several villages. From the selected zone, a tehsil (Mundra) was randomly selected. From the selected tehsil, 4 villages (Mundra, Shekhadia, Zarapara and Navinal Kutadi) were randomly selected. Samples were selected using probability proportional sampling from each village. Subjects were selected starting from the reference point (north east corner of selected villages) employing simple random sampling technique until the minimum sample size was achieved. Final sample comprised of 553 adult fishermen population who had diagnosed with hernia from 3400 population.

Clinical examination: The survey was conducted by the Department of General Surgery, Gujarat Adani Institute of medical science Bhuj, Kutch Gujarat. The study population originally included all male fishermen residents aged 20 or over residing in coastal areas. The investigation comprised an interview at the subject's home and a subsequent examination by a doctor at the department's community health centre. Special consideration was paid to standardizing techniques, including the careful training and regulation of interviewers and examiners and the use of standardized questions, examination procedures, and diagnostic criteria. The home interview included a question on the occurrence of hernia past or present. If it was answered positively, the man was asked if he had ever had an operation for hernia. The examining physician was informed of the replies.

The examination procedure was the one described by Bailey (1942). The examining physician reported whether, in each groin, there was a visible and clearly palpable hernia; a palpable impulse; or an operation scar. The examination was conducted with the subject standing in a good light. After inspection, any visible lump was palpated to determine whether it was possible to 'get above it' with the thumb and index finger. If not, and if its neck was continuous with the inguinal canal or directed backwards into the abdomen, it was diagnosed as a palpable hernia. If there was no visible lump, the scrotum was invaginated by the little finger to reach the external ring, and the subject was asked to cough, in order to determine whether there was a palpable impulse. An impulse

at the scar site on coughing was taken as evidence of recurrence. No attempt was made to distinguish between indirect and direct hernias. 'Swellings' and repaired hernias will be referred to below as 'obvious' hernias.

Statistical analysis: The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2007) and then exported to data editor page of SPSS version 11.5. Chi-square test was used for comparisons. Confidence level and p-value were set at 95% and 5%, respectively.

Results: Outcomes of the study were as follows. Among all hernia patients 20-35 age had highest prevalence of hernia (45.7%). 36-50 and 51- 65 age group had 30.1% and 25. 8% prevalence respectively (table 1).

Table 1: Age wise distribution of hernia patients

Age	Number (%)
20-35	253 (45.7)
36-50	167 (30.1)
51-65	143 (25.8)

In relation to the distribution of the hernia, Lingual hernia had highest prevalence (21.8%) followed by Incisional (15.7) and paraumbilical (13.7%) (table 2).

Table 2: distribution of hernia according to type among fishermen population

Type of hernia	Number	Percentage (%)
Lingual	121	21.8
Umbilical	65	11.7
Paraumbilical	76	13.7
Epigastric	45	8.1
Incisional	87	15.7
Traumatic	65	11.7
Obturator	96	17.3

When comparison was done for the hernia in relation to the site, Hernia of right-direct had 45.9% of prevalence which was highest among all followed by left direct (30.1%) and right-indirect (12.1%) (table 3). In relation to the association of age and site of hernia among fishermen population, among all groups, 20-35 age group had highest percentage of left –direct hernia (59.2%). Similarly in 36-50 age group right-indirect had highest

percentage of hernia (37.3). when the association between age and site of hernia was done it was found to be statistically significant.($p=0.01$)

Table 3: distribution of hernia according to site among fishermen population

Type of hernia	Number	Percentage (%)
Right-direct	254	45.9
Right-indirect	67	12.1
Left direct	167	30.1
Left-indirect	54	9.7
Bilateral-lingual	11	1.9

Table 4: association of age and site of hernia among fishermen population

Age	Right-direct (%)	Right indirect (%)	Left-direct (%)	Left-in-direct (%)	Bilateral-lingual (%)	P value
20-35	123 (48.4)	30 (44.7)	99 (59.2)	28 (51.8)	7 (63.6)	0.01*
36-50	56 (22)	25 (37.3)	52 (31.1)	20 (37)	3 (27.2)	
51-65	75 (29.5)	12 (17.9)	15 (8.9)	6 (1.1)	1 (0.9)	

Discussion: A hernia occurs when an internal part of the body pushes through a weakness in the muscle or surrounding tissue wall. In many cases, hernias cause no or very few symptoms, although you may notice a swelling or lump in your tummy (abdomen) or groin. The lump can often be pushed back in, or will disappear when you lie down. Coughing or straining may make the lump appear. Hernia is considered a complication of PD. The pathophysiology is based on the concept of increased abdominal pressure (mechanical effect) affecting a weak abdominal wall.¹¹

Causes of hernia vary depending on each individual. Among the multiple causes, however, are the mechanical causes which include: improper heavy weight lifting, hard coughing bouts, sharp blows to the abdomen, and incorrect posture.¹²

Furthermore, conditions that increase the pressure of the abdominal cavity may also cause hernias or worsen the existing ones. Some examples would be: obesity, straining during a bowel movement or urination (constipation, enlarged prostate), chronic lung disease, and also, fluid in the abdominal cavity (ascites).¹³ Also, if muscles are weakened due to poor nutrition, smoking, and overexertion, hernias are more likely to occur.

The physiological school of thought contends that in the case of inguinal hernia, the above-mentioned are only an anatomical symptom of the underlying physiological cause. They contend that the risk of hernia is due to a physiological difference between patients who suffer hernia and those who do not, namely the presence of aponeurotic extensions from the transversus abdominis aponeurotic arch.¹⁴

A number of factors will need to be taken into consideration when deciding whether surgery is appropriate, including:

- The type of hernia – some types of hernia are more likely to become strangulated, or cause a bowel obstruction, than others.
- The content of your hernia – if the hernia contains a part of your bowel, muscle or other tissue, there may be a risk of strangulation or obstruction.
- Symptoms and the impact on your daily life – surgery may be recommended if your symptoms are severe or getting worse, or if the hernia is affecting your ability to carry out your normal activities.
- General health – surgery may be too much of a risk if your general health is poor.

By far the most common hernias develop in the abdomen, when a weakness in the abdominal wall evolves into a localized hole, or "defect", through which adipose tissue, or abdominal organs covered with peritoneum, may protrude. Another common hernia involves the spinal discs and causes sciatica. A hiatus hernia occurs when the stomach protrudes into the mediastinum through the esophageal opening in the diaphragm.

Hernias may or may not present with either pain at the site, a visible or palpable lump, or in some cases more vague symptoms resulting from pressure on an organ which has become "stuck" in the hernia, sometimes leading to organ dysfunction. Fatty tissue usually enters a hernia first, but it may be followed or accompanied by an organ.

Hernias are caused by a disruption or opening in the fascia, or fibrous tissue, which forms the abdominal wall. It is possible for the bulge

associated with a hernia to come and go, but the defect in the tissue will persist.

Symptoms and signs vary depending on the type of hernia. Symptoms may or may not be present in some inguinal hernias. In the case of reducible hernias, a bulge in the groin or in another abdominal area can often be seen and felt. When standing, such a bulge becomes more obvious. Besides the bulge, other symptoms include pain in the groin that may also include a heavy or dragging sensation, and in men, there is sometimes pain and swelling in the scrotum around the testicular area.³ Irreducible abdominal hernias or incarcerated hernias may be painful, but their most relevant symptom is that they cannot return to the abdominal cavity when pushed in. They may be chronic, although painless, and can lead to strangulation (loss of blood supply) and/or obstruction (kinking of intestine). Strangulated hernias are always painful and pain is followed by tenderness. Nausea, vomiting or fever may occur in these cases due to bowel obstruction. Also, the hernia bulge in this case may turn red, purple or dark and pink.

In the diagnosis of abdominal hernias, imaging is the principal means of detecting internal diaphragmatic and other nonpalpable or unsuspected hernias. Multidetector CT (MDCT) can show with precision the anatomic site of the hernia sac, the contents of the sac, and any complications. MDCT also offers clear detail of the abdominal wall allowing wall hernias to be identified accurately.⁷

Although most hernias will not get better without surgery, they will not necessarily get worse. In some cases, the risks of surgery will outweigh the potential benefits.

Surgery is usually recommended for most types of hernias to prevent complications like obstruction of the bowel or strangulation of the tissue, although umbilical hernias and hiatus hernias are usually left to heal on their own, or are treated with medication, respectively.¹⁶ Most abdominal hernias can be surgically repaired, but surgery often has complications, such as chronic groin pain. Time needed for recovery after treatment is greatly reduced if hernias are operated on laparoscopically, the minimally invasive operation

most commonly used today.¹⁷ Uncomplicated hernias are principally repaired by pushing back, or "reducing", the herniated tissue, and then mending the weakness in muscle tissue (an operation called herniorrhaphy). If complications have occurred, the surgeon will check the viability of the herniated organ, and resect it if necessary.

Muscle reinforcement techniques often involve synthetic materials.¹⁸ The mesh is placed either over the defect or under the defect. At times staples are used to keep the mesh in place. These mesh repair methods are often called "tension free" repairs because, unlike some suture methods, muscle is not pulled together under tension. However, this widely used terminology is misleading, as there also exists many tension-free suture methods that do not use mesh. Evidence suggests that tension-free methods often have lower percentages of recurrences and the fastest recovery period compared to tension suture methods. However, among other possible complications, prosthetic mesh usage seems to have a higher incidence of chronic pain and, sometimes, infection.¹⁹

One study attempted to identify the factors related to mesh infections and found that compromised immune systems was a factor.²⁰ Mesh has also become the subject of recalls and class action lawsuits.²¹

Many patients are managed through day surgery centers, and are able to return to work within a week or two, while intense activities are prohibited for a longer period. Patients who have their hernias repaired with mesh often recover in a number of days, though pain can last longer, and often forever. Surgical complications have been estimated to be more than 20 percent. They include chronic pain, surgical site infections, nerve and blood vessel injuries, injury to nearby organs, and hernia recurrence.²²

Due to surgical risks, mainly chronic pain risk, the use of external devices to maintain reduction of the hernia without repairing the underlying defect (such as hernia trusses, trunks, belts, etc.) are often used. In particular, we can mention uncomplicated incisional hernias that arise shortly after the operation (should only be operated after

a few months), or inoperable patients. There have been known cases where hiatus and esophageal hernias have shown signs of improvements after the patient stopped producing stress on the affected area by fasting or parenteral nutrition. It is essential that the hernia not be further irritated by carrying out strenuous labor.

Being a commonly performed general surgical operation, abdominal wall hernia comprises a significant proportion of total surgical work load in most of the centers. Present study describes high prevalence of hernia among fishermen population residing in Kutch.

In the present study 20-35 age group had highest prevalence of hernia compared to other age group which is in contrast with findings suggested by Sangwan M et al (2013).²³ This may be due to most of the working fishermen belong to this age group and Smoking, and neglected urinary obstructive symptoms may be the contributory factors.²³

Inguinal hernia constituted 21.8% of total abdominal wall hernias which is in accordance with text. Inguinal hernia is more common on right side due to late fall down of right testis and more frequent failure of closure of right processus vaginalis.^{24,25} in a study conducted by ML Akin et al (1997)²⁶ prevalence of right lingual hernia was around 54.1% which was higher than the present study.

In a study conducted by HD patel et al (2014)²⁷ prevalence of hernia was found to be around 7.01% which was very compared to present study.

The order of hernia frequency in our study in decreasing order is inguinal, obturator, incisional, paraumbilical, umbilical, epigastric, and femoral hernia which obviously differs from literature mentioning the frequency as: inguinal, femoral, umbilical and others. There is no case of femoral hernia in our study as compared to literature where it comes as third commonest type of hernia. It may be due to some racial factors as wider pelvis has been thought to be an important factor as an etiological agent of femoral hernia. Abdominal wall hernias have been reported more prevalent in low socioeconomic status which holds true for our rural population also.²⁸

Prevalence of hernia was higher in fishermen population than in the general population. Hernia problems in these high-risk patients can be safely solved using careful technique with application of tension-free hernioplasty with a polypropylene mesh.

Complications may arise post-operation, including rejection of the mesh that is used to repair the hernia. In the event of a mesh rejection, the mesh will very likely need to be removed. Mesh rejection can be detected by obvious, sometimes localized swelling and pain around the mesh area. Continuous discharge from the scar is likely for a while after the mesh has been removed.

A surgically treated hernia can lead to complications, while an untreated hernia may be complicated by inflammation, irreducibility, obstruction of any lumen, bowel obstruction in intestinal hernias, strangulation, hydrocele of the hernial sac, haemorrhage, autoimmune problems, Incarceration; which is where it cannot be reduced, or pushed back into place, at least not without very much external effort.²² In intestinal hernias, this also substantially increases the risk of bowel obstruction and strangulation

Recurrence of hernia:

An estimated 25% of all hernia recurrences present within a year of the hernia repair. Another 25% will become evident by the fifth postoperative year. The remaining 50% of recurrences occur more than 5 years after the surgical repair.²³

Prevention of hernias:

The key to hernia prevention is to take steps to decrease the amount and duration of pressure on the abdominal contents. Hiatal or Epigastric hernias, hernias that occur when the stomach pushes up through the hole in the diaphragm where the esophagus goes through, are not as easy to detect as other types of hernias because they are entirely internal. Moreover, many hiatal hernias that are small do not cause any symptoms.

The risk of developing an inguinal hernia or femoral hernia can be decreased by reducing the pressure inside of the abdominal cavity that may push the abdominal contents out of a weak spot in the abdominal wall. These types of hernias are similar,

as they are both hernias that come out of the lower abdominal wall, and the same prevention tips apply equally to both. Prevention of inguinal and femoral hernias can be summarized as follows: lift properly, reduce straining, quit smoking and lose weight.

Another cause of high abdominal pressure that can exacerbate hernia formation is constipation. A man who has difficulty urinating and has to strain to urinate may have an enlarged prostate gland. An enlarged prostate is usually a benign condition, but medications are available to treat the prostate swelling and make urination easier.

People who smoke are advised to quit smoking for many medical reasons, but a smoker with a chronic cough is also increasing their risk of developing a hernia. Lastly, being overweight is a risk factor for developing hernias. Losing weight may help decrease your chance of developing an inguinal or femoral hernia.

Conclusion: The prevalence of hernia among fishermen population was higher than general populations. Early diagnosis, easily accessible health facilities and health education are important to prevent complications.

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