



The Quality of Life of Inguinal Hernia Patient in India: The Application of Hernia- Specific Quality of Life Assessment

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: In inguinal hernia patient post-operative recurrence rate has been decrease due to advancement in prosthetic mesh. The hernia outcome study should concentrate on hernia post-operative quality of life and various complications.

Objectives:

- 1) To study the application of HERQL INSTRUMENT in surgical practice.
- 2) To study the quality of life pre-operatively & post-operatively.
- 3) To utilise as HERQL INSTRUMENT in clinical management as a prognostic indicator to improve upon the healthcare system.

Methodology: All the patients of inguinal hernia presenting to Acharya Vinoba Bhawe Rural Hospital, Sawangi (Meghe), Wardha as an elective/emergency case will be included in the study after obtaining consent. Patient has to go through the HERQL questionnaire pre-operatively and post-operatively or post-operatively only. These patients will be enrolled in the study.

Results: We expect a causal relationship between formative symptomatic subscale and the reflective functional status demonstrated by HERQL. The assessment of summative pain in preoperative and immediate postoperative patient shows changes in summative pain and 3 month follow up suggestive of clinical response of HERQL.

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Conclusion: This study will help to know quality of life in “post-operative” hernia patient with the help of “HERQL instrument”.

Keywords: Inguinal hernia; hernioplasty; quality of life.

1. INTRODUCTION

Hernioplasty is most common procedure performed by surgeon worldwide [1-3]. The recurrence has been significantly reduced with development of “artificial mesh” [4-5] and improvement in tension free hernioplasty research on ‘postoperative quality of life’ in hernioplasty patient possible complication like chronic post-operative pain [6-7]. Research in quality of life in hernia patient is typically focused on standardized techniques that decreases the sensitivity of measures and restrict clinical applications [8]. In fact the post hernioplasty assessment of quality of life and post-operative outcome for different kind of hernia was suggested [9]. The recurrence rate has been decrease dramatically in hernia repair operation with the use of prosthetic mesh and subsequent better clinical outcomes. Previously, the “quality of life” after hernia patient has been checked using standardised SF36 survey, like much other medical condition for patient undergoing hernia repair. The patient who are undergoing hernia mesh repair for them CAROLINA COMFORT SCALE was proposed to evaluation validity and reliability of this survey [10].

For abdominal wall hernia and inguinal hernia first post-operative quality of life assessment instrument was proposed which summarize symptomatic and functional pain experienced by patient with various type of hernia. Hence HEQRL instrument was proposed for assessment of quality of life in post-operative patient of hernia it includes 4 item which are discomfort due to strenuous activity, symptomatic pain, and summative pain experienced by patient with diverse hernia types can be evaluated [11].

As a result, an appropriate and validated hernia-specific evaluation method for results study needs immediate attention in the “surgical communities”

The aim of the study has been to provide HERQL, a validated tool of quality of life evaluation, for research on hernia. The mode and time of presentation is very much variable in

Indian Scenario, so it's difficult and unrealistic to directly compare one patient with another.

1.1 Aim

To prove the efficacy and to establish the system of HEQRL INSTRUMENT in predicting the quality of life in patients undergoing hernioplasty for a more focussed care.

1.2 Objectives

- 1) To study the application of HERQL INSTRUMENT in surgical practice.
- 2) To study the quality of life pre-operatively & post-operatively.
- 3) To utilise as HERQL INSTRUMENT in clinical management as a prognostic indicator to improve upon the healthcare system.

2. MATERIALS AND METHODS

All the patients of inguinal hernia presenting to “Acharya Vinoba Bhave” Rural Hospital, Sawangi (Meghe), Wardha as an elective/emergency case will be included in the study after obtaining consent. Patient has to go through the HERQL questionnaire pre-operatively and post-operatively or post-operatively only. These patients will be enrolled in the study.

2.1 Inclusion Criteria

Patient who are planned or had undergone inguinal hernia repair at Acharya Vinoba Bhave Rural Hospital, Sawangi.

2.2 Exclusion Criteria

- 1) Patient <12 years
- 2) The patient's not giving consent for the above study
- 3) Co-morbidity like uncompensated diabetes, advanced liver disease
- 4) All obstetric procedures
- 5) Mental problem and difficulties in understanding and completing questionnaire and refusal.

'Exclusion criteria' were parallel participation in another human subject study, mental problems and difficulties in understanding and completing the questionnaire, and refusal. Demographic characteristics, operation details, and follow-up events.

'The questionnaire' will have correlations of mobility, usual activities, and pain/discomfort in 'preoperative' and 'postoperative' patient scores of the 'EQ-5D-5L' from the same patient with the corresponding scores of the HERQL (activity restriction, health impact, and pain upon various strenuous activities) will be evaluated. The patients who are unable to follow up for the study will be telephonically enquired for the HERQL survey in the post-operative follow-up period.

2.3 Study Design

Prospective Observational Study

2.4 Study Population

Patient coming to AVBRH for Elective/
Emergency hernioplasty

2.5 Setting

A.V.B.R.H. Sawangi (Meghe) Wardha.

2.6 Duration of Study

2 years (July 2020-August 2022)

2.7 Sample Size

50 to 70

3. EXPECTED OUTCOME / RESULT

HERQL, a validated tool of quality of life evaluation, for research on hernia. The mode and time of presentation is very much variable in Indian Scenario, so it's difficult and unrealistic to directly compare one patient with another. Hence result will be based on findings for study of protocol

4. DISCUSSION

4.1 Modern Era of Hernia Surgery

In year 1865 modern era of hernia repair surgery started, when Joseph Lister introduced

antisepsis. In the middle of nineteenth century, discovery of anaesthesia and asepsis by Lister (1867) of England, made surgery painless and safe. Advances in anaesthesia, haemostasis, antisepsis and asepsis allowed rapid development of science of herniology [12].

During the eighteenth and early nineteenth centuries (the anatomic era), pioneers like Pott (1756), Scarpa (1812), Cooper (1804), Cloquet (1817), and Morton (1841) described important aspects of inguinal anatomy.

The revolution in inguinal hernia surgery brought by Edoardo Bassini (1844-1924) of Pavia. "William S. Halsted (1852-1922) developed an operation similar to Bassini's for the treatment of inguinal hernias. The major difference between Bassini's and Halsted's repair was the change position of the cord to a position above the 'external oblique aponeurosis'. The Shouldice repair, as performed since 1945 provided highly successful results. Some surgeons were pissed by the learning curve of Shouldice to the extreme that they were very reluctant in attempting it [13].

The successive hallmark in groin hernia operation was the introduction of the method anchoring iliopectineal ligament the "medial parietal" wall in the repair by McVay" and "Barry J. Anson The importance of the iliopubic tract in the pre-peritoneal approach to repair was emphasized by Nyhus and associates. [14].

Marcy H.O. (1871) was the first to emphasize the importance of obliquity of inguinal canal and devised a surgery based upon the understanding of physiology of inguinal region. He performed the first antiseptic herniorrhaphy where the hernial sac was reduced. Antisepsis to France was brought by Championniere in 1881. His report about the first patient in which external oblique aponeurosis was slit to reveal a canal. The dissection and ligation of sac at the internal ring under direct vision was greatly appreciated In 1942, Malick used braided monofilament nylon for hernia repair. In 1958, Usher popularized use of polyamide and polypropylene sheets In 1987, Jack Abrahamson advocated his nylon darn tensionless repair. In recent years sheets of monofilament polyamide of knitted monofilament proline have been used extensively. Farquharson E.L. (1955, suggested that a hospital stay of 48 hours might eventually prove perfectly satisfactory; Palumbo has statistical evidence to

suggest that early ambulation and short hospital stay are 'associated' with both less morbidity rate and lowering of the incidence of complication, including the recurrence rate. Management of groin hernias using the short stay for surgery, with early mobilization had been started in the clinic of Shouldice, Toronto during 1945.

4.2 Anatomy of Inguinal Region

The groin also referred to as inguinal canal of the 'body' is situated at the lower portion of anterior abdominal wall, bounded by pubic tubercle

medially, anterior superior iliac spine superlaterally and thigh inferiorly.

Appears as a tube like structure that proceeds downwards and medially, with tissues like "round ligament" in women and spermatic cord in men. Floor of the inguinal canal is formed by 'inguinal ligament, also known as ligament of "Poupart". Inguinal ligament is formed by aponeurosis of external oblique muscle when it folds and inserts at the anterior superior iliac spine down to the bony tubercle (pubic). This folding edge is also called as the shelving edge and is precious for surgeons in hernia procedures [15].

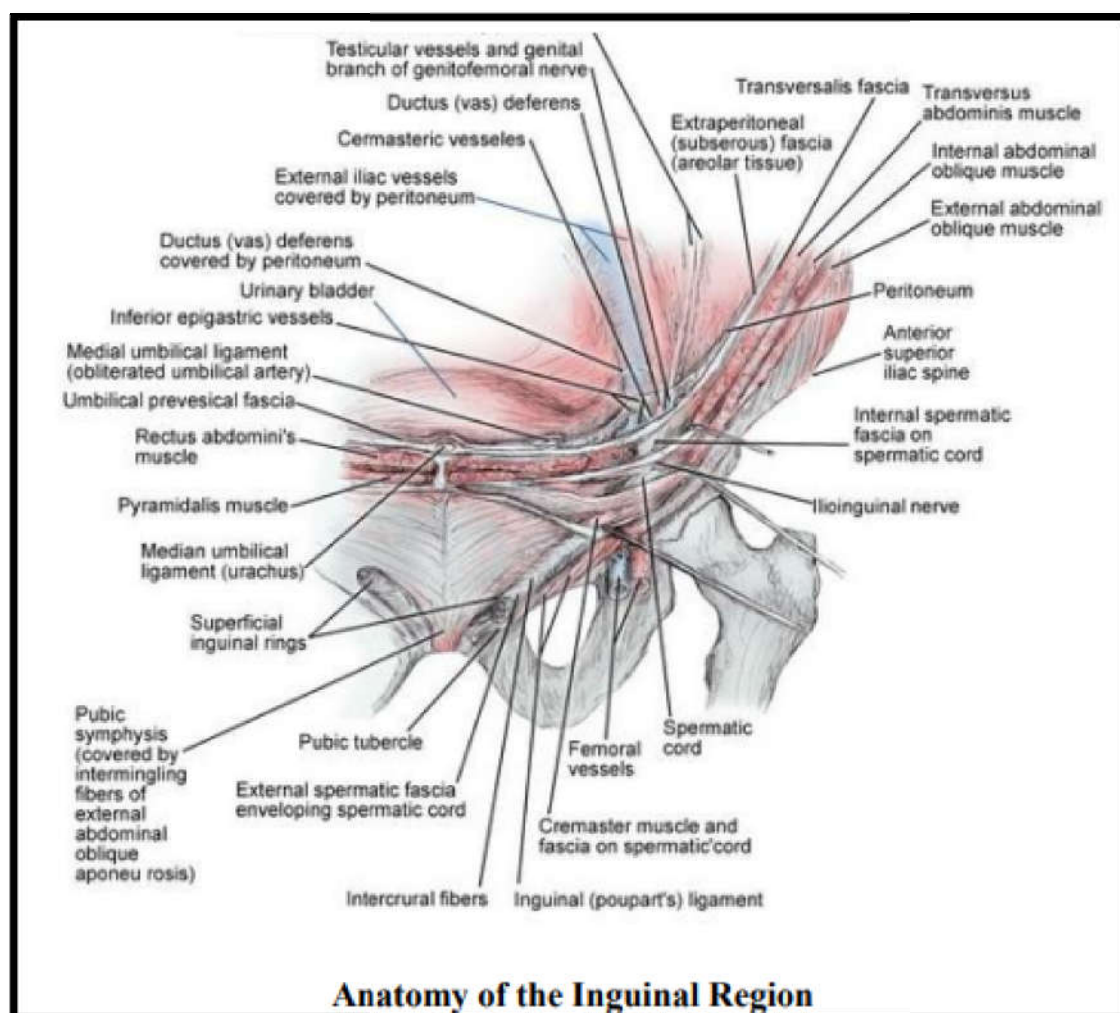


Fig. 1. Showing anatomy of inguinal region

The inguinal canal has 2 openings: the deep (internal) inguinal ring and the superficial (external) inguinal ring. The boundaries of the canal are as follows:

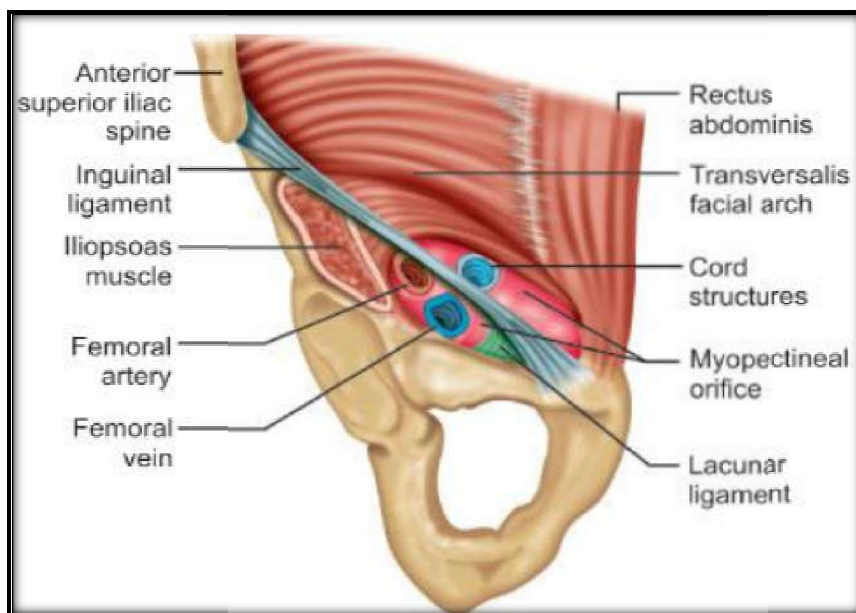


Fig. 2. Showing parasagittal diagram of Mid-inguinal region and its contents

4.3 “Myopectineal Orifice”

First described by Dr. Henri Fruchaud in 1956 as a distinct area of weakness in the pelvic region.

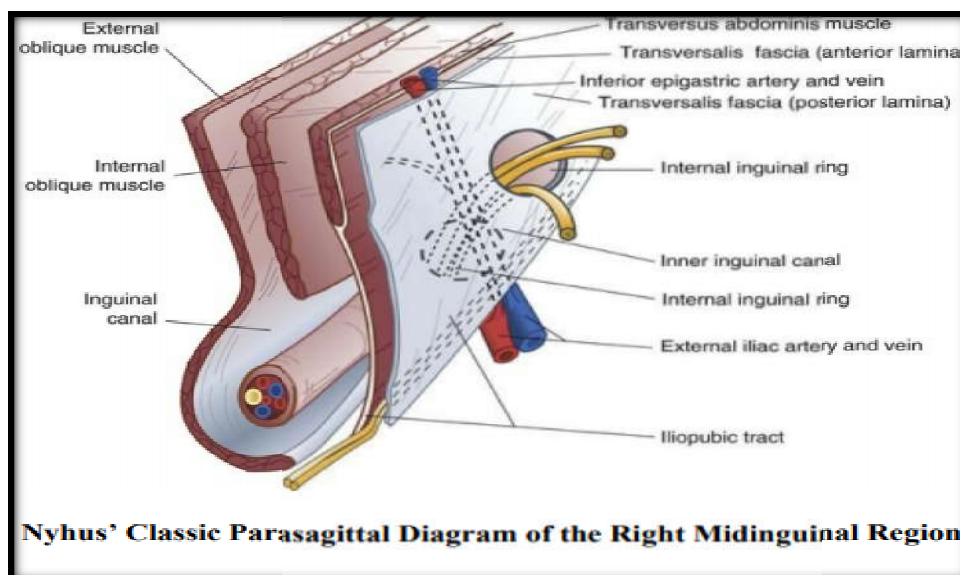


Fig. 3. Myopectineal Orifice of Fruchaud [24]

4.4 Myopectineal Orifice of Fruchaud

The inguinal ligament, which extends diagonally from the ASIS to the pubic tubercle, separates the MPO. The MPO's supra-inguinal space includes the internal inguinal ring from which the

spermatic cord penetrates the abdominal wall to travel through and through the scrotum through the inguinal canal. This is the site of a pathological opening or weakening of an indirect inguinal hernia in the Transversus Abdominis Fascia, causing the peritoneum and its contents

to bulge alongside the spermatic cord or round ligament across the inner ring. Owing to the usual anatomical openings in the tissue, the whole MPO is prone to the creation of hernias [16].

5. ETIOLOGY

The etiology of hernia formation is multifactorial. Now, it is theorized, that a defect, no matter what the cause, is common in all groin hernia patients.

- **Embryological:** One of the origins of groyne hernias is patent phase vaginalis. It illustrates, however, some of the indirect inguinal hernias at best, but fails to describe the other forms of groyne hernias
- **Anatomical:** “shutter mechanism” due to an underlying anatomic and metabolic abnormality may contribute to the functional impairment, here again, if there is failure of the mechanism, indirect herniation is more likely to result.
- **Metabolic Factors:** Systemic collagen defects have been related to the formation of groin hernias. Research conducted by Pans et al. (2001)says that some molecular alteration in collagen may be involved in the genesis of groin hernias. Inguinal defects can be due to connective tissue disorders, hereditary disorders, or associated with other diseases like Marfan’s syndrome, hip dislocation in childhood. All these diseases are a result of genetic mutations.
- **Other factors:**
 - Trauma- spontaneous or iatrogenic
 - Increased intra-abdominal pressure
 - Physical exertion

5.1 Classifications of Groin Hernias

Most important methods of communication in science and medicine are classifications, effective groin hernia classifications provide the following:

- Provides an anatomical idea for surgical dissection Helps in choosing the correct and effective repair for the respective problem.
- Assists in evaluating the related post-operative complications, grade of disability and time period of convalescence.
- Grants to study the relation between post-operative conclusions numerous hernia classifications have been proposed within the final 4 decades, which meet these criteria to changing degrees. The foremost prevalent classifications are depicted underneath.

Casten partitioned hernias into 3 stages: • stage one: an indirect hernia with a ordinary (normal) inner ring • stage two: an indirect hernia with an extended or misshaped inner ring • stage three: all femoral or direct hernias [17].

Two types of indirect hernia have been identified by the Ponka system: (1) uncomplicated indirect inguinal hernia and (2) sliding indirect inguinal hernia and three types of direct hernia: I a small defect in the medial aspect of the Hesselbach triangle near the pubic tubercle; (ii) a diverticular hernia in the posterior wall with an intact inguinal floor; and (iii) a large diffuse direct inguinal hernia of the pubic tubercle.

Halverson and McVay 35 Description:

Halverson and McVay (1970) based their classification on the repair technique and the pathologic anatomy and grouped them into four classes:

1. Small indirect inguinal hernia
2. Medium indirect inguinal hernia
3. Large indirect or direct inguinal hernia
4. Femoral hernia

Chart 1. Halverson and McVay classification for inguinal hernias

In study of Todd Heniford et al. 2008 proposed CAROLINA COMFORT SCALE specifically for patient who underwent hernia repair with prosthetic mesh and mailed to 1048 patient to assess responsiveness and acceptability. Study included at least 6 month post-operative hernia patient repair with mesh. Reliability was assessed by Cronbach's alpha coefficient (0.97) 72 percent patient preferred CCS questionnaire and 80 percent patient said it was easy 66 percent patient said it reflects their condition. 69 percent patient said they would like to fill CCS questionnaire over SF36 hence CCS better assesses quality of life in post-operative patient of hernia than SF36.

In study Martin Mc Carthy et al (2005) total 2,164 patient was there among them 1562 patient at 3 months follow up (only male patients) activities assessment scale was reliable with Cronbach's coefficient alpha 0.85 there were 3 subscales (work activities, sedentary activities, and physical functional activities) on the physical functioning patient was reporting better improvement post-operatively shows effect size of 1.20 for preoperative and post-operative changes in their activities assessment scale hence post hernia surgery AAS can be used to evaluate patient functioning Patient need to give 5 minute to complete this measurement system can be used in both research and office practice.

In study of Lucia Chung et al 2014 over 16 months period, patients were asked questionnaire who underwent elective inguinal hernioplasty. The questionnaire included visual analog scale, verbal rating scale and brief pain inventory. Out of 126 patients 75 percent patients complained of pain on brief pain inventory. In scoring system there was good correlation. Specifically ventral hernia patients gave more complaints of pain $p=0.004$ compared with other people and inguinal hernia patients. Hence BPI is easy and effective to assess pain on physical activity in post hernioplasty patients. Few of the studies on hernia were reviewed [18-21]. Evidences on similar problems were reflected in Global Burden studies [22-28].

6. CONCLUSION

This study will help to know quality of life in "post-operative" hernia patient with the help of "HERQL instrument".

CONSENT AND ETHICAL APPROVAL

As per international standard or university standard guideline patients consent and ethical

approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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