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Quality Of Life Assessment after Laparoscopic Mesh Hernioplasty for Inguinal Hernia

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Abstract
Introduction: *Use of mesh has shown to considerably reduce recurrence rates for hernia repair and the subsequent improvement in clinical outcomes. Focus has now been placed on quality-of-life outcomes in patients undergoing these repairs. The Carolinas Comfort Scale (CCS) quality-of-life (QOL) survey is used in our study pertaining specifically to patients undergoing laparoscopic mesh hernioplasty. Our goal was to assess if CCS can be used for assessment of QOL for inguinal hernia repair and to assess the rate of long term inguinal discomfort following repair.*
Materials & Methods: *It is a hospital based observational study carried out retrospectively on 188 individuals who underwent laparoscopic mesh hernioplasty during Apr 2010 to Nov2013. Data was collected telephonically by doctors who were not a part of operating team to reduce bias.CCS questionnaire was used after translating it in vernacular language, the parameters of CCS were tabulated and the respondents were asked to rate the questionnaire in terms of ease of understanding at the end of each interaction. Data analysis was done by SPSS software ver. 21.*
Results:*The response rate in present study was 55.3% with good level of understanding by all the respondents. Out of 104 respondents, 23 respondents experienced pain during various activities, 17 respondents experienced movement limitation and 8 respondents experienced sensation of mesh.*
Conclusion*: Using CCS, we were able to objectively measures discomfort, pain rates and activity limitation rates. CCS met the goal that any quality-of-life survey should accurately assess the participant's condition in an easy to understand and concise manner.*
Keywords: *CarolinasComfort Scale, Inguinal Hernia, Laparoscopic Mesh Hernioplasty, Quality of Life*

I. Introduction

With the concept of tension-free hernia repair and the subsequent improvement in clinical outcomes of recurrence, there has been a new focus placed on functional outcomes of hernia repair, specifically on quality of life (QOL).

In current scenario improvement in quality of life after any surgical intervention has gained interest. An improvement in quality of life represents an additional indication for elective hernia repair in minimally symptomatic inguinal hernia patient.There are two types of tools that have been used for assessment of quality of life: a) Generic measure and; b) Disease specific quality of life measures.

Generic measures can be used to assess quality of life after any surgical intervention.Short form 36(SF-36) is one of the commonly used generic methods to assess quality of life after any surgical intervention. So far SF-36 is considered as the gold standard for measuring quality of life for patients who have undergone hernia repairs with mesh[1]. The SF-36 measures eight domains of health-related quality of life i.e. physical functioning (PF), role-physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role-emotional (RE) and mental health (MH). None of these measures explicitly address the relationship between mesh repair and mesh symptom severity, however, living with a prosthetic mesh can affect each of these domains. For majority of the patients sampled, living with mesh did not seem to affect one's general or mental health in reviewed literature [1,2]. Quality of life after hernia repair in terms of chronic groin pain and paraesthesia have been studied so far as a measure of outcome in inguinal hernia repairs.

SF 36 has the shortcoming of being generic "one size fits all"type of tool that fails to specifically deal with QOL issues of hernia repair.Initially, many studies were done to assess quality of life but they did not have any standard format [2], with now that there is increased focus on quality of life, there is a requirement of standard tool that can assess quality of life effectively and objectively.

Disease specific quality of life measures are better options for these patients. One of the disease specific quality of life measures is Carolinas Comfort Scale (CCS) developed by physician and researchers from Carolina laparoscopic and advanced surgery programme (CLASP), to monitor quality of life in patients undergoing hernia repair [3]. The CCS is a 23-item, Likert type questionnaire that measures, on a scale of 0 to 5,

severity of pain, sensation and movement limitations from the mesh in the following eight categories: laying down(LD), bending over (BO), sitting up (SU), activities of daily living (ADL), coughing or deep breathing (CB),walking (W), stairs (S), and exercise (E). The CCS score is derived by adding the scores from each of the 23 items [3].

The present study aims to assess the quality of life of patients after laparoscopic mesh hernioplasty for inguinal hernia using CCS scale.

II. Materials And Methods

It is a Hospital basedobservational, retrospective study carried out on 188 individuals who underwent laparoscopic mesh henioplasty during Apr 2010- Nov 2013. All the individuals were operated by single surgical team; all underwent laparoscopic Transabdominal Preperitoneal mesh hernioplasty for inguinal hernia.

Meshused for hernia repair was 90% parietex (covedien^{TM}), 4% prolene soft (Johnson and Johnson^{TM}), 4% dynaPP light (dyna mesh ^{TM}), 02% polypropylene heavy mesh (Suture India ^{TM}). **Mesh fixation** was done by Protac 5mm (covedien ^{TM}).

Patient demography and operative details were collected from hospital records and CCS forms were filled by doctors, who were not a part of operating team to reduce bias. Each of the 188 patients who underwent laparoscopic TAPP mesh hernioplasty during study period were contacted telephonically.

CCS questionnaire was used after translating it in vernacular language, the parameters of CCS were tabulated and the respondents were asked to rate the questionnaire in terms of ease of understanding at the end of each interaction.

Collected data was entered in Microsoft excel sheet and analyzed using SPSS software ver. 21.0.

III. Results

Out of the total 188 patients, 104 responded and all of them rated good level of understanding of CCS scale (response rate 55.3%) [Table 1]. There were 101 males and 3 females. Out of 104 respondents 23 respondents (22.5%) experienced pain during various activities. Majority of respondents experiencing pain belonged to age group of > 50 years and it was noticed that majority of respondents complained of pain during bending, coughing and climbing up and down stairs. Respondents felt least pain in lying down position. A total of 8 respondents (7.8%) experienced sensation of mesh. Sensation of mesh was predominantly felt during bending, walking and climbing up and down stairs. It was observed that respondents of younger age groups (<40 years) did not experienced such sensation. A total of 17 respondents (16.7%) experienced movement limitation, three fourth of them were > 60 years [Table 2].

IV. Discussion

Due to reduced recurrence of hernia in current surgical practice with the use of tension-free hernia repair, focus is now being placed on functional outcomes of hernia repair, specifically on quality of life. Because of the complexities involving in quality-of-life measures, it is very important to consider what purpose the measure is going to serve when choosing between various quality-of-life surveys [4].

Disease-specific quality-of-life measures are more sensitive for detection and quantification of small changes that are important to clinicians or patients. These have been promoted for years by many investigators in oncology [5,6] and in diseases such as gastroesophageal reflux disease [7,8] and Crohn's disease [9]. In contrast, generic measures are used primarily to compare outcomes across different populations and interventions [10]. For assessment of quality of life after mesh hernioplasty, a mesh-specific or hernia-specific instrument is crucial to effectively understand how surgical repair with mesh affects patient quality of life.

One of the disease specific quality of life measures is Carolinas Comfort Scale (CCS) which uses patient questionnaire to ascertain quality measure for pain [3]. One argument against a disease-specific quality-of-life survey is that it may be too specific and detects insignificant changes that do not affect overall mental and physical well-being. It is true that the CCS is concerned only with physical well-being and seems to have more power when comparing mesh types or repair techniques. But it still represents a powerful tool for overall health because the total CCS score is highly correlated with the physical and mentalsummary scores for the SF-36, providing evidence that the CCS does measure overall mental and physical well-being.

Recent evidence indicates that 3% to 6% of patients will have severe pain, and up to 31% will have chronic pain after inguinal hernia repair [11-14]. In our study, 22.5% had chronic pain after hernia repair while none of them complained of severe pain score of 4 or more.In a study comparing laparoscopic and open repair of inguinal hernias, laparoscopic hernia repair offered an advantage to patients in terms of their postoperative pain [15].Long term results showed that laparoscopic repairs of inguinal hernia are associated with considerably less parasthesia and groin pain than open repairs are at least 5 years after operation[16]. Despite such differences in specific aspects of patient health state for laparoscopic and open surgical techniques, they were not reflected in the general perceptions of health on the SF-36[15].

Advantages of the laparoscopic technique were evident in the categories that CCS specifically addresses i.e. movement and coughing, but not at rest. [15]. It is thus evident that CCS could prove to be better than SF-36 in its content and focus when specifically applied to hernia repairs.

In our study we observed that after translating CCS in Hindi it was easily understood by all the respondents. The response rate was 55.3% when the questionnaire was asked telephonically which is far better as compared to mailed questionnaire which was used by Heniford et al. with response rate of only 13% [1].

V. Conclusion

Impairment in quality of life is a major reason why hernia patients seek surgical repair. By using CCS, we were able to objectively measure: discomfort, pain and activity limitation rates. CCS met the goal that any quality-of-life survey should accurately assess the participant's condition in an easy to understand and concise manner.

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Tables

Table 1. Distribution of subjects who responded to the telephonic follow up

Total Patients	188
No. of Responders	104
% Responders	55.3%

Table 2. Distribution of patients based on Complaints

Complaints (n-102)	**N**	**%**
Pain	23	22.5%
Sensation of Mesh	8	7.8%
Movement Limitation	17	16.7%