

Use of health related quality of life tools in upper gastrointestinal surgery

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SUMMARY

The objective of this article is to review the literature and discuss the various tools used in upper gastrointestinal surgery for the measurement of health related quality of life (HR-QOL) and highlights various outcome variables that affect the HR-QOL among patients of common upper gastrointestinal disorders. The paper reviews HR-QOL articles published in the last 25 years on different upper gastrointestinal curative or palliative procedures. The paper used an HR-QOL method, which is a questionnaire, which is utilized to assess the changes in the health status of patients after a surgical intervention. These surveys are of increasingly importance, as health care providers are challenged to justify treatment approaches and rationale for any surgical intervention. These HR-QOL tools are very helpful for the evaluation of subjective outcome of common upper gastrointestinal surgical procedures like Gastrointestinal Quality of Life Index (GIQLI) and Quality of life in reflux and dyspepsia (QOLRAD) for Nissen fundoplication, Spitzer's QOL index for gastrectomy, Short Form 36 (SF-36) for achalasia and GIQLI for peptic ulcer disease. The paper concludes that use of validated and reliable health instruments in upper gastrointestinal surgery is directed at measuring the impact in a reproducible and valid fashion. Curative or palliative procedures should be offered to the patients of upper gastrointestinal disorders after the assessment by HR-QOL tools. As the impairment of functions that may occur after different operations vary considerably, an operation-specific assessment of HR-QOL for each type of surgical procedure is becoming an essential principle to follow in a successful healthcare system.

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Introduction

Based on the modern concepts of health related quality of life (HR-QOL), the principle criteria guiding the patients' acceptance of treatment are most often the patients' subjective feelings i.e. the quality of their lives after surgical, medical or palliative intervention for any upper gastrointestinal disorder [1]. Particularly, surgery offers patients to trade illness related present discomfort and health risk for future gains, in gauging the achievements of surgical treatment. It is important to measure the quality of functional results, which are granted to the patients after any surgical treatment. Another reason which makes the HR-QOL

assessment an essential phenomenon is that "surgery is forever" and cannot be undone, unlike medicine, which can be stopped to control the unwanted side effects. Broadening the choice of endpoints beyond traditional, so-called "hard" variables, and including HR-QOL in surgical studies have many advantages for both surgeons and patients.

The HR-QOL studies have been developed and performed by both surgeons and non-surgeons with psychometric support [2]. Conduction of research on HR-QOL is helping the surgeons to bridge another divide, opening doors to show more sensitivity, and leading to better communication with their patients and their families. A free, open, polite

and frank discussion, about HR-QOL gains, as a benefit of surgery, at the time of counselling will go a long way in ensuring that patients' perspectives get their rightful place in decision-making [3]. In this way, both patients and surgeons will benefit from the measurement of HR-QOL. That is why the use of objective criteria (biomedical model) has been replaced by quality of life of the patient (outcomes model) to assess the efficiency of a healthcare system [4]. The objective of this article is to review the literature and discuss the various tools used in upper gastrointestinal surgery for the measurement of HR-QOL. Another purpose of this review is to discuss various outcome variables that affect the HR-QOL.

Surgery for the carcinoma of oesophagus

HR-QOL assessment is an important tool to evaluate the adequate management of patients with oesophageal cancer. It has assumed even more importance in the light of evidence that supports a relationship between patient-rated scores of HR-QOL and improved survival [5, 6]. Dysphagia being the most common symptom of carcinoma of esophagus can be troublesome and can affect all aspects of quality of life [7]. Radical resection (oesophagectomy) remains a formidable surgical procedure for improved survival. The radical resection of the esophagus for carcinoma results in a strong negative impact on HR-QOL. This effect is transient for patients who survive for 2 or more years. After this period their general quality of life is similar to that of healthy individuals of the same age.

This finding should be considered when selecting patients for surgery [8, 9]. Of the several factors analysed, only tumour recurrence ($P < 0.01$) and anastomotic stricture ($P < 0.05$) lower the quality of life significantly [10]. Factors affecting late functional outcome were analysed in two studies and it was shown that patients who had a cervical anastomosis had significantly fewer reflux symptoms ($P < 0.05$). Dumping syndrome occurred more frequently in younger patients ($P < 0.05$) and women ($P < 0.01$) [11, 12]. Duodeno-gastroesophageal reflux may eventually be the major cause of morbidity in 10 years after oesophagectomy for carcinoma. Posterior mediastinal reconstruction is a preferred method to achieve the curative resection and to

avoid possible local recurrence. However, in the palliative situation, the retrosternal route of reconstruction can also be used, as the functional disadvantages have no negative effect on the quality of life [13]. Similarly, stent placement, as the first choice for inoperable malignant stenosis or oesophageal fistula has improved HR-QOL as much as multiple dilatations by endoscopies [14, 15].

It has been shown that patients who were treated by oesophagectomy reported significantly better physical, emotional, cognitive, and global health scores than those in the palliative treatment group [16]. Wong et al have shown that even a palliative oesophagectomy provides enhanced HR-QOL with marked symptomatic benefits and enjoyment of daily living comparable to that observed following curative resection [17]. After curative surgery, most patients have a good appetite and they can take ordinary solid foods. However, about one-third of the patients complain of passage disturbance on swallowing, abdominal pain or diarrhoea after a meal. In these patients management should focus on symptoms that interfere with the patients' HR-QOL. HR-QOL after oesophagectomy, when analysed in detail, shows that the main psychosocial stress is less in the areas of anxiety and depression than in a loss of social activity and impairment of physical capacity.

Surgery for gastric cancer

Major concerns in HR-QOL after gastrectomy for carcinoma of the stomach are the reservoir function of neo-stomach, absence of dumping, absence or under-performing reflux mechanism and the ability to eat well for the maintenance of weight. Control of these gastrointestinal symptoms is important to minimize or completely abolish the impairment of HR-QOL after partial or complete gastric resection. A variety of instruments and scales have been used to quantify the HR-QOL after gastrectomy. The prime examples include Visick criteria, Karnofsky index, Spitzer's QOL index, Cuschieri's assessment, GIQLI, Goodness of fit index (GFI), and EORTC questionnaires [18].

When restoring the continuity of the gastrointestinal tract after gastrectomy, exclusion of the duodenal passage, although simpler, is responsible for alterations in the

physiology of gastric emptying due to bypassing the pyloric sphincter. Among various techniques used for bypass, the dysmotility of the Roux limb is seen only in 10-30% of patients and severe forms are even less frequent. Pouch procedures like the Hunt-Lawrence pouch are used with the Roux-en-Y procedure to augment the neo-stomach's reservoir capacity and to slow down the rapid emptying of food in the small intestine, as both functions are important to avoid dumping syndrome. Food transit through the pouch follows a linear decreasing function and is significantly slower compared to the exponential passage of oesophago-jejunosomy, although both patterns remain still accelerated compared to the physiological ranges of gastric emptying [19-21]. The advantages of a pouch become apparent after a considerable period of time and the real assessment of its benefit should be performed after a long follow-up [22, 23]. A randomised controlled trial has shown that a short pouch is more effective than a long pouch in maintaining nutritional maintenance to minimise the symptoms of reflux [24].

Interposition of jejunal loop between the oesophagus and duodenum, although technically more demanding, restores the duodenal continuity, which maximizes absorption and helps in restoring nutrition. Although preservation of the duodenal passage is the more physiological approach to the restoration of the continuity of the digestive tract, surprisingly the expected impact of the duodenal passage on symptoms, nutrition and outcome could not be ascertained by most of the studies, thereby negating the additional operative effort of jejunum interposition. Two randomised controlled trials have compared the outcome after jejunal interposition [25, 26]. After jejunal interposition with pouch formation; statistically proven benefits for pouch reconstruction could not be demonstrated by either study. Perhaps the reason for failure of the physiological superiority of preservation of the duodenal passage not getting translated into clinical benefit lies in the denervation of the jejunal interposition. Similarly, the pylorus, the pyloric branch of the vagus nerve and the lower oesophageal sphincter are saved in modified surgical procedures ("nearly total gastrectomy" or "function-preserving gastrectomy"), wherever oncologically

feasible, in an attempt to improve the motility of the reconstructed digestive tract [27-31]. Clinicians now realize that malnutrition is not an inevitable consequence of total gastrectomy and it can be prevented by an adequate calorie intake, as a close relationship has been observed between dietary intake and postoperative nutritional parameters. In gastrectomized patients a strict nutritional follow-up can ensure an adequate dietary intake [32].

Most authors agree that maintenance of nutritional status and quality of life is similar after partial/subtotal and total gastrectomy, hence total gastrectomy, when clinically indicated, can be safely done without excessive concern about postoperative nutrition [33-35]. A randomised controlled trial has shown that patients who undergo subtotal gastrectomy have a better outcome during the first postoperative year, but patients given a gastric substitute after gastrectomy improve dramatically with the passage of time and have an even better outcome in the long run [36]. Only one prospective randomised controlled trial has compared various techniques of reconstruction after partial gastrectomy, and it favoured Roux en Y as the technique of choice when compared with Billroth I and Billroth II techniques of reconstruction [37].

Patients undergoing total gastrectomy enjoy a good quality of life and most of them return to the preoperative lifestyle in 18 months. The global health status is not negatively influenced by D2 lymphadenectomy and extended gastrectomy [38]. Patients with splenectomy are more affected by treatment than patients without splenectomy [39]. As a palliative measure, gastro-jejunosomy and total gastrectomy performed with P2 or P3 peritoneal dissemination has no beneficial effect on the prolongation of survival or improvement of HR-QOL of patients with gastric cancer [40]. Self-expanding metal stents are a safe and efficacious method for palliating malignant gastric outlet obstruction, which has gone to a scale of severity according to gastric outlet obstruction scoring system [41].

Surgery for gastro-oesophageal reflux disease (GORD)

Many HR-QOL scales have been designed and used for Gastro-oesophageal reflux disease.

The most commonly used tools include Quality of life in reflux and dyspepsia (QOLRAD), Gastro-oesophageal reflux disease Health related QOL (GERD-HRQOL), Gastrointestinal Quality of life index (GIQLI), Gastrointestinal Symptoms Rating scale (GSRS) and Psychological General Well-Being Index (PGWBI) [42, 43]. It has been consistently shown in many studies that the HR-QOL is improved in patients of GORD after fundoplication (open and laparoscopic) and is close to the level expected in a healthy individual [44-46]. Heartburn score, dysphagia score, regurgitation scores and global QOL scores are superior to medical therapy after laparoscopic fundoplication [47]. Both partial and complete wrapping offer an effective form of therapy for reflux disease with over 85% patient satisfaction but partial fundoplication has been found to be associated with fewer mechanical side effects [48].

Surgery for GORD is aimed to provide a long-term benefit and eliminate the need for medications. However, reflux symptoms may persist even after surgery due to functional dyspepsia and may spoil the expected outcome in a few patients deranging the quality of life [49]. Apart from medical and surgical interventions many endoscopic techniques have been evolved to control the reflux disease. These techniques include endoscopic suturing, endoscopic radio-frequency treatment of the lower oesophageal sphincter [50], and injection of ethylene vinyl alcohol polymer into the lower oesophageal sphincter. The endoscopic techniques may improve the quality of life but it is a bit too early to compare their outcomes with standard surgery, which remains the gold standard.

Surgery for oesophageal achalasia

GIQLI, PGWBI and 36-item Short Form (SF-36) have been frequently used to assess the quality of life of the patients of achalasia after both open and laparoscopic Hellers myotomy [51, 52]. All available intervention (open, laparoscopic, endoscopic) do not restore normal oesophageal motility, but surgical management of achalasia offers excellent results in most patients with HR-QOL scores matching the controls in the long follow-up of 18 months [53, 54].

Surgery for gastro-duodenal ulcer disease

Many researchers have assessed HR-QOL, for both operative and medical management of peptic ulcer disease. At one time, the major share of research was focussed on the effects of various types of vagotomies and their respective outcomes, but the advent of anti-histamines agents and proton pump inhibitors have made routine surgery of acid peptic disease almost obsolete. Prior to the development of modern day HR-QOL indices, outcomes of operations for peptic ulcer were measured in terms of Visick grading. Visick grading may be termed as a forerunner of modern day HR-QOL indices for peptic ulcer disease [55]. Surgery is reserved only for complications of peptic ulcer disease like gastric or duodenal perforation, uncontrolled bleeding, stricture formation and suspected malignant transformation. By using gastrointestinal quality of life index (GIQLI), it has been recently shown that peptic perforation does not result in any long-lasting impairment of HR-QOL in survivors and the quality of life improves to near normal in 6 months time after omental patch repair. It was seen that the overall GIQLI score as well as its GI core, GI disease-specific, psychological and physical and social components significantly increase over 3 and 6 months of follow-up, reflecting improvement in HR-QOL as perceived by the patients [56].

Implications

Assessment of HR-QOL has been the missing measurement in healthcare systems all over the world but now it has 'come of age'. HR-QOL is being incorporated into the decisions of clinicians and policy-makers in almost every speciality of medicine and surgery. However, HR-QOL measurement in surgery is currently done mainly for the research purposes, and unless it finds a beneficial place in routine clinical practice, it is likely to remain a philosophical exercise. Developments in this field will lead to widespread use of HR-QOL measurements in all surgical disciplines as a part of routine clinical practice. HR-QOL as a prediction of treatment response is another interesting option, even though more work needs to be done in this area. Because the impairments of function that may occur after different operations vary considerably, an operation-specific assessment of HR-QOL for each type

of surgical procedure is becoming an essential principle to follow in a successful healthcare system. Another important area of growth is incorporation of HR-QOL in both the medical school curriculum and in the continuous professional development programme for clinicians.

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