Relationship between preoperative symptoms and improvement of quality of life in patients undergoing elective inguinal herniorrhaphy

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Background. *Improvement of quality of life (QoL) is the ultimate goal for inguinal hernia repair. Data on QoL before surgery are scarce, and it is not known whether postoperative improvement of QoL relates to preoperative symptoms.*

Methods. *Symptoms and self-reported QoL were evaluated and compared with matched control patients from a normal population in 309 male subjects before and 1 year after unilateral open inguinal hernia repair.*

Results. *Before operation, 91 % of patients noted a bulge, whereas 75% had symptoms, most commonly pain (64%); the other 25% were asymptomatic. Physical QoL scores (physical component score) were decreased in patients compared with matched controls (median [interquartile range] PCS 47 [38–53] vs 54 [48–57]* $P < .05$*), whereas mental scores (mental component score) were not affected (*$P = .401$*). PCS was less in patients with pain compared with those without pain (44 [35–50] vs 53 [48–56]* $P = .001$*). In patients without pain, no difference was found compared with control patients (*$P = .57$*). At 1 year after surgery, PCS was increased to 55 (53–57) in patients and was slightly greater than control patients (*$P < .05$*). The increase was greater in patients who reported preoperative pain (from 44 [35–50] to 55 [52–57] vs from 53 [48–56] to 56 [54–57],* $P < .00001$*). MCS did not change after inguinal herniorrhaphy.*

Conclusion. *Preoperative affection as well as postoperative improvement in self-reported physical QoL seems to be strongly associated with preoperative inguinal pain. This finding underscores that occurrence of preoperative pain is an important symptom to evaluate before taking the decision to operate for inguinal hernia. (Surgery 2014;155:106-13.)*

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Since the introduction of the open, tension-free hernia repair developed by the Lichtenstein group in 1984,[1] low recurrence rates of approximately 1–2% have been reported repeatedly.[2] In recent years, more attention has been paid to quality of life (QoL) and chronic groin pain after inguinal hernia repair. Chronic pain has been reported to occur in the range of as high as 50–60% 1 year after *inguinal herniorrhaphy* and is associated with decreased QoL, which manifests as marked limitations in daily life, such as daily work, sports, and sexual activities.[3-5] To evaluate outcome after inguinal hernia repair, postoperative results need to be compared with QoL and symptoms, such as pain and/or discomfort, before the operative procedure, but very few studies evaluating results after inguinal hernia repair report such data.

The purpose of this prospective study was to evaluate pre- and postoperative QoL in relation to preoperative symptoms in a group of men undergoing elective, tension-free, unilateral primary herniorrhaphy under local anaesthesia in day care surgery. We hypothesized that outcome in terms of QoL after inguinal hernia repair is related to preoperative symptoms and self-reported QoL.

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METHODS

Between November 1, 2006 and January 31, 2009, all male patients scheduled for primary, open, unilateral hernia repair in day care surgery under local anesthesia at one single elective hernia clinic were considered for participation in the study. Patients with impaired cognitive function, substance abuse, markedly limited mobility, or decreased capacity to communicate in Swedish were not eligible. The study (NCT01699971) was approved by the regional ethics committee, and all participants gave their written informed consent after being informed orally as well as in writing about the nature and the purpose of the study.

According to the local program of hernia management in our clinic, patients with an asymptomatic hernia or with only minor symptoms were, in general, recommended not to undergo operation. The study protocol also included randomization between operation using one of three different meshes (Lichtenstein with polypropylene mesh, Prolene Hernia System [PHS], and Ultrapro Hernia System [UHS], respectively).[6] Data on comparisons between groups randomized to different meshes are not be presented in this report; however, our results are adjusted for the operative technique used, as well as for other possible confounders (see below at the end of the methods section).

To standardize operative technique, the study protocol also stated that the surgeon should be well experienced in inguinal hernia surgery and should have performed at least 50 procedures independently to be allowed to operate within the study. Nine experienced surgeons performed, evenly distributed, all procedures.

Included patients were asked to fill out two different protocols preoperatively and at 1 year after inguinal herniorrhaphy. First, a hernia-specific protocol that has been used previously and shown to accurately reflect symptoms related to inguinal hernia was used.[7] In this, it was documented whether the hernia was painful at rest and/or during motion, and the degree of any pain was quantified with the use of the visual analog scale (VAS, 0–10). Also, in this protocol any other discomfort from the groin was reported and described with the patient's own words.

Second, QoL assessment was carried out by use of the Swedish version of the Short Form (SF)-36, which was available with data on all parameters from age- and sex-matched controls selected randomly from the Swedish population during 1998–1999.[8] For the current study 3,857 subjects matched for age (18–75 years) and sex (male) were selected. In brief, SF-36 is a questionnaire containing 36 questions regarding the patient's physical and mental health. The patient scores four physical and four mental health dimensions that are transformed into a total score between 1 and 100, where 100 represent the best possible score. All physical and mental dimensions are summarized separately to physical component score (PCS), and mental component score (MCS), respectively. In addition, several specific questions from the physical dimensions of SF-36 were selected and processed separately. The questions were related to restrictions in specific tasks in daily life and capacity to perform regular work. The alternative answers for such restriction were "none," "mild," "moderate," or "severe," which were dichotomized into either "none/mild" or "moderate/severe." Two designated nurses collected all data at the time when patients had been posted on the waiting list for operation.

At 3, 6, and 12 months after *inguinal herniorrhaphy*, the two questionnaires were sent to and filled out by all patients. Patients reporting any symptom suggestive of a complication or recurrence were contacted by a study nurse, who offered and recommended a visit to a surgeon, who was blinded to group allocation. The same recommendation was also given to any patient calling spontaneously during the follow-up time and complaining of such symptoms. Patients who did not answer were contacted by a surgeon by phone. If the patient still did not respond, they were registered as "missing data."

The sample size of the current study was based on the power calculation for the randomized study comparing three different meshes mentioned previously (100 patients in each group).[6] Because we were not aware of any robust data reporting changes in QoL 12 months after open inguinal repair, no specific power calculation was performed for the current study. Changes in QoL according to SF-36 and pain according to VAS were primary and secondary end points, respectively.

Data are presented in numbers (percentages) or as median (interquartile range). For univariate comparison between and within groups, the Mann-Whitney *U* test, the Wilcoxon test, χ^2 test, or Student two-tailed paired or unpaired test were used, when appropriate. Multiple linear regression was used for adjusted comparisons of PCS and MCS pre- and postoperatively. The adjustment variables were: age, body mass index, type of mesh used, duration of the operation, and concomitant disease. All data were analysed using STATISTICA