

# The improvement of quality of life a indication for elective surgery in elderly patients with minimally symptomatic inguinal hernia



Ann. Ital. Chir., 2014 85: 136-142  
pii: S0003469X14020946

Rosalba Patti, Paolo Aiello, Anna Maria Caruso, Bianca Cudia, Gaetano Di Vita

General Surgery Unit, Department of Surgical and Oncological Sciences, University of Palermo, Italy

## The improvement of quality of life a indication for elective surgery in elderly patients with minimally symptomatic inguinal hernia

*AIM: Effectiveness of surgery on quality of life in elderly affected by minimally symptomatic inguinal hernia.*

*MATERIAL OF STUDY: Forty male patients aging over 75 years affected by minimally symptomatic inguinal hernia were included. In the first group were allocated 15 patients who refused hernioplasty; in the second were included 25 patients who underwent early elective hernioplasty using an high density polypropylene mesh under local anesthesia. The SF-36 questionnaire was administered to all patients at the time of enrollment and 6 months after.*

*RESULTS: All 8 domains of SF-36 and his related two comprehensive index, Mental Component Summary and Physical Component Summary scores, improved 6 months after surgery in patients of the second group. No significant differences were detected in the first group.*

*DISCUSSION: There is no scientific evidence concerning early repair or watchful waiting strategy for elderly with minimally symptomatic inguinal hernia. in the last years, the evaluation of quality of life have a central role in the decision making of disease.*

*CONCLUSION: Improvement of quality of life in elderly with minimally symptomatic inguinal hernia underwent to early hernia repair hernioplasty could represents a further indication for elective hernia repair.*

KEY WORDS: Elderly, Inguinal hernia, Quality of life

## Introduction

Inguinal hernias are common in elderly patients due to the weakness of the abdominal wall. The incidence rises from 11 per 10,000 person-years aged 16-24 years to

200 per 10,000 person-years aged 75 years and above<sup>1</sup>. Minimally symptomatic inguinal hernia is defined as hernia with complaints that do not interfere with daily normal activities<sup>2</sup>.

Although about one third of patients presenting with a minimally symptomatic inguinal hernia<sup>3</sup>, the indication for the treatment in the recent guidelines published by European Hernia Society<sup>2</sup> are not clear. Also, the results of two randomized clinical trials<sup>4,5</sup> published in 2006 comparing early operation versus watchful waiting, strategy is not conclusive. Moreover, the results from three studies published in 2011 are not conclusive<sup>6-8</sup>. Surgical outcomes traditionally have been measured by survival and rates of morbidity<sup>9</sup>. Recently evaluation of quality of life (QoL) has achieved a central role in

*Pervenuto in Redazione Novembre 2012. Accettato per la pubblicazione Maggio 2013*

*Correspondence to: Prof. Gaetano Di Vita, MD, Head of General Surgery Unit, University of Palermo, Via Autonomia Siciliana 70, 90143 Palermo, Italy (e-mail: divitagaetano@libero.it)*

management and decision making since the main goal of care has been refocused on maintaining the longest possible time of being disease free from symptoms. Some studies including adult and not adults patients have been showed that the inguinal hernia is responsible for the impairment of QoL and that the hernioplasty contributes to improve it <sup>5,9-11</sup>. Different questionnaire have been used to evaluate QoL. Among them, the brief version of Medical Outcome Study, a short form with 36 answers (SF-36), is the most used. Aim of this study was to prospectively evaluate the effect of surgery on QoL in a consecutive series of elderly affected by minimally symptomatic inguinal hernia.

## Materials and Methods

Forty male patients aging over 75 years with primary minimally symptomatic inguinal hernia were included in this prospective study.

All patients gave a written informed consent and the local ethics committee approved the study.

Hernioplasty was suggest for all patients. Fifteen patients refused hernioplasty and were allocated in the first group, whereas 25 patients who underwent elective hernioplasty were allocated in the second group. None of these subjects, at the time of hospitalization claimed complications but all were minimally symptomatic.

Exclusion criteria were the hernia recurrence, the presence of a large umbilical hernia, hepatic cirrhosis and advanced neoplastic. All hernioplasties were performed after short-term antibiotic prophylaxis with 2 gm i.v. Cefazidime one hour before surgery. In all patients hernioplasty was carried out under local anesthesia using a mixture of 40 ml 1% mepivacaine and 20 ml 0.5% bupivacaine plus 2 ml sodium bicarbonate. All patients received a tension-free Lichtenstein hernioplasty using an high density polypropylene mesh. All operations were performed by the same surgical staff.

## QOL ASSESSMENT

The SF-36 is a widely used and validated scale, which yields scores for eight dimensions of health-related QoL: (1) Physical functioning (PF): limitations to physical activities due to health, such as self-care, walking, and climbing stairs; (2) Role physical (RP): interference with work or daily activities due to physical health; (3) General health (GH): overall evaluation of health; (4) Bodily pain (BP): pain intensity and how this pain affects work in and out of the home; (5) Vitality (VT): how full of energy the patient feels; (6) Mental health (MH): overall emotional and psychological status; (7) Social functioning (SF): how much health interferes with social interactions; (8) Role emotional (RE): limitations to work or daily activities due to emotional health.

The scores for each domain range from 0 to 100, 0 being the poorest and 100 the best possible health status. However, 0 is not equivalent to death and 100 is not equivalent to perfect health. Two comprehensive indexes of QoL were also evaluated: the Physical Component Summary (PCS) that equals the value of the physical subscale (PF, RP, GH, BP) and the Mental Component Summary (MCS) that equals the value of the psycho-social subscale (VT, MH, SF, RE) <sup>12,13</sup>.

We used an Italian adaptation of the SF-36 generic health-related QoL scale <sup>14,15</sup>. The SF-36 questionnaire was administered after a careful account by nursing staff. All nurses had received training and guidans from institution's geriatric physician. An identical follow-up questionnaire was presented to the patients, both surgically treated and untreated one 6 months later. Global analysis of all patients was made through PCS, MCS and evaluation of each of eight domains.

## STATISTICS

All statistical analyses were performed using a statistical program (GraphPad Instat Version 3.06 for Windows). Continuous variable were summarized by mean and standard deviation or median, categorical ones by frequencies. Data from each domain of SF-36 were analyzed using non-parametric tests. The Mann-Whitney test was used to compare the two questionnaire performed at the distance of 6 months for each domain of SF-36. The two comprehensive indexes of SF-36, PCS and MCS were obtained by the sum of the physical (PF, RP, GH, BP) and the psycho-social (VT, MH, SF, RE) subscale and analyzed by unpaired t-test two tailed. Any p-value < 0.05 was considered significant.

## Results

Patients of both groups were similar for age, anesthesiologic risk according to ASA grading, Barthel and Charlson Index, type of hernia according to Nhyus classification <sup>16</sup> and side of hernia (Table I). Patients affected by bilateral inguinal hernia were treated for both side in the same operation time. No significant complications were observed in any of these patients during surgery. The local anaesthetic procedure was well tolerated, and no case needed a conversion to general anesthesia. Fifteen patients who underwent surgical operation were discharged within 24 hours from surgery, 6 patients after 48 hours and 4 after 72 hours. No wound infections or hematoma were detected during the postoperative follow-up. During the post-operative hospital time, urinary retention was observed in one patients. At 6 months after hernioplasty, all patients were alive, no hernia recurrence was observed and no patients claimed pain. All patients who refused surgical operation

TABLE I - Demographic and clinical features of elderly according to treatment received.

	Untreated group (n=15)	Surgically treated group (n=25)	P
AGE (Years)			
Mean ± SD	75.2 ± 6.8	74.6 ± 5.3	NS
TYPE OF HERNIA (Nyhus)			
II	1 (6.7%)	0	NS
III A	3 (20.0%)	6 (24.0%)	
III B	7 (46.7%)	12 (48.0%)	
IV A	4 (26.6%)	12 (48.0%)	
SIDE OF HERNIA			
Right	7 (46.7%)	12 (48.0%)	NS
Left	6 (40.0%)	9 (36.0%)	
Bilateral	2 (13.3%)	4 (16.0%)	
BARTHEL INDEX			
Mean ± SD	71.6 ± 28.7	68.3 ± 23	NS
CHARLSON INDEX			
Mean ± SD	11.8 ± 5.1	14.3 ± 4.3	NS
CLASS ASA			
I	-	-	NS
II	2 (13.3%)	4 (16.0%)	
III	8 (53.4%)	13 (52.0%)	
IV	5 (33.3%)	8 (32.0%)	

were alive 6 months after surgery, even though, one of them underwent emergency hernioplasty due to hernia strangulation.

#### THE ASSESSMENT OF QOL

A good compliance for SF-36 was observed for all patients who actively were involved in the study protocol, showing a high level of satisfaction. In fact, all patients completed their questionnaire both preoperatively and 6 months later. The comparison between the two groups performed at the time of enrollment did not show significant differences as regards all domains of SF-36 and MCS and PCS scores (data not shown). In patients underwent hernioplasty, all eight domains of SF-36 resulted significantly improved. This increase was more evident for BP, VT, PF, and GH (Fig. 1). In the same way MCS and PCS scores significantly increased as compared to preoperative values (Fig. 2).

In patients who refused hernioplasty the comparison was limited to 14 subjects because one patient underwent emergency hernioplasty after two months. The eight domains of SF-36 resulted unmodified at 6 months in comparison to baseline (Fig. 3). Similarly MCS and PCS values did not show any significant modifications (Fig. 4).

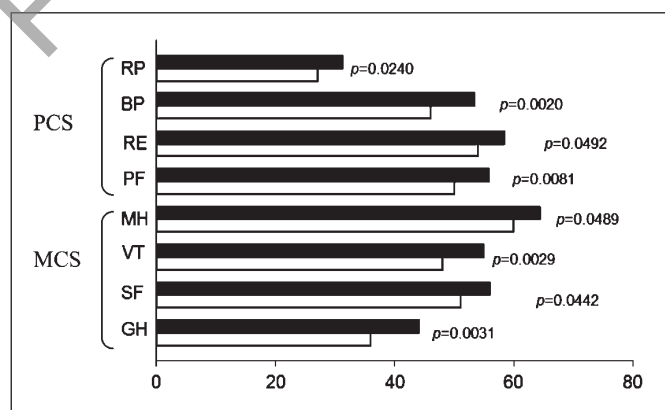


Fig. 1: Domains of SF-36 assessed in patients (n=25) who underwent hernioplasty. Data are expressed as median. White square: preoperative time; black square: postoperative assessment. Mann-Whitney test was used to compare preoperative and postoperative values.

#### Discussion and Comment

The results of our study showed at 6 months a significant improvement of all domains of SF-36 after early hernioplasty in elderly affected by minimally symptomatic inguinal hernia. On the contrary, in the patients who not

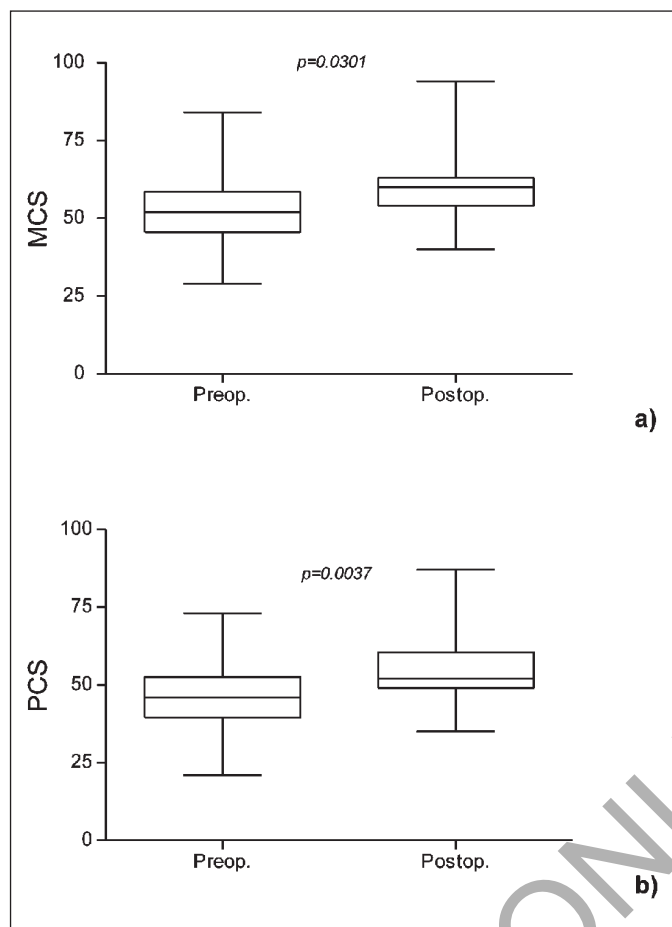


Fig. 2: Box Plots of MCS and PCS scores evaluated pre-operatively and after 6 months in patients (n= 25) who underwent hernioplasty. Mann-Whitney test was used to compare preoperative and postoperative data.

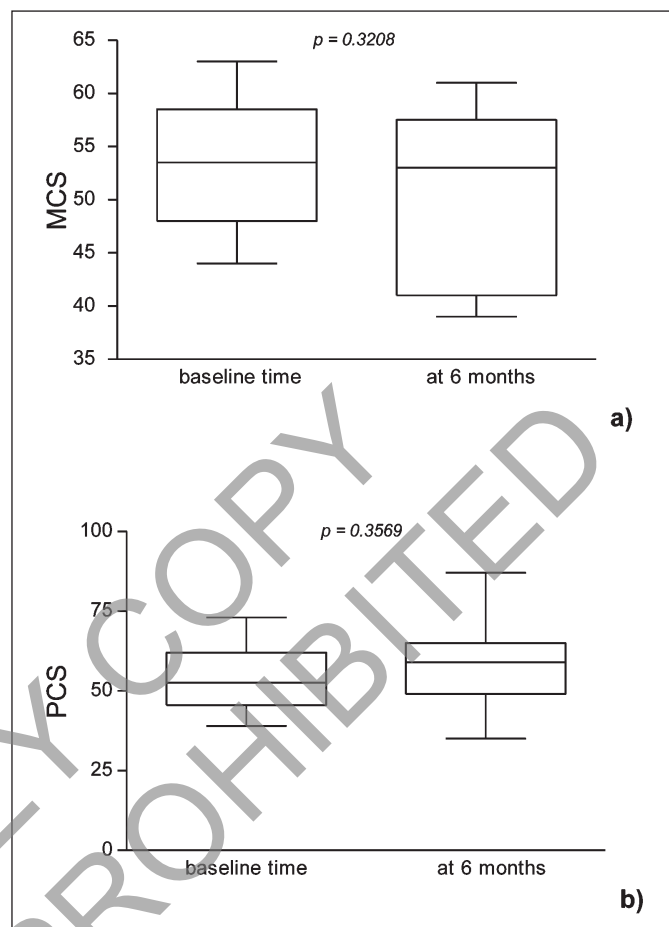


Fig. 4: Box Plots of MCS (a) and PCS (b) scores evaluated at baseline time and after 6 months in patients (n= 14) who refused surgery. Mann-Whitney test was used.

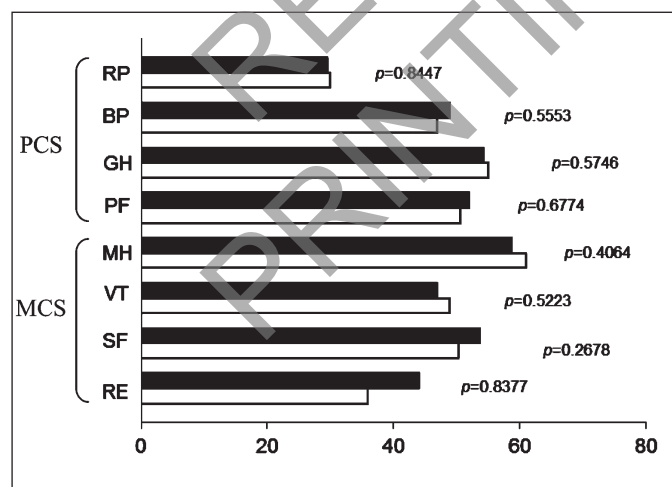


Fig. 3: All domains of SF-36 assessed in patients (n=14) who refused hernioplasty. Data are expressed as median. White square: baseline time; black square: control 6 months after. Mann-Whitney test was used to compare baseline time vs control 6 months after values.

underwent surgery, the QoL domains not gain any modifications.

To date, watchful and waiting strategy or early hernioplasty for the elderly affected by minimally symptomatic inguinal hernia, remains an unsolved problem<sup>17</sup>. A part for the residual life expectancy, different factors needs to be considered in the choice among non operative strategy and early hernia repair.

In addition with the common long-term complications, such as testicular atrophy, osteitis pubis, and problems with the prosthetic mesh, the developing of chronic post-operative groin pain<sup>17</sup> represents an important argument for consideration of watchful and waiting. This can be debilitating and in 3-6 per cent affects their work and leisure activities<sup>18</sup>. However, there are opportunities for identifying patients at high risk of persistent pain and optimizing surgical technique to reduce this complication. It is commonly believed that progression of hernia is inevitable and that surgery becomes more difficult if the hernia is left unrepaired for a longer time<sup>3,19</sup>. Chung

et al reported that the 72 per cent of patients with asymptomatic inguinal hernia, became symptomatic after 7.5 years. Also Hair et al<sup>3</sup> reported similar results. Emergency surgery of incarcerated or strangulation inguinal hernia has traditionally been regarded as carrying an increased mortality rates and complication rates when compared to elective procedures. Emergency repair in the elderly carries a mortality ranging between 3.5 and 22% and a complication rate as high as 60% in some series<sup>20-23</sup>. Data regards the risk of complication of minimally symptomatic inguinal hernia up to require emergency surgery are not clear. Ohana et al.<sup>17</sup> reports that the 30% of operated patients for incarceration were asymptomatic before the complication. Van den Heuvel et al.<sup>7</sup> reports that the strangulation risk is approximately 4 per 1000 patients per years, and risk factors for incarceration are age above 60 years, femoral hernia and duration of signs less than 3 months<sup>7</sup>. Fitzgibbons et al.<sup>4</sup> estimated that the lifetime risk of strangulation without operation for a 72 years old with minimally symptomatic hernia was one in 2941. Chung et al.<sup>8</sup> reported that the lifetime risk of acute presentation for conservatively managed minimally symptomatic inguinal hernia is very high. The prophylaxis of an inguinal incarceration can not represent the only rationale for elective inguinal minimally symptomatic hernia repair<sup>12</sup>. Over the last 15 years, there has been an increasing consensus regarding the centrality of the patient's point of view in the assessment of health status. In fact, the perception of one's own health status may be more relevant than prolonging length of life because patients are frequently more concerned about quality and disability than longevity. The majority of studies examine QoL with the use of SF-36 questionnaire. The SF-36 is a generic measure of QoL. The advantage of the SF-36 is that it has verified psychometric properties and they are well known by regulatory bodies and doctors. The use of generic measures also means that the changes in QoL can be benchmarked against other diseases and treatments. While it is widely used and respected measure, it has not been established whether it is well suited to measuring the chronic health related quality of life burden imposed by inguinal hernia repair<sup>24</sup>. Mathur et al.<sup>25</sup> using cross-sectional psychometric analysis have shown that otherwise healthy subjects with inguinal hernia have a significant lower QoL compared with age, sex, and comorbidity-matched controls. In all 8 domains of the SF-36 score, patients achieved lower scores than controls, including an impaired QoL in terms of their VT, SF, MH, and overall perceptions of general health<sup>25</sup>. Different studies show that the hernioplasty itself is able to improve QoL. However, this studies included both elderly and not<sup>5,9,10,26</sup>. In a study that included only patients aging from 60 to 80 years, it has been showed that the QoL after hernioplasty was similar to those of healthy population of the same age<sup>27</sup>. Zieren et al.<sup>28</sup>

in a prospective study including patients aged more of 65 years who underwent a plug and patch for repair inguinal hernia, observed that QoL showed a significant improvement in the SF-36 domains of PF, BP, VT and SF after 3 months follow-up. No significant change was observed for RP, RE and GH<sup>28</sup>.

It has been shown that complications after inguinal hernioplasty have a deleterious effect on patient's activities, pain, overall health status, and satisfaction<sup>9</sup>. The effects of complications on QoL may be due to the level of distress that the event induces to the patient<sup>9</sup>. Some recurrences are not recognized by the patient itself and therefore do not affect the QoL, differently by others complications related to cardiovascular, respiratory, urinary and infectious diseases.

Our results are consistent with findings of other studies that have showed a low incidence of complications after hernioplasty<sup>5,10,11,29</sup> although 84 % of patients had ASA grade of III-IV. This fact depends on local anesthesia we systematically used. The anesthetic technique used has great impact to reduce the incidence of complications<sup>5,29</sup>. General and spinal anesthesia are associated with higher rates of serious postoperative complications including occasional postoperative death<sup>30</sup>. In a large series of elective inguinal hernia repair in general anesthesia, Lewis et al.<sup>21</sup> found a 10% incidence of postoperative chest infection and an overall 21% complication rate in patients over 65 years of age and a 43% incidence in the subgroup over 75 years of age. In addition, the routine use of general anesthesia in the elderly will, at best, result in expensive and unnecessary pre-operative screening, a greater risk of post-operative complications and a consequent delay in hospital discharge, with a further increase in costs<sup>29</sup>. On the contrary, local anesthesia is seldom followed by minor complications<sup>31</sup>; in fact, the early mobilization reduce the incidence of vascular and pulmonary complications<sup>32</sup>.

## Conclusion

The early and tardive complications represent an important argument for consideration of watchful or waiting strategy, while the prevention and emergency surgery for incarcerated or strangulated hernia, associated with high mortality rate, traditionally gives indication to early hernia repair.

The improvement of QoL could constitute an additional important argument to early hernia repair in elderly with minimally symptomatic inguinal hernia.

## Riassunto

Le linee guida nei pazienti anziani affetti da ernia inguinale pauci-sintomatica non sono chiare. Negli ultimi anni, la valutazione della qualità di vita ha assunto un

ruolo importante nella strategia terapeutica da adottare nelle malattie croniche.

Scopo del presente studio è stato quello di valutare le modificazioni della qualità di vita nei pazienti anziani affetti da ernia inguinale pauci-sintomatica sottoposti ad ernioplastica. La qualità di vita è stata valutata attraverso la somministrazione di un questionario (SF-36) al momento dell'arruolamento e sei mesi dopo.

Quaranta pazienti di sesso maschile di età superiore ai 75 anni affetti da ernia inguinale pauci-sintomatica sono stati inclusi nello studio. I pazienti sono stati suddivisi in due gruppi, nel primo, sono stati inseriti i 15 pazienti che hanno rifiutato l'intervento chirurgico, nel secondo, gli altri 25 che sono stati sottoposti ad ernioplastica tension-free con apposizione di protesi in polipropilene ad alta densità in anestesia locale.

A distanza di sei mesi, nei pazienti sottoposti ad ernioplastica si è notato un significativo miglioramento di tutti i punteggi dei domini dell' SF-36, del Mental Component Summary e del Physical Component Summary; invece nei pazienti non operati non sono state riscontrate differenze significative.

Il miglioramento della qualità di vita nei pazienti anziani affetti da ernia pauci-sintomatica sottoposti ad ernioplastica può costituire una indicazione per l'intervento chirurgico in elezione.

## References

1. Purkayastha S, Chow A, Athanasiou T, Tekkis P, Darzi A: *Inguinal Hernia*. Clinical Evidence (Online), 16 July 2008; pii: 0412.
2. Simons MP, Aufenacker T, Bay-Nielsen M, Bouillot JL, Campanelli G, Conze J, de Lange D, Fortelny R, Heikkinen T, Kingsnorth A, Kukleta J, Morales-Conde S, Nordin P, Schumpelick V, Smedberg S, Smietanski M, Weber G, Miserez M: *European Hernia Society guidelines on the treatment of inguinal hernia in adult patients*. Hernia, 2009; 13:343-403.
3. Hair A, Paterson C, Wright D, Baxter JN, O'Dwyer PJ: *What effect does the duration of an inguinal hernia have on patient symptoms?* J Am Coll Surg, 2001; 193:125-59.
4. Fitzgibbons RJ Jr, Giobbie-Hurder A, Gibbs JO, Dunlop DD, Reda DJ, McCarthy M Jr, Neumayer LA, Barkun JS, Hoehn JL, Murphy JT, Sarosi GA Jr, Syme WC, Thompson JS, Wang J, Jonasson O: *Watchful waiting vs repair of inguinal hernia in minimally symptomatic men: a randomized clinical trial*. JAMA, 2006; 295:285-92.
5. O'Dwyer PJ, Norrie J, Alani A, Walker A, Duffy F, Horgan P: *Observation or operation for patients with an asymptomatic inguinal hernia: A randomized clinical trial*. Ann Surg, 2006; 295:167-73.
6. INCA Trialists Collaboration: *Operation compared with watchful waiting in elderly male inguinal hernia patients: A review and data analysis*. J Am Coll Surg, 2011; 212:251-59.
7. Van den Heuvel B, Dwars BJ, Klassen DR: *Is surgical repair of an asymptomatic groin hernia appropriate? A review*. Hernia, 2011; 15:251-59.
8. Chung L, Norrie J, O'Dwyer PJ: *Long-term follow-up of patients with a painless inguinal hernia from a randomized clinical trial*. Br J Surg, 2011; 98: 596-99.
9. Hawn MT, Itani KM, Giobbie-Hurder A, McCarthy M Jr, Jonasson O, Neumayer LA: *Patient-reported outcomes after inguinal herniorrhaphy*. Surgery, 2006; 140:198-205.
10. Lawrence K, McWhinnie D, Jenkinson C, Coulter A: *Quality of life in patients undergoing inguinal hernia repair*. Ann R Coll Surg Engl, 1997; 79:40-45.
11. Zieren J, Kupper F, Paul M, Neuss H, Muller JM: *Inguinal hernia: obligatory indication for elective surgery? A prospective assessment of quality of life before and after plug and patch inguinal hernia repair*. Langenbecks Arch Surg, 2003; 387:417-20.
12. Hays RD, Marshall GN, Wang EY: *Four-year cross-lagged associations between physical and mental health in medical outcome study*. J Consult Clin Psychol, 1994; 62:441-49.
13. Rumsfeld JS, Magid DJ, O'Brien M, McCarthy M Jr, MaWhinney S, Shroyer AL, Moritz TE, Henderson WG, Sethi GK, Grover FL, Hammermeister KE: *Changes in health-related quality of life following coronary artery bypass graft surgery*. Ann Thorac Surg, 2001; 72:2026-32.
14. Ware JE Jr, Sherbourne CD: *The MOS 36-item short-form health survey [SF-36]. I. Conceptual framework and item selection*. Med Care, 1992; 30:473-83.
15. Apolone G, Mosconi P: *The Italian SF-36 Health Survey: Translation, validation and norming*. J Clin Epidemiol, 1998; 51:1025-36.
16. Nyhus LM: *Individualisation of hernia repair: A new era*. Surgery, 1993; 114:1-2.
17. Ohana G, Manevitch I, Weil R, Melki Y, Seror D, Powsner E, Dreznik Z: *Inguinal hernia: Challenging the traditional indication for surgery in asymptomatic patients*. Hernia, 2004; 8:117-20.
18. Callesen T, Bech K, Kehlet H: *Prospective study of chronic pain after groin hernia repair*. Br J Surg, 1999; 86:1528-31.
19. Thompson JS, Gibbs JO, Reda DJ, McCarthy M Jr, Wei Y, Giobbie-Hurder A, Fitzgibbons RJ Jr: *Does delaying repair of an asymptomatic hernia have a penalty?* Am J Surg, 2008; 195:89-93.
20. Gianetta E, De Cian F, Cuneo S, Friedman D, Vitale B, Marinari G, Baschieri G, Camerini G: *Hernia repair in elderly patients*. Br J Surg, 1997; 84:983-85.
21. Lewis DC, Moran CG, Vellacott KD: *Inguinal hernia repair in the elderly*. J R Coll Surg Edinb, 1989; 34:101-03.
22. Nilsson H, Stylianidis G, Haapamaki M, Nilsson E, Nordin P: *Mortality after groin hernia surgery*. Ann Surg, 2007; 245:656-60.
23. Haapaniemi S, Sandblom G, Nilsson E: *Mortality after elective and emergency surgery for inguinal and femoral hernia*. Hernia, 1999; 4:205-08.
24. Van Hanswijck de Jonge P, Lloyd A, Horsfall L, Tan R, O'Dwyer PJ: *The measurement of chronic pain and health-related quality of life following inguinal hernia repair: A review of the literature*. Hernia, 2008; 12:561-69.
25. Mathur S, Bartlett AS, Gilkison W, Krishna G: *Quality of life assessment in patients with inguinal hernia*. ANZ J Surg, 2006; 76:491-93.

26. Neumayer L, Giobbie-Hurder A, Jonasson O, Fitzgibbons R Jr, Dunlop D, Gibbs J, Reda D, Henderson W: *Open mesh versus laparoscopic mesh repair of inguinal hernia*. N Engl J Med, 2004; 350:1819-27.
27. Wojcik B, Majewski WD: *Does inguinal hernia repair influence on quality of life of elderly males?* Ann Acad Med Stetin, 2007; 53:74-81.
28. Zieren J, Zieren HU, Wenger F, Muller JM: *Repair of inguinal hernia in the elderly. Results of the plug-and-patch repair with special reference to quality of life*. Chirurg, 2000; 71:564-67.
29. Kurzer M, Kark A, Hussain T: *Day-case inguinal hernia repair in the elderly: A surgical priority*. Hernia, 2009; 13:131-36.
30. Pavlidis T, Symeonidis NG, Rafailidis SF, Psarras K, Ballas KD, Fardellas I, Marakis GN, Sakantamis AK: *Open mesh-plug inguinal hernia repair in the oldest old*. J Am Geriatr Soc, 2009; 57:1507-08.
31. Sanjay P, Jones P, Woodward A: *Inguinal hernia repair: Are ASA grades 3 and 4 patients suitable for day case hernia repair?* Hernia, 2006; 10:299-302.
32. Sinha S, Srinivas G, Montgomery J, DeFriend D: *Outcome of day-case inguinal hernia in elderly patients: how safe is it?* Hernia, 2007; 11:253-56.

READ-ONLY COPY  
PRINTING PROHIBITED