

Patient acceptance of diagnostic laparoscopy

Weickert U^{1*}, Bühl A¹, Jakobs R¹, Eickhoff A¹, Löffler W², Riemann JF¹

¹ Department of Internal Medicine C, Klinikum Ludwigshafen, Academic Hospital of the University of Mainz, Germany

² Department of Biostatistics, Klinikum Ludwigshafen, Academic Hospital of the University of Mainz, Germany

Abstract

Purpose: To assess patient acceptance of diagnostic conventional laparoscopy and minilaparoscopy under sedoanalgesia.

Materials and methods: 120 consecutive patients undergoing diagnostic laparoscopy were enrolled prospectively in this study. Within the first week after diagnostic laparoscopy the patients were asked to answer a total of eight questions with regard to the acceptance of the procedure.

Results: The inconvenience of laparoscopy was assessed with a mean of 1.6 on a scale from 0 to 10 (0=no inconvenience, 10=very unpleasant). The discomfort in the two days following laparoscopy were graded with a mean of 2.1 on a scale from 0 to 10 (0=no inconvenience, 10=very unpleasant). There was no difference between conventional laparoscopy and minilaparoscopy. Only 10% of the patients described laparoscopy more inconvenient in comparison to diagnostic gastroscopy, whereas 29% of the patients assessed diagnostic gastroscopy more inconvenient.

Conclusions: Diagnostic laparoscopy under sedoanalgesia is a very well tolerated procedure. There is no difference between conventional laparoscopy and minilaparoscopy.

Key words: acceptance, diagnostic laparoscopy, questionnaire.

Introduction

Despite the availability of modern imaging methods diagnostic laparoscopy still is an important diagnostic tool of gastroenterologists [1-3]. The main indication for laparoscopy is liver disease and staging of gastrointestinal tumors [4-7].

There are several large studies available comparing the laparoscopic findings with the histological results of biopsies taken during laparoscopy in patients with various liver diseases. These studies consistently demonstrate that histology alone may miss the diagnosis of cirrhosis in up to a quarter of patients [8-11]. The diagnosis of cirrhosis is not made by histology alone especially in the case of macronodular disease and early stages of cirrhosis [12,13].

Small metastases to the liver surface and/or peritoneum missed by ultrasound, computed tomography (CT) and magnetic resonance tomography (MRT) can be easily diagnosed by laparoscopy [14]. With the recent development of small diameter laparoscopes the method has gained more widespread acceptance [15,16]. Its diagnostic capacity in liver disease and as a staging procedure has been proven in recent studies [13,14].

However, as there are no data published with respect to patient acceptance of minilaparoscopy compared with conventional laparoscopy, we addressed this topic in a prospective study.

Material and methods

Patients

120 consecutive patients undergoing diagnostic laparoscopy (conventional laparoscopy n=64, minilaparoscopy n=56) were enrolled prospectively in this study.

Laparoscopy

Diagnostic laparoscopy was performed as a standard procedure with the patient under conscious sedation with midazolam and pethidine. For conventional laparoscopy the Veres needle was advanced at the point of Monroe (lower left abdominal

* CORRESPONDING AUTHOR:

Department of Internal Medicine C
Klinikum Ludwigshafen
Academic Hospital of the University of Mainz
Bremerstr 79
67063 Ludwigshafen am Rhein, Germany
Tel: +49-621-503-4100; Fax: +49-621-503-4114
e-mail: weickeru@klilu.de (Uwe Weickert)

quadrant). After insufflation of N₂O the laparoscope was introduced into the abdominal cavity through a trocar which was inserted at the point of Kalk (periumbilical). In the patients undergoing minilaparoscopy a small trocar for the Veres needle was advanced at the point of Kalk and after insufflation of N₂O the laparoscope was introduced through the same trocar. Liver biopsies and/or peritoneal biopsies were taken dependent on the underlying disease.

Questionnaire

Within the first week after diagnostic laparoscopy the patients were asked to answer a total of eight questions concerning the acceptance of the procedure. Questions 4 and 8 were constructed as a visual analog scale [17,18].

Questionnaire

1. Did you undergo gastroscopy in the past:

- no
- yes, without sedation
- yes, with sedation

2. How did you experience laparoscopy in comparison with former gastroscopy:

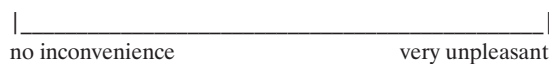
- I have not undergone gastroscopy
- I don't know
- more unpleasant
- comparable
- less unpleasant

3. How did you experience laparoscopy in comparison with former ultrasound guided liver biopsy:

- I have not undergone ultrasound guided liver biopsy
- I don't know
- more unpleasant
- comparable
- less unpleasant

4. How was your overall experience of laparoscopy (left: no inconvenience, right: very unpleasant):

- I can't remember



5. Would you retrospectively give your consent for laparoscopy:

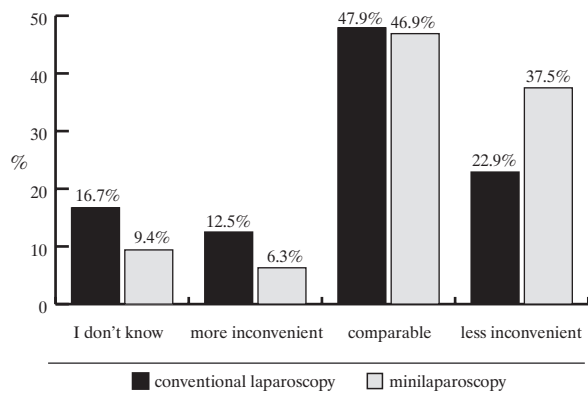
- yes
- perhaps
- no

6. Would you undergo laparoscopy again, if indicated:

- yes
- yes, but only under deeper sedoanalgesia
- perhaps
- no

7. If you had to undergo another laparoscopy, what was your preference with respect to sedoanalgesia:

Figure 1. "How did you experience laparoscopy in comparison with former gastroscopy?"



- more sedoanalgesics
- less sedoanalgesics
- same medication

8. What was the grade of discomfort in the two days following laparoscopy (left = no discomfort, right = severe discomfort):



Statistics

The frequency of answers was described for each group and the associations in the one-way and two-way tables were measured with Fisher exact test. The Mann-Whitney-U-Test was used for testing the hypothesis that two independent samples are from populations with the same distribution (rank-sum test, questions 4 and 8).

Results

No patient declined to answer the questionnaire. The mean age (71 men, 49 women) was 54 years. In all patients sedoanalgesia was performed with a combination of midazolam and pethidin. The mean dose of midazolam was 5.2 mg. One hundred seventeen patients received 50 mg pethidin, one patient 75 mg and two patients 100 mg. There was no statistical significant difference between the groups of patients investigated by conventional laparoscopy and minilaparoscopy with respect to the dosage of sedoanalgesics, sex distribution, indication for laparoscopy or body-mass-index.

Eighty of 120 patients (67%) had undergone gastroscopy in the past, 23 patients (29%) without and 57 patients (71%) after administration of sedatives. Thirty eight patients (48%) judged the inconvenience of gastroscopy and laparoscopy as comparable, 8 patients (10%) described laparoscopy more inconvenient and 23 patients (29%) less inconvenient. Eleven patients (14%) could not decide on the topic. There was no difference between the group of patients who had undergone conventional laparoscopy and minilaparoscopy (p=0.42) (Fig. 1).

Figure 2. “How was your overall experience of laparoscopy (0=no inconvenience, 10=very unpleasant)?”

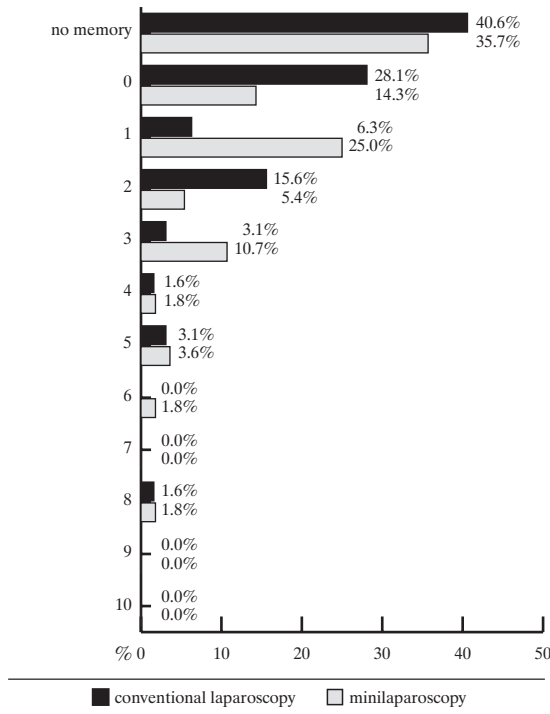
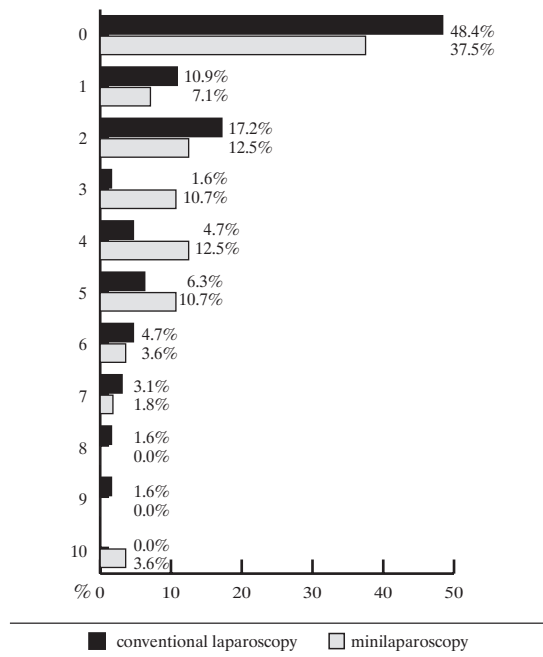
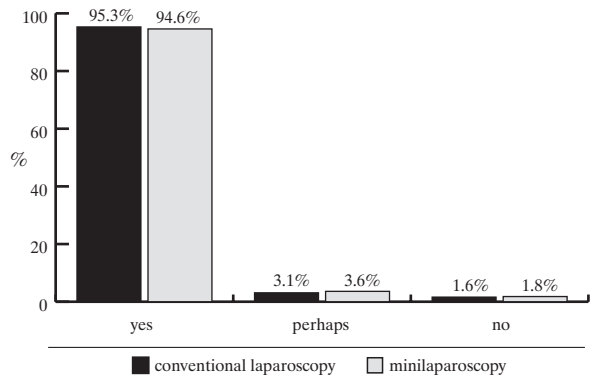


Figure 4. “What was the grade of discomfort in the two days following laparoscopy (left=no discomfort, right=severe discomfort)?”



Only 7 patients (5.8%) had undergone ultrasound-guided liver biopsy previously. One patient judged both procedures as comparable and two patients judged laparoscopy less and two patients more inconvenient.

Figure 3. “Would you retrospectively give your consent for laparoscopy?”



Forty six of 120 patients (38%) could not remember the performance of laparoscopy. The remaining 74 patients (62%) judged the inconvenience of laparoscopy with a mean of 1.6 on a scale from 0 to 10 (visual analog scale, 0=no inconvenience, 10=very unpleasant) (Fig. 2). There was no difference between conventional and minilaparoscopy (p=0.15).

One hundred fourteen patients (95%) would – retrospectively – again give their consent to the performance of laparoscopy. Only 2 patients (1.7%) would decline to give their consent again (Fig. 3).

One hundred five patients (87.5%) would give their consent to undergo another laparoscopy, if necessary in the future; 10 patients (8.3%) only after the administration of more sedatives. The performance of another laparoscopy was declined by 3 patients (2.5%). Again there was no difference between conventional and minilaparoscopy (p=0.58).

One hundred one patients (84.2%) would prefer the same sedoanalgesia in the case of another laparoscopy. Four patients (3.3%) would prefer less and 15 patients (12.5%) more sedoanalgesics. Again there was no difference between the patients who had undergone conventional and minilaparoscopy (p=0.66).

The discomfort in the two days following laparoscopy was graded with a mean of 2.1 on a scale from 0 to 10 (visual analog scale, 0=no inconvenience, 10=very unpleasant) (Fig. 4). There was no difference between both groups (p=0.14).

The answers to question 4 (“How was your overall experience of laparoscopy?”) and 8 (“What was the grade of discomfort in the two days following laparoscopy?”) were analysed with respect to an influence of: age, gender, body-mass-index and indication for laparoscopy. There was only one significant association: sex and judgement of the discomfort in the two days following laparoscopy. Male patients judged the discomfort with a mean of 1.7 and female patients with a mean of 2.6. This difference was statistically significant (p=0.02).

Discussion

Diagnostic laparoscopy – either as conventional laparoscopy or minilaparoscopy – can be performed under sedoanalgesia. As

the value of a diagnostic tool is dependent on the acceptance by patient we performed a structured questionnaire in a consecutive series of 120 patients undergoing diagnostic laparoscopy. Especially the question whether the reduced invasiveness of minilaparoscopy compared with conventional laparoscopy results in improved patient acceptance was addressed.

Our results demonstrate the overall minor inconvenience of diagnostic laparoscopy under sedoanalgesia. Only 10 percent of patients judged diagnostic laparoscopy more inconvenient than gastroscopy. Forty eight percent of patients judged the two procedures comparable and 29% experienced gastroscopy even more inconvenient in comparison with diagnostic laparoscopy. Ninety five percent of patients would – retrospectively – give their consent to the performance of laparoscopy again. Eighty four percent of patients were satisfied with sedoanalgesia. Only 12.5% of patients would prefer more sedatives in a future diagnostic laparoscopy and 3.3% of patients less sedatives. However, there was no difference between the patients who had undergone conventional laparoscopy and minilaparoscopy. Only gender was a predictor of the grade of inconvenience after laparoscopy. Male patients experienced significantly less inconvenience.

Discomfort following diagnostic laparoscopy is mainly caused by pneumoperitoneum [19]. Presumably distension by gas insufflation leads to minor injuries of vessels and nerves with the consequence of inflammatory cytokine release [19].

In a placebo controlled study on 110 patients undergoing laparoscopy for fertility reasons the administration of 200 mg celecoxib two hours prior to laparoscopy reduced pain after the procedure [20]. Celecoxib-like rofecoxib – is a cox-II-inhibitor. Whether the cardiovascular side effects of rofecoxib, which has lead to its recall by the pharmaceutical company, are specific for the substance or a class effect, remains unclear [21]. However, a new study using conventional NSAR seems to be necessary.

In a study by Poynard and Lebrec [22] 113 patients and 80 hepatologists were interviewed with respect to the inconvenience of different diagnostic procedures. These procedures included gastroscopy and conventional laparoscopy. Gastroscopy was judged more inconvenient compared with laparoscopy by patients in this study too. The assessment of the hepatologists was quite different from the assessment of patients. Hepatologists deemed laparoscopy a procedure with more discomfort compared with gastroscopy.

A study of 56 patients comparing conventional administration of analgosedation with patient-controlled medication resulted in a similar safety and patient tolerance of colonoscopy [23]. As patient tolerance of laparoscopy was excellent in our study, improvement by patient-controlled drug administration seems unlikely.

Conclusions

Diagnostic laparoscopy under sedoanalgesia is a very well tolerated procedure. It compares favourably with diagnostic gastroscopy. However, there is no difference between conventional laparoscopy and minilaparoscopy.

References

1. Weickert U, Buttman A, Jakobs R, Schilling D, Eickhoff A, Riemann JF. Diagnosis of liver cirrhosis: A comparison of modified ultrasound and laparoscopy in 100 consecutive patients. *J Clin Gastroenterol*, 2005; 39: 529-32.
2. Weickert U, Jakobs R, Riemann JF. Diagnostic laparoscopy. *Endoscopy*, 2005; 37: 33-7.
3. Weickert U, Jakobs R, Siegel E, Eickhoff A, Schilling D, Riemann JF. Komplikationen der internistischen Laparoskopie: Eine Analyse von 675 Laparoskopien in der Übergangszeit von der konventionellen zur Mini-Laparoskopie. *Dtsch Med Wochenschr*, 2005; 130: 16-20.
4. Feussner H, Omote K, Fink U, Walker SJ, Siewert JR. Pretherapeutic laparoscopic staging in advanced gastric carcinoma. *Endoscopy*, 1999; 31: 342-7.
5. Hulscher JBF, Nieveen van Dijkum EJM, de Wit LT, van Delden OM, van Lanschoot JJB, Obertop H, Gouma DJ. Laparoscopy and laparoscopic ultrasonography in staging carcinoma of the gastric cardia. *Eur J Surg*, 2000; 166: 862-5.
6. Jimenez RE, Warshaw AL, Rattner DW, Willett CT, McGrath D, Fernandez-del Castillo C. Impact of laparoscopic staging in the treatment of pancreatic cancer. *Arch Surg*, 2000; 135: 409-15.
7. Reddy KR, Levi J, Livingstone A, Jeffers L, Molina E, Kligerman S, Bernstein D, Kodali VP, Schiff ER. Experience with staging laparoscopy in pancreatic malignancy. *Gastrointest Endosc*, 1999; 49: 498-503.
8. Gebo KA, Herlong HF, Torbenson MS, Jenckes MW, Chander G, Ghanem KG, El-Kamary SS, Sulkowski M, Bass EB. Role of liver biopsy in management of chronic hepatitis C: A systematic review. *Hepatology*, 2002; 36: S161-72.
9. Jalan R, Harrison DJ, Dillon JF, Elton RA, Finlayson ND, Hayes PC. Laparoscopy and histology in the diagnosis of chronic liver disease. *QJM*, 1995; 88: 559-64.
10. Orlando R, Lirussi F, Okolicsanyi L. Laparoscopy and liver biopsy: further evidence that the two procedures improve the diagnosis of liver cirrhosis. A retrospective study of 1,003 consecutive examinations. *J Clin Gastroenterol*, 1990; 12: 47-52.
11. Poniachik J, Bernstein DE, Reddy KR, Jeffers LJ, Coelho-Little ME, Civantos F, Schiff ER. The role of laparoscopy in the diagnosis of cirrhosis. *Gastrointest Endosc*, 1996; 43: 568-71.
12. Helmreich-Becker I, Schirmacher P, Denzer U, Hensel A, Meyer zum Büschenfelde KH, Lohse AW. Minilaparoscopy in the diagnosis of cirrhosis: Superiority in patients with Child-Pugh A and macronodular disease. *Endoscopy*, 2003; 35: 55-60.
13. Weickert U, Siegel E, Schilling D, Eickhoff A, Jakobs R, Bohrer MH, Riemann JF. Die Diagnose einer Leberzirrhose: Ein Vergleich der Wertigkeit von Standardlaparoskopie, Minilaparoskopie und Histologie. *Z Gastroenterol*, 2005; 43: 17-21.
14. Denzer U, Hoffmann S, Helmreich-Becker I, Kauczor HU, Thelen M, Kanzler S, Galle PR, Lohse AW. Minilaparoscopy in the diagnosis of peritoneal tumor spread: prospective controlled comparison with computed tomography. *Surg Endosc*, 2004; 18: 1067-70.
15. Denzer U, Helmreich-Becker I, Galle PR, Lohse AW. Liver assessment and biopsy in patients with marked coagulopathy: value of mini-laparoscopy and control of bleeding. *Am J Gastroenterol*, 2003; 98: 893-900.
16. Helmreich-Becker I, Meyer zum Büschenfelde KH, Lohse AW. Safety and feasibility of a new minimally invasive diagnostic laparoscopy technique. *Endoscopy*, 1998; 30: 756-62.
17. Jensen MP, Karoly P, Braver S. The measurement of clinical pain intensity: a comparison of six methods. *Pain*, 1986; 27: 117-26.
18. Myles PS, Troedel S, Boquest M, Reeves M. The pain visual analog scale: is it linear or nonlinear? *Anesth Analg*, 1999; 89: 1517-20.
19. Alexander JI. Pain after laparoscopy. *Br J Anaesth*, 1997; 79: 369-78.
20. Phinchantra P, Suwajanakorn S. The preemptive analgesic effect of celecoxib for day-case diagnostic laparoscopy. *J Med Assoc Thai*, 2004; 87: 283-8.
21. Oberholzer-Gee F, Inamdar SN. Merck's recall of rofecoxib. *N Engl J Med*, 2004; 351: 2147-9.
22. Poynard T, Lebrec D. The inconvenience of investigations used in hepatology: patient's and hepatologist's opinions. *Liver*, 1992; 2: 369-75.
23. Stermer E, Gaitini L, Yudashkin M, Essaia G, Tamir A. Patient-controlled analgesia for conscious sedation during colonoscopy: a randomized controlled study. *Gastrointest Endosc*, 2000; 51: 278-81.