Original Article

Early outcome of myomectomy for large uterine myoma by isobaric gasless laparoscopy, minilaparotomy and laparoscopically assisted minilaparotomy. A randomized trial

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ABSTRACT **Background:** To compare operative data and early postoperative outcome for myomectomy performed by isobaric gasless laparoscopy (IG-LA), minilaparotomy (MLT) or laparoscopically assisted minilaparotomy (LA-MLT) in a series of patients with large uterine leiomyomas (≥ 5cm) randomly assigned to each surgical technique. **Methods:** 105 patients were randomized to IG-LA (n=35), MLT (n=35) or LA-MLT (n=35). The randomization procedure was based on a computer-generated list. The primary outcome was a comparison of the intraoperative blood loss among the three procedures. **Results:** The mean operating time was significantly shorter after IG-LA than after MLT (P=0.007; Table 2) and after LA-MLT (P<0.001; Table 2). The intraoperative blood loss was less with IG-LA than with MLT (81.29± 12.92 vs 96.60± 28.62; P=0.004); and Hb was less with IG-LA than with MLT (1.19± 0.59 vs 1.57± 0.63; P=0.010). No intraoperative complications occurred, and no case was returned to the theater in either group. No conversion to standard laparotomy was necessary. Time of postoperative ileus and hospitalization days were similar among the three procedures. The repeated measures Analysis of Variance on postoperative abdominal pain VAS scores found that there was difference of the VAS score among the three time points (12h, 24h and 48h) (P<0.001); no difference of the VAS score among the three groups, with values at all time points averaged and over time (P=0.595); and the interaction between treatment and time was significant (P=0.001).

Conclusions: Several surgical and immediate postoperative outcomes were significantly better in the IG-LA group than in the MLT and LA-MLT group.

KeyWords: Isobaric gasless laparoscopy; minilaparotomy; laparoscopically assisted minilaparotomy; myomectomy

Abbreviations: IG-LA: Isobaric Gasless Laparoscopy;
MLT: Minilaparotomy;
LA-MLT: Laparoscopically Assisted Minilaparotomy

BACKGROUND

Uterine leiomyomas (fibroids or myomas) are benign clonal tumours that arise from the smooth-muscle cells of the human uterus. They are clinically apparent in about 25% of women (1). With availability of advanced imaging techniques, the prevalence may even be higher. Careful pathological examination of surgical specimens suggests that the prevalence is as high as 77% (2). While most myomas cause no symptoms, many women with myomas present with symptoms which warrant therapy. Symptoms associated with myomas can generally be classified in three categories: abnormal uterine bleeding, pelvic pressure and pain, and reproductive dysfunction (3). Myomectomy is advisable if myomas are either asymptomatic, but growing rapidly and causing infertility/recurrent abortion, or symptomatic, causing abnormal uterine bleeding or pain. The procedure is also preferred in women who wish to preserve their childbearing capabilities and it is needed when (1,4,5).

Laparoscopy has developed into an effective and feasible tool that can be applied to a wide range of pelvic surgerie, including conservative myomectomy. The most common indication for conservative laparoscopic myomectomy is the patient's will to avoid hysterectomy and conserve fertility. Several minimally invasive approaches to myomectomy, including isobaric gasless laparoscopy (LA), using an abdominal wall-lifting device (6,7), minilaparotomy (MLT) (8-10) and laparoscopically assisted minilaparotomy (LA-MLT) (11) have been introduced recently. It is reported that myomectomy by isobaric gasless laparoscopy is feasible and safe, offering several advantages over conventional laparoscopy with pneumoperitoneum (12,13). Myomectomy via minilaparotomy has proven to be a safe and effective minimally invasive approach to

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myomectomy. Early discharge and return to normal activities were comparable with those for conventional laparoscopy, and the approach appears to be more cost effective (10).

Only two prospective trials in the literature comparing myomec tomy with MLT with conventional LA using CO2 (14,15). only one study compares MLT with isobaric gasless LA myomectomy, and only one study compares laparotomy (LT), MLT with LA-MLT. However, there are no published studies comparing IG-LA with MLT and LA-MLT myomectomy for the removal of large uterine leisomyomas. Even there are several studies of la paroscopic myomectomy for large myomas (6,13,16), or compares with abdominal myomectomy (17). Therefore, we conducted a ran domized trial comparing the operative data and early postoperative outcome of myomectomy among IG-LA, MLT and LA-MLT in a series of patients with large uterine leiomyomas(≥ 5cm).

MATERIALS AND METHODS

Patient Selection

The trial was performed in the Department of Gynaecology, Jiangyin Hospital, affiliated to Medical school of Southeast of China University, Jiangsu Province, PR China. The study was approved by the ethics committee. Each participant gave her informed consent. There was no financial interest or any arrangement with the companies producing the instruments used in the study or with competitor companies. There also was no direct payment to the authors from any source for the purpose financing the writing of the manuscript, nor were there any other financial conflicts of interest, direct or indirect, or other situations that might raise the question of bias in the work.

Inclusion and Exclusion Criteria

From January 2005 to July 2007, all women with symptomatic uterine myomas requiring myomectomy were considered eligible for the study. The inclusion criteria were the presence of one to three symptomatic intramural or subserosal myomas (without pedunclе) associated with either infertility or fast growth and having a diameter of 5 to 10 cm.

Exclusion criteria were significant medical comorbidities, psy chiatric disorders, current or past history of acute or chronic physi cal illness, premenstrual syndrome, current or past (a washout peri od of at least 6 months was considered appropriate before enrol ment) use of hormonal drugs or drugs influencing cognition, vigi lance, or mood, inability to complete the daily diary, a history of alcohol abuse, and symptomatic women who did not have a previ ous conception resulting in a live baby or with a tubal/male factor subfertility In addition, the following patients with following con ditions were also excluded: no desire to conceive, hypoechoic or calcified leiomyomas diagnosed at ultrasound, presence of submu cosal leiomyomas or alterations of the uterine cavity screened by hysteroscopy and of other uterine or adnexal abnormalities at ultrasound (e.g., adenomyosis, abnormal endometrial thickness), pattern of hyperplasia with cytological atypia in the endometrial biopsy performed for abnormal uterine bleedings under hysteroscopy on suspected areas, an abnormal Papanicolau smear, and a positive urine pregnancy test.

Study Protocol

At study entry, age, parity, and body mass index (BMI), leiomyoma-related symptoms, previous laparotomies, and associated medical conditions were assessed in each patient by the same clinician (Dr. Jie Tan, M.D.). All ultrasound examinations were performed transvaginally by an experienced operator, who assessed the presence/absence of associated pelvic diseases, evaluated uterine dimensions, and leiomyoma number, dimension and location.

At study entry, a sample of venous blood was obtained from each patient between 8 and 9 AM, after an overnight fast and bed rest during the early proliferative phase (second to third day of the cycle) to evaluate a complete blood count.

After enrolment by a physician, each woman was concealed randomization by a nurse to IS-LA (n=35), MLT (n=35) or LA-MLT (n=35), in closed and dark-colored envelope until surg eries were assigned (before entering in the operating room), using a computer-generated list of randomization. Thus, patients were as signed to one of the three surgical procedure groups (i.e., IG-LA, MLT or LA-MLT). The same surgeons performed all surgical pro cedures.

Surgical Procedures

All Procedures were performed by the same surgeon (Dr. Jie Tan, M.D., who equally experienced in three procedures) using the same technique. The operator was informed on the type of intervention to perform (if IG-LA, MLT or LA-MLT) just before entering the operating room. A drug for thrombosis prophylaxis was not administered to any patient. After anesthesia administration, each patient was placed in a modified lithotomic position. Immediately before surgery, each patient received 2 g of IV cephalosporin as antibiotic prophylaxis, and if necessary, a same dose was repeated if the intervention lasted more than 2 hours.

Isobaric gasless laparoscopic myomectomy (IG-LA) In the IG-LA group, after anesthetize, lie at position for vesical-calculus incision, lower head 35° and lift hip, and lift uterus for easy exposure of uterine myoma. Incise umbilical opening, put 10mm Troca, insert laparoscope, pass vertically Kirschner's needle (diameter: 2 mm) through subcutaneous tissue of lower abdomen at an interval of 10cm, suspend both ends of steel needle at cross arm of lifting/pulling device via saddle chain, connect cross arm with vertical arm, fix at one side of operating table. Incise 1.5-2.0 cm hole to peritoneum at left lower abdomen, put incision protective sleeve via this hole, and start apparatus operation. Excise myoma one by

one according to its growing position.

Minilaparotomy (MLT) MLT is performed with an ~5 cm incision, 1-2 cm above the pubic symphysis. The abdominal fascia is opened crosswise or longitudinally. A uterine manipulator is used to elevate the uterus toward the suprapubic incision. Trans-peritoneal palpation is used to identify a major myoma, and a corkscrew manipulator is inserted into it blindly, through the peritoneum. The parietal peritoneum is then incised just above the myoma during the traction performed on the corkscrew, and the myoma along with the uterus is forced out of the peritoneum and the minilaparotomic incision. Myomectomy and uterus reconstruction is performed directly outside the peritoneum. Then the uterus is replaced in the pelvic cavity, and after an accurate rinsing the abdominal incision is closed in multiple layers.

Laparoscopically assisted Minilaparotomy (LA −MLT) In the LA-MLT group, a 10 mm port is inserted through the umbilicus to introduce the laparoscope, which is connected to a camera for video monitoring. An accessory 5 mm trocar is inserted into the abdomen to the left of the umbilicus. The video camera is used to identify the myoma and to obtain visual guidance for the insertion of the corkscrew through the peritoneum. The accessory trocar is used to insert operative instruments and the suction irrigator cannula. During the time, the minilaparotomic incision is performed. MLT was performed with a 4- to 7-cm suprapubic incision. The difference in the sizes of the incision was related to the number, diameter, and position of the myomas. The subcutaneous fat and the abdominal fascia were transversely opened 2 cm above the skin incision. The abdominal muscle and the parietal peritoneum were longitudinally opened on the midline. After positioning of two or three Deaver retractors, the dominant myoma was identified, grasped with a tenaculum clamp, and pulled toward the skin incision. Hysterotomy was transversally performed on the principal myoma along its maximum diameter. Sharp dissection with scissors allowed the avascular cleavage plane to be created, separating the tumor and the surrounding myometrium. Enucleation then was executed by traction on the myoma together with countertraction on the uterus, which facilitated dissection. After the closure of peritoneum, haemostasis is further controlled under videolaparoscopy, and an accurate rinsing of the pelvic cavity is performed via a suction-irrigator.

In all groups (IG-LA, MLT and LA-MLT), the uterine incision was performed using the same electrosurgical device with a cutting current of 70 W. At the end of each intervention, the pelvis was washed with saline solution. No adhesion barrier or saline dextrane macromolecular solutions were left in the peritoneal cavity. All operative samples were submitted for pathologic examination.

No peritoneal or incisional instillation of topical analgesics is used in laparoscopy procedures. For the first 12 h after surgery, each subject receives an i.v. analgesic therapy. Analgesics consist of ketoprofen (45 mg/12 h) and tramadol (150 mg/12 h). Thereafter, analgesics are suspended and administered only on a patient's demand.

Equipment and Apparatus

Video electronic laparoscope (Olympus Co, Tokyo, Japan.) and gasless lifting device and surgical apparatus (Japan Daoke Co. Tokyo, Japan).

Outcome Measurement

During each surgical procedure, total operative time. Specifically, the total duration time of the surgical procedure was calculated during the IG-LA, MLT or LA-MLT procedure beginning from abdominal skin incision, before Verres needle insertion to skin suture.

The primary outcome was a comparison of the intraoperative blood loss among the three procedures. Duration of postoperative ileus and hospitalization were evaluated in three groups. Hospitalization time was defined from entry (the day of surgery) to discharge. The patients were discharged from the hospital when they were tolerant of a normal diet, able to dress themselves, fully mobile, apyrexial, not requiring analgesics, and satisfied that they could manage at home.

Intraoperative blood loss, intraoperative and postoperative complications were also evaluated and recorded in three groups. The intraoperative blood loss was estimated by calculating the blood volume collected in the suction apparatus and the net weight change of gauze used during surgery, and expressed as hemoglobin level decrease (Hb). Intraoperative complications were defined as laparotomic conversions, and as bowel, bladder, ureteral, or vascular injuries. Laparotomic conversions were defined as open abdominal access through a more than 7-cm long skin incision. And early postoperative complications include any unfavorable episode occurring within 30 days after surgery requiring readmission, blood transfusion, or repeat surgery.

After intervention all patients received an IV bolus of tramadol (100 mg), followed by patient-controlled analgesia (tramadol 200 mg [2 vials] in 500 mL of saline solution) (21). The postoperative analgesia was administered during the first 12 hours after surgery. At the end of the surgical procedures the postoperative pain was also evaluated using visual analog scale (VAS). The VAS consisted of a non-graduated 10 cm line ranging from 'no pain' to 'pain as bad as it could be'(22). Postoperative pain was specifically assessed in each group at 12h, 24h, 48h and 7 days after the surgical procedure.

Women were allowed to eat and drink the morning after surgery, and to ambulate as soon as they felt comfortable. The urinary catheter was removed the evening of the surgery. A blood sample was obtained and Hb was calculated for each woman 24 hours after surgery.

Statistical Analysis

Statistical analysis was performed using the Statistical Pro-

gram/SPSS for Windows, version 11.5 (Chicago, IL, USA). Parametric tests were used after having evaluated the normal distribution of the data to be analysed. Analysis of variance (ANOVA) was used to compare baseline characteristics and net modifications at single time-points observed in the three groups. When significant, Fisher's post-hoc test was used to identify significant comparisons. The differences between groups were compared with ONE-WAY ANOVA method between groups, multiple comparisons were performed with LSD method. The modifications in time observed in the three groups were compared by ANOVA for repeated measures. A P value less than 0.05 was considered statistically significant.

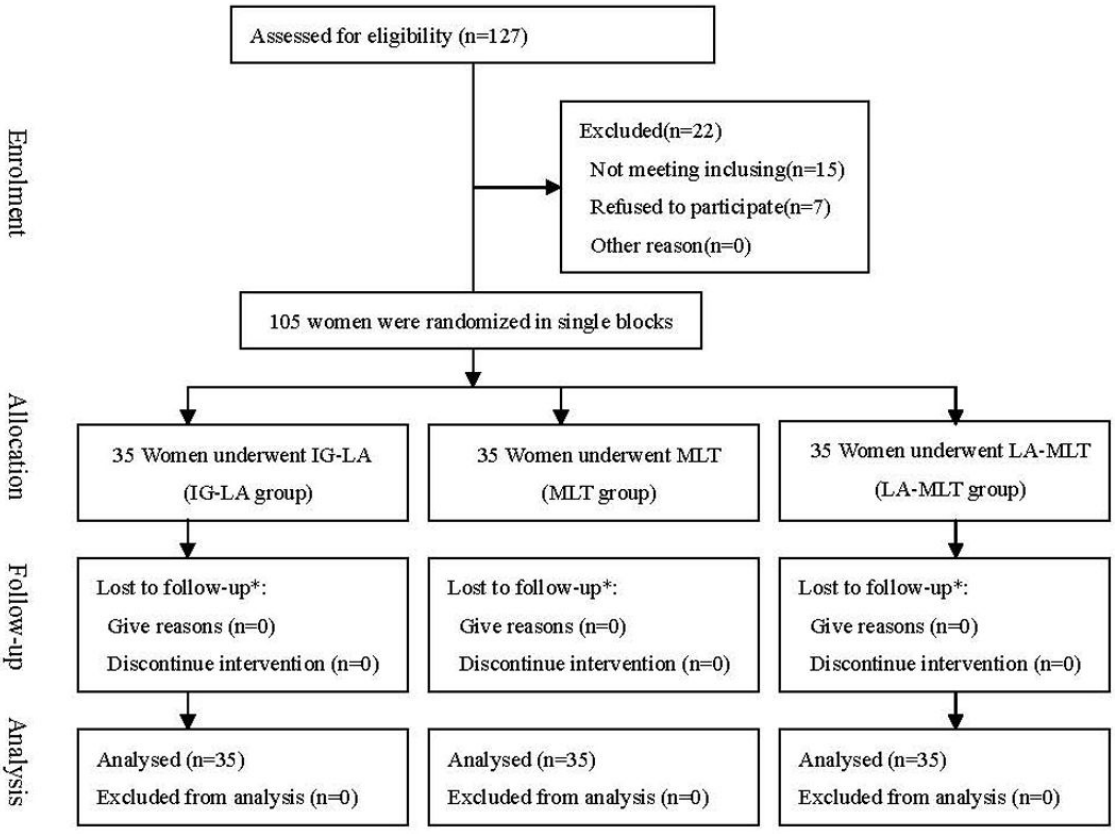
RESULTS

Of the 127 women requiring myomectomy, 112 fulfilled the inclusion criteria and were recruited for the trial. 7 refused to participate. The enrollment was closed when 105 patients were included, and 35 patients were allocated to each group (Fig. 1). Figure 1 illustrates the flow diagram of the present clinical study. The three groups of 35 patients each were obtained from randomization of 105 patients.

In all cases the estimated size and the histologic leiomyomas diagnosis, suspected before surgery through ultrasound, were confirmed, respectively, by macroscopic and microscopic examination of the enucleated tumors. Procedures were successfully performed for all the patients in three groups. No difference was observed among the three groups in uterine size, dimension of leiomyomas, main dimension of the largest leiomyoma, and number of leiomyomas (Table 1). The localization of leiomyomas was also similar among the three groups (Table 1).

Table 2 shows the operative parameters in the three groups. The mean operating time was significantly shorter after IG-LA than after MLT (P=0.007; Table 2) and after LA-MLT (P<0.001; Table 2). The intraoperative blood loss was less with IG-LA than with MLT (81.29± 12.92 vs 96.60 ± 28.62; P=0.004); and Hb was less with IG-LA than with MLT (1.19± 0.59 vs 1.57± 0.63; P=0.010). No intraoperative complications occurred, and no case was returned to the theater in either group. No conversion to standard laparotomy was necessary. Time of postoperative ileus and hospitalization days were similar among the three procedures (Table 2).

The repeated measures Analysis of Variance on postoperative abdominal pain VAS scores found that there was difference of the VAS score among the three time points (12h, 24h and 48h) (P<0.



Note:
*None were lost to follow-up.

Fig 1. Flow diagram

Table 1
Main characteristics of the IG-LA, MLT and LA-MLT groups

Group	IG-LA(n=35)	MLT(N=35)	LA-MLT(n=35)	P
Age (years) [a]	36.23± 2.60	35.17± 3.54	35.66± 2.96	0.354
BMI(kg/m2)*	22.69± 2.07	22.77± 2.18	22.79± 2.14	0.981
Indication for myomectomy (n,%) [b]				0.823
Leiomyomas-related symptoms	21(60.0)	23(65.7)	20(57.1)	
Unexplained infertility	14(40.0)	12(34.3)	15(42.9)	
Previous major abdominal surgery (n,%) [b]				0.730
None	26(76.9)	29(82.9)	25(71.4)	
One operation	6(15.4)	5(14.3)	8(22.9)	
More than one operation	3(7.7)	1(2.8)	2(5.7)	
Numbers of myomas (n,%)				0.913
1	26(74.3)	23(65.7)	23(65.7)	
2	7(20.0)	9(25.7)	10(28.6)	
3	2(5.7)	3(8.6)	2(5.7)	
Dominant myoma diameter (cm) [a]	8.10± 1.49	7.65± 1.40	7.85± 1.39	0.411
Dominant myoma (location): (n, %) [b]				0.812
Intramural	10(28.6)	13(37.1)	12(34.3)	
Subserosal	25(71.4)	22(62.9)	23(65.7)	
Dominant myoma (site): (n, %) [b]				0.735
Anterior	29(82.9)	30(85.7)	27(77.1)	
Fundal	6(17.1)	5(14.3)	8(22.9)	

*BMI, body mass index

[a] Values are expressed by Mean ± standard deviation, differences were compared with one-way ANOVA.

[b] Some differences between groups were compared with Fisher´s exact Test method.

There were no significant differences between the groups.

001); no difference of the VAS score among the three groups, with values at all time points averaged and over time (P=0.595); and the interaction between treatment and time was significant (P=0.001) (Fig.2).

DISCUSSION

Historically, there has been little innovation in treatments for fibroids, nominally because they are benign and cause morbidity, not mortality, and because leiomyoma research is underfunded as compared with that for other nonmalignant diseases. Medical therapy for fibroids is similarly limited. The only FDA-approved medical therapy is a GnRH agonist used preoperatively with iron. GnRH agonists abrogate both bleeding and bulk-related symptoms but induce significant menopausal side effects that limit therapy. Tumors also rapidly regrow if not removed surgically. The standard treat-

Table 2
Main parameters evaluated during and after surgery in the IG-LA, MLT and LA-MLT groups

Group	IG-LA (n=35)	MLT (N=35)	LA-MLT (n=35)	P value			
				IG-IA vs MLT	IG-LA vs LA-MLT	MLT vs LA-MLT	multiple
Total operative time (min) [a]	74.63± 26.39	90.86± 20.01	99.11± 25.48	0.007	<0.001	0.161	<0.001
Intraoperative blood loss (ml) [a]	81.29± 12.92	96.60± 28.62	90.77± 20.84	0.004	0.071	0.265	0.014
Hb a	1.19± 0.59	1.57± 0.63	1.34± 0.59	0.010	0.298	0.117	0.034
Postoperative ileus (h) [a]	23.43± 4.07	23.70± 4.37	23.29± 4.01	-	-	-	0.917
Hospitalization (days) [a]	0.58± 0.10	2.06± 0.59	2.00± 0.49	-	-	-	0.132
Conversion to laparotomy: n	0	0	0	-	-	-	NS

Note:

[a] Values are expressed by Mean ± standard deviation, differences between groups were compared with ONE-WAY ANOVA Method,multiple comparisons were performed with LSD method.

Hb=haemoglobin NS=not significant

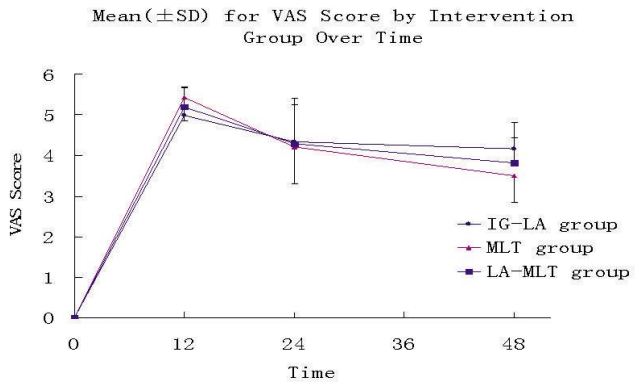


Fig. 2 Mean ± SD score values of the values of the visual analogue scale (VAS) observed in women undergoing surgical myomectomy by isobaric gasless laparotomy (IG –LA; n = 35), minilaparotomy (MLT; n = 35) or laparoscopically assisted minilaparotomy (LA–MLT; n = 35)

ment of uterine fibroids-surgical excision and hysterectomy-has been promulgated as the one-size-fits-all solution (18). However, myomectomy is advisable for women who wish to preserve their childbearing capabilities and it is needed when myomas are either asymptomatic, but growing rapidly and causing infertility/recurrent abortion, or symptomatic, causing abnormal uterine bleeding or pain.

Laparoscopy has developed into an effective tool that facilitates a wide range of pelvic surgery, including conservative myomectomy. The most common motive for conservative myomectomy, and hence laparoscopic myomectomy, is the patient's will to avoid hysterectomy for personal reasons, or conserve fertility.

Among the minimally invasive approaches to myomectomy, isobaric gasless laparoscopy (LA), using an abdominal wall-lifting device (6,7), minilaparotomy (MLT) (8-10) and laparoscopically assisted minilaparotomy (LA-MLT) (11) have been introduced recently. Retrospective studies have shown isobaric gasless laparoscopy to be a feasible, reproducible, reliable, safe procedure for removing intramural and subserosal myomas (6,7). Moreover, gasless laparoscopic myomectomy permitted the removal of large intramural myomas through a minimal access procedure with satisfactory results (12,13). Therefore, it was suggested that gasless laparoscopic myomectomy could be indicated primarily for removal of large intramural myomas or for multiple myomectomies (≥ 3 myomas per patient).

The use of minilaparotomy in surgery for benign gynecologic disease has been well established (8). Laparoscopic assisted myomectomy was first reported in 1994 (19). In their review of 57 cases, the authors concluded that the use of the minilaparotomy incision is a safe alternative to myomectomy by laparotomy. It is technically less difficult to perform than laparoscopic myomectomy, allows better closure of the uterine defect, and may require less time to perform. The procedure is far easier to teach than laparoscopic myomectomy because of the high degree of technical skill required for the latter.

Similarly, myomectomy via minilaparotomy was shown to be a safe and effective minimally invasive approach with little bleeding, few complications, and early discharge and return to normal activities (8,9,10,20). In a multicenter randomized, controlled study, Palomba et al confirmed that minilaparotomic myomectomy is related to a lower global degree of surgical difficulty, and that it is a highly feasible and safe procedures, even if the laparoscopic approach remains, in expert hands, the procedure better related to the best short-term outcomes (21). In two retrospective non-randomized studies, LA-MLT induced a similar blood loss, but fewer days of hospitalization, fewer days to resume normal activity (19, 22) and less post-operative use of analgesics (22).

The first randomized study reporting that MLT and LA-MLT offer advantages in comparison with classic laparotomy (11). To the best of our knowledge, only two prospective trials in the literature compare myomectomy with MLT and conventional LA using CO2 (14,15), only one study compares MLT with isobaric gasless LA myomectomy, and only one study compares laparotomy (LT), MLT with LA-MLT. However, no study compares IG-LA with MLT and LA-MLT for removal of large uterine leisomyomas. Even there are several studies of laparoscopic myomectomy for large myomas (6,13,16), or compares with abdominal myomectomy (17).

Therefore, we undertook the randomized study comparing the operative data and early postoperative outcome for myomectomy performed by IG-LA compared with those for MLT or LA-MLT in a series of patients with large uterine leiomyomas (≥ 5cm) randomly assigned to each surgical technique.

In our study, the operation was completed for all the patients using a minimally invasive approach (IG-LA, MLT, or LA-MLT), and no conversion to standard laparotomy was necessary. No case in either group was returned to the operative theater. There was difference of the VAS score among the three time points (12h, 24h and 48h), no difference of the VAS score among the three groups, with values at all time points averaged and over time, and the interaction between treatment and time was significant.. No difference between two groups was detected in hospitalization days and postoperative ileus. However, the mean operating time was significantly shorter after IG-LA than after MLT or after LA-MLT. The intraoperative blood loss and Hb was less with IG-LA.

The rate of conversion to open surgery for laparoscopic myomectomies has been reported between 3.3 and 28.7% (23,24). The main reason for conversion is the need to control heavy bleeding (23,25), which is greatly influenced by an accurate and quick suture. Moreover, the high number of myomas, the intramural type, the large size and the location have been related to a higher risk of conversion.

The mean operating times are shorter after IG-LA than after MLT and after LA-MLT, because an optimal view can be maintained during irrigation-suction, the repair of the uterine defect is less time consuming and myoma morcellation by scissors or

scalpel is faster. Indeed, IG-LA procedure associates the advantages of laparoscopy and minimal access surgery with those of using the laparotomic instruments that are more reliable for uterine closure. The intraoperative blood loss and Hb were significantly less after IG-LA than after MLT, probably because of less intraoperative blood loss and better hemostatic control under endoscopic magnification, which can be easier and more effective to stop bleeding. Several operative factors (i.e., operating time, intraoperative blood loss) were significantly better in the IG-MLT group than in the MLT and/or LA-MLT group, however, no difference of early postoperative outcomes (i.e., time until discharge and paralytic ileus, postoperative abdominal pain). Indeed, these superior results associate the advantages of laparoscopy and minimal access surgery.

There are some limitations in the present trial. No influence of main myoma localization and BMI on the total operative time was detected. The explanation for this finding is probably related to the homogeneous patient characteristics of our sample. We can suppose that in a large population including obese and lean patients, BMI could significantly influence the surgical results.

In conclusion, our results demonstrate that IG-LA, MLT and LA-MLT can be a suitable option in uterine myomectomy. Several surgical and immediate postoperative outcomes were significantly better in the IG-LA group than in the MLT and LA-MLT group. However, multi-center prospective randomized studies are required to confirm the results of this study, and to compare early and late clinical outcome of myomectomy by LA-MLT with that performed by LA, including but not limited to: recurrence rate, fertility and obstetric outcome.

Conflict of interest statement

None declared.

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