

ESGE survey on tissue power morcellation complications other than leiomyosarcoma

Vasilios Tanos¹ · Hans Brölmann² · Rudy Leon De Wilde³ · Peter O'Donovan⁴ · Elina Symeonidou⁵ · Rudi Campo⁶

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Abstract The exact incidence of power morcellation complications (PMC) is unknown and probably underestimated. Medical literature mainly describes case reports and the vast majority of complications after tissue power morcellation are not reported. ESGE has run a survey among its members about complications emerging after laparoscopic

electromechanical morcellation including the risk of leiomyosarcoma (LMS). The reported risk of a sarcoma after myoma or uterus morcellation is low and presented in a separate article. The Central office using the ESGE server and website, activating the 'Survey Monkey' programme, sent a request to 3422 ESGE members to answer, anonymously, a structured electronic questionnaire with multiple structured answer options, within 3 months. The doctors responding to the call were automatically given a serial number in an EXCEL spreadsheet, enabling statistical analysis using the SPSS v.18. The probabilities were calculated by using the raw data as reported to each individual question, dividing the number of incidence with surgeon's lifetime experience in laparoscopic surgery. The electronic questionnaire was answered by 216 (6 %) surgeons. The majority of the respondents used the morcellator for 10 years. The overall probability of direct power morcellator injuries to internal organs is more frequent (0.12 %) than that of morcellator injuries to the abdominal and pelvic wall (0.06 %). The risk of parasitic myoma is estimated 0.08 and 0.16 % for the de novo endometriosis after myoma and adenomyoma morcellation. Furthermore, the vast majority of surgeons have never experienced bladder or ureter, aorta and vessel injuries by using the morcellator, proven by the standard deviation being close to zero. Three surgeons with morcellator experience between 1 and 5 years were involved in an injury that caused permanent damage, 1 nerve, 2 bowel and 1 port-site hernia injury due to the morcellator. According to surgeons' answers, death has never occurred after power morcellation. Morcellator technical problems found also to be of low probability between 0.12 and 0.3 % as estimated for all endoscopic surgeries in lifetime of 188 surgeons. The average number of times per doctor where the morcellator stacked and stopped working is 2.17 with standard deviation equal to 4.4 and sum of incidents equal to 426 times for all 196 doctors. The most frequent

✉ Vasilios Tanos
v.tanos@aretaeio.com

Hans Brölmann
h.brolmann@ziggo.nl

Rudy Leon De Wilde
rudy-leon.dewilde@pius-hospital.de

Peter O'Donovan
podonovan@hotmail.com

Elina Symeonidou
elinasy@gmail.com

Rudi Campo
Rudi.campo@lifeleuven.be

- ¹ Department of Obstetrics and Gynaecology, St. Georges Medical School Nicosia University, Aretaeio Hospital, Nicosia, Cyprus
- ² Department of Obstetrics and Gynecology, VU University Medical Center, De Boelelaan 1117, 1181HV Amsterdam, The Netherlands
- ³ Clinic of Gynecology, Obstetrics and Gynecological Oncology, University Hospital for Gynecology, Pius-Hospital Oldenburg, Medical Campus University of Oldenburg, Oldenburg, Germany
- ⁴ Obstetrics and Gynecological Oncology Yorkshire Clinic, Bradford Road, Bin2gley, West Yorkshire BD16 1TW, UK
- ⁵ Statistics, Nicosia, Cyprus
- ⁶ Past President European Society Gynaecological Endoscopy, European Academy for Gynecological Surgery LIFE, Tiensevest, 1683000 Leuven, Belgium

technical problem was morcellator transient stacking and the least frequent was the morcellator stopped working and colpotomy needed to evacuate the tissue out of the abdominal cavity 0.12 % operations. The majority of surgeons 136/188 (72 %) are using reusable morcellator devices and 51 (27 %) are using disposable devices. Moreover, 97/188 (51.6 %) of surgeons are using exclusively, only reusable morcellators; 56/188 (29.8 %) are using both disposable and reusable types of morcellators. The incidence of power morcellation complications is very low reputedly. The ESGE board advises that endoscopic operations must be performed only by doctors who have had an adequate training and knowledge. It is compulsory to know the publications about dangers, contraindications and complications before performing these operations. A complete knowledge of techniques and principles of endoscopic surgery is needed to avoid and minimize complications. A training session prior to morcellator first use might decrease further PMC.

Keywords Leiomyoma uteri · Leiomyosarcoma · Laparoscopy · Morcellation · Power morcellation complication

Introduction

A surgical complication is an unintended and undesirable event following an operative management resulting in its adjustment or irreversible injury to the patient. While a mishappening takes place, the surgeon should be alert at any moment, be ready to recognize the problem and take the most appropriate action to correction. Complications due to morcellation usually arise after organ and/or tissue injury or mechanical problems due to device malfunction. A direct morcellation injury is a tissue or vital organ injury during entry of the morcellator tip or after activation of the blade, whereas blood vessels or bowel by mistake are traumatized. Malfunction of a morcellator during surgery like abrupt stop or insufficient rotation and cutting or even spontaneous dismantling of the instrument may also happen and considered as a device complication [1, 2]. Injury to adjacent organs could be related to the individual experience and it is recommended that the use of a morcellator is trained in a dry lab environment.

During morcellation of a fibroid or an adenomyoma, the high intraperitoneal CO₂ pressure in combination with the centripetal forces of the cylindrical blade spreads the chips and cells that sedate the peritoneum. Late morcellator complications such as parasitic myoma or endometriosis peritoneal implants may happen and further surgery may be necessary. Similarly, in a case of a sarcoma morcellation of a presumed fibroid or other malignancy may upstage the disease reducing patient's survival. However, upstaging of the disease is not clear yet according to Pritts E et al. (2015) [3]. Actually, any method that disrupts

the integrity of a tumour has the potential to spread the disease like might very well happen during myomectomy of a hidden sarcoma by laparotomy [4]. Difficulties to select an indicated or a specific region of a morcellated organ and the direct distraction of a small region with malignancy are rare, however, may lead to a histopathological misdiagnosis and eventual risk for disease advancement and treatment delay [5].

In fact, the benefits that a patient gains by laparoscopic myomectomy and/or hysterectomy are far greater than the risk of complications that might emerge during morcellation in laparoscopy. According to several studies, the overall complications of laparoscopic operations are similar to those performed by laparotomy [5]. In addition, several recent publications demonstrate with statistical significant difference that the hospitalization stay, post operative pain and painkillers, blood loss, and return to active lifestyle were shorter in laparoscopic myomectomies and hysterectomies as compared to open surgery [6, 7].

It is common knowledge that the incidence of gynaecological surgery complications in general is underreported mainly due to medicolegal reasons. Complications derived after laparoscopic surgery are very scant in the literature and usually are small series or isolated events. Case reports on myoma morcellation disseminating unexpected malignancy as well as benign cells like parasitic myomas attracted recently gynaecologists and public attention [8]. In addition, the frequency of morcellator mechanical and organ injury complications in the medical literature is minimal and blurred. The ESGE, in an effort to gain more information not only about cell dissemination but also other complications that emerge after laparoscopic morcellation, has run a survey among its members. The survey results may provide at least a range of absolute numbers of power morcellation complications to be compared with the published ones. The frequency and the severity of the registered PMC could help to direct the ESGE teaching efforts and give the most appropriate advice to its members.

Methodology

The ESGE Central office has sent to 3422 ESGE members a structured electronic questionnaire with multiple structured answer options in July 2014. Free text options and comments were also available in some of the questions (Table 1). A letter accompanied the questionnaire explaining that ESGE would like to run a survey among its members about morcellator complications in order to be able to give more information and advice to gynaecologists performing laparoscopic surgery. The first part of the questionnaire was looking into the frequency of morcellated malignancies which has been published separately. The second part regarding the safety issues using a morcellator is presented in this article. Eighteen questions were specifically designed in order to receive answers

Table 1 Descriptive statistics

How many	No. of answers	Mean	Mode	Standard deviation	Sum
Q13—years have you been using a morcellator?	216	8.42	10	6.288	1818
Q15—times did you have a de novo dissemination of myomas (parasitic myoma) in the abdominal wall/pelvis?	215	0.69	0	1.974	149
Q16—times did you have a de novo dissemination of endometriosis (after adenomyoma resection) in the abdominal wall/pelvis?	212	0.59	0	1.939	125
Q17—times did you encounter direct M injuries in Lpy?	214	0.23	0	0.840	50
Q18a—times did you encounter device related complications such as parts detached in abdominal cavity?	197	0.38	0	1.928	75
Q18b—times did you encounter device related complications such as stack and not working?	196	2.17	0	4.397	426
Q18c—times did you encounter device related complications such as stop working and need to do colpotomy or laparotomy?	204	0.71	0	2.037	144
Q18d—times did you encounter other device related complications?	110	0.09	0	0.614	10
Q19—injuries you experienced in general using morcellator during your career?	213	0.24	0	0.935	52
Q20—abdominal/pelvic wall injuries have you experienced using the morcellator during your career?	209	0.17	0	0.625	35
Q21—vessel injuries have you experienced using the morcellator during your career?	212	0.01	0	0.118	3
Q22—aorta injuries have you experienced using the morcellator during your career?	209	0.00	0	0.000	0
Q23—bowel injuries have you experienced using the morcellator during your career?	209	0.10	0	0.332	21
Q24—bladder injuries have you experienced using the morcellator during your career?	210	0.03	0	0.205	7
Q25—ureter injuries have you experienced using the morcellator during your career?	207	0.01	0	0.155	3
Q26—times did you experienced a permanent damage to patient after using the morcellator?	208	0.02	0	0.138	4
Q26a—Which type of permanent damage have you experienced?	44	0.20	0	0.734	9
Q27—times did you experienced a death of a patient due to morcellator usage?	210	0.00	0	0.000	0

regarding the morcellation safety as demonstrated in Table 1. Using the ESGE server and website, activating the ‘Survey Monkey’ programme, the central office sent electronically to all members the questionnaire. By mid September 2014, the survey was closed and the doctors responded to the call were automatically isolated in an EXCEL spreadsheet. The email address was the identification of each individual while a serial number was also used to separate and establish the study group avoiding mistakes and enabling statistical analysis. Direct injury has been defined as the injury after putting the morcellator tip directly to an organ unintendedly. Abdominal/

pelvic wall injury is the direct wall injury by mistake. General morcellator injuries are the overall number of injuries excluding the direct to organ and pelvic wall injuries. ESGE members were asked to answer a structured questionnaire about the use of power morcellation in their daily practice. Table 1 presents the Q13–Q27 and the descriptive statistics. The average incidence of direct morcellation injuries, demonstrated in Table 2, was calculated by using the raw data as reported to each individual question, divided by the number of lifetime laparoscopic procedures, including laparoscopic myomectomy and hysterectomy and laparoscopic subtotal hysterectomy.

Table 2 Overall incidence of power morcellation complications during laparoscopic surgery

Complication	No. of surgeons	Probability (%)
Parasitic myoma	191	0.8
Parasitic endometriosis	188	1.6
General morcellator injuries	191	0.7
Abdominal and pelvic wall injuries	188	0.6
Direct morcellator injury	190	1.2
Morcellator stop working and need colpotomy	188	1.2
Morcellator parts to be detached during surgery	180	2.1
Morcellator stack and not working	180	3.0

Statistical analysis

The statistical analysis was performed by using SPSS v.18 (Statistical Package for Social Sciences). The second part of the questionnaire consisted of eighteen (18), mostly, open-ended questions. The sample was cleansed from the surgeons who had no morcellator experience in order to avoid inconsistencies in the answers, solely for Part B. The answers on the open-ended questions were categorized in an ordinal form, in order to be analysed and presented either by bar charts for simple frequency data or by crosstabs and cluster bars for the correlated data.

Results

Out of 3422 ESGE members who received the questionnaire, 216 (6.3 %) responded that are using power morcellation in their daily practice. A total of 344,406 laparoscopic operations, among which 103,576 laparoscopic myomectomies, 106,022 LSH and 134,808 LH, were performed by 236 surgeons. Routine morcellation during laparoscopic surgery was reported by 216 surgeons who answered all the specific questions related to the power morcellation complications as shown in Table 1.

Surgeons experience with morcellation

Out of 188 surgeons who answered all the relevant morcellator-type usage questions, 97 (51.6 %) reported that have been using only reusable morcellators, 35 (18.6 %) only disposable ones and 56 (29.8 %) use both disposable and reusable types. As it is shown in Table 1, 216 gynaecologists reported that have been using the morcellator in their daily practice with an average morcellation experience of 8 years (1–26). The majority of surgeons 64 % (124/195) have been using the morcellator between 6 and 20 years, performing LH and laparoscopic myomectomy, while 10 % (20/195) surgeons reported a morcellator experience of more than 20 years and 26 % (51/195) declare an experience of up to 5 years (Fig. 1). Almost all surgeons with up to 5 years of experience with laparoscopy have equivalent years of experience with morcellator. A similar pattern of equivalent number of years of morcellator usage and laparoscopic surgery experience is observed in surgeons with 6–10 years of endoscopic surgery practice. Fewer surgeons report 11–15 years of experience with laparoscopy but still their vast majority have similar years of morcellator experience. The morcellator usage times by surgeons with over 16 years of laparoscopic surgery experience is variable and much less than their overall lifetime operative practices (Fig. 1).

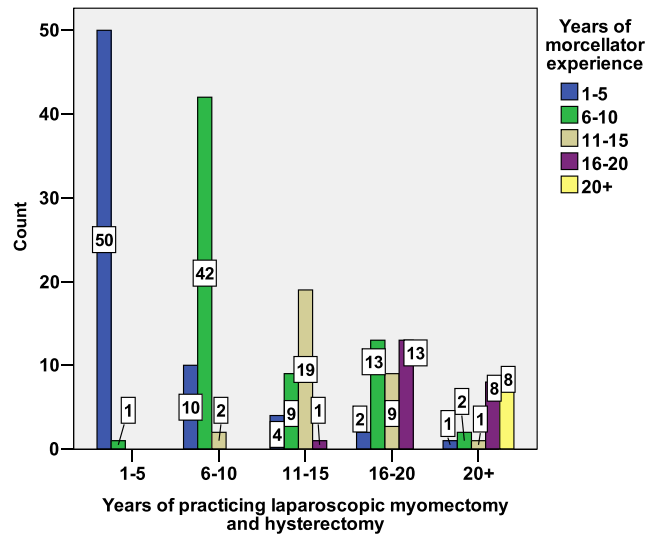


Fig. 1 Morcellator experience according to years of performing laparoscopic myomectomy and hysterectomy

Direct morcellator injuries

The majority of surgeons never encounter direct morcellator injuries during laparoscopic operations with the average being close to zero and standard deviation close to 2 as shown in Table 1. The vast majority of surgeons never experienced bladder, ureter, aorta or vessel injuries by using the morcellator, proved by the average and the standard deviation being close to zero. According to surgeons’ answers, death has never occurred after power morcellation and the vast majority never experienced a case with permanent damage. The survey results clearly demonstrate that PMC incidence is minimal as shown in Table 2. Three surgeons with morcellator experience between 1 and 5 years stated that they had either nerve or bowel or port-site hernia injury by using the morcellator. In addition, only one surgeon with 18 years of morcellator experience stated that he had bowel injury while using the morcellator (Fig. 2).

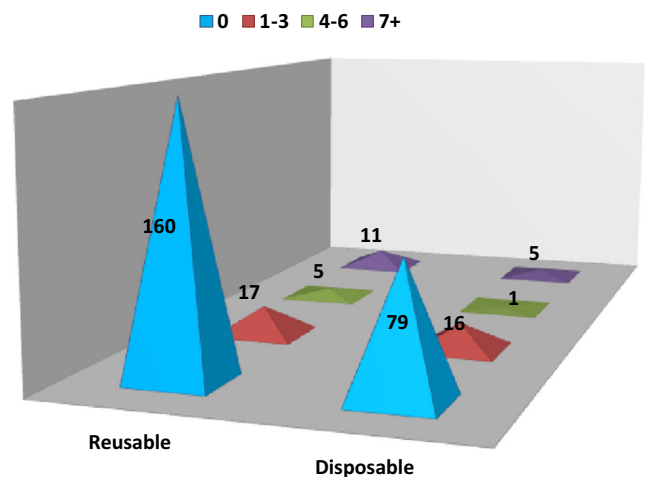


Fig. 2 Times of device problem by device type

The overall probability of abdominal pelvic wall injuries while performing laparoscopic surgery is 0.06 % and is almost similar to the overall probability of general morcellation injuries (0.07 %) and half of the overall probability of direct morcellator injures (0.12 %). The majority of surgeons never experienced any kind of injury while using the morcellator. Among 190 surgeons, 17 (8.1 %) experienced a bowel injury only once and 1 % twice presenting the most frequent direct morcellator injury. The 2.4 % of the surgeons experienced bladder injury once and 0.5 % twice. As reported, 1.4 and 1.9 % have experienced once either vessel or permanent injury, respectively, while none of the surgeons experienced an aorta injury (Table 3).

Morcellation late complications

The total number of 145 parasitic myomas after morcellation has been reported by 191 surgeons, performing as calculated 328,500 laparoscopic myomectomies in lifetime. The probability of a parasitic myoma after laparoscopic myomectomy and morcellation is almost half of the probability of parasitic endometriosis after morcellation of an adenomyoma being 0.08 and 0.16 %, respectively, as shown in Table 2. The risk of a leiomyosarcoma morcellation on a presumed fibroid has been estimated 0.15 % as shown in the previous article.

Device mechanical problems

The 85 % (160/188) of surgeons using the reusable devices and 42 % (79/188) using the disposable ones have never experienced a device problem taking in consideration that 29.8 % of surgeons are using both types of reusable and disposable morcellators. However, 9 % using the reusable and 8.5 % using the disposable morcellators have experienced 1–3 times a device problem. The 3 % using the reusable and 0.5 % using the disposable morcellators have experienced 4–6 times a device problem, while 6 % using the reusable and 3 % using the disposable morcellators have experienced a device problem more than 7 times (Fig. 2).

Table 3 Type and times of morcellator injuries

	Total no. of surgeons	Never had accident		Once accident		Twice accidents	
		No. of surgeons	Percent	No. of surgeons	Percent	No. of surgeons	Percent
Vessel injuries	212	209	98.6	3	1.4	0	0.0
Aorta injuries	209	209	100.0	0	0.0	0	0.0
Bowel injuries	209	190	90.9	17	8.1	2	1.0
Bladder injuries	210	204	97.1	5	2.4	1	0.5
Ureter injuries	207	205	99.0	1	0.5	1	0.5
Permanent damage	208	204	98.1	4	1.9	0	0.0

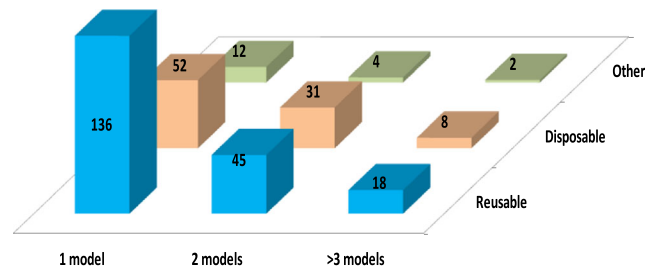


Fig. 3 Type and number of models of morcellator used

As reported, 181 doctors overall experienced a morcellator stacked and stopped working incidents 426 times during their lifetime, on an average of 2.35 times per doctor (a standard deviation equal to 4.5). Morcellator technical problems such as sudden stack of the device and parts to be detached during morcellation reported as 0.12 and 0.21 %, respectively. The risk of morcellator malfunction and the use of colpotomy for tissue evacuation were reported in 0.12 % of the cases (Table 2).

The majority of surgeons 136/188 (72 %) state that they are using reusable morcellator devices and 52 (27 %) are using disposable devices. The vast majority of surgeons who stated that they used only one type of reusable morcellator is also the first choice of morcellator for the surgeons that use more than one type of morcellator as shown in Fig. 3. Moreover, 97/188 (51.6 %) of surgeons are using exclusively reusable morcellators, 35/188 (18.6 %) are using only disposable morcellators and 56/188 (29.8 %) are using both disposable and reusable types of morcellators.

Discussion

In this survey, the direct morcellator injuries among 190 surgeons were 0.12 %. The spread of a parasitic myoma was 0.008 %. Among 188 surgeons, the spread of parasitic endometriosis was reported to be 0.16 %. Experience with morcellator surgery seems to be a determining factor, minimizing the events of complications. The usage of morcellator over 10 years reduces the risk of mishappenings near to zero.

The majority of gynaecologists used the morcellator for 10 years, and they reported that they never experienced morcellator de novo dissemination of myomas or endometriosis in the abdominal/pelvic cavity. Among the 208 surgeons participated in this survey, no death was recorded; however, of 4 cases of permanent injuries, 1.9 % were reported. The majority of the surgeons have been using a reusable morcellator device and the general incidence of technical problems was low up to 0.3 %.

Surgeons with less years of endoscopic surgery experience are using the morcellator in an equivalent amount of years of their practical experience performing laparoscopic myomectomy and hysterectomy. However, the time of morcellator usage by surgeons with longer exposure to endoscopic surgery varies showing a time lapse and shorter experience with power morcellation as compared to their laparoscopic surgery overall practice. In addition, the more experienced surgeons have been using also mechanical ways of tissue destruction in addition to electrical power morcellation. A small proportion of 8.1 % of the surgeons have experienced bowel injury only once and 1 % twice, while 2.4 % experienced bladder injury once and 0.5 % twice. The 4 permanent injuries, 2 cases of bowel, 1 nerve and 1 hernia injuries were all reported by surgeon with up to 5 years of laparoscopic surgery experience. Good bowel retraction during morcellation, steep Trendelenburg position, muscle relaxation and assistant good training might all be factors that can contribute to decrease these mishappenings. Good practice points for morcellator safe entry and operation are appropriate size of skin incision allowing smooth abdominal wall penetration. The tip of the morcellator shaft has to be kept in midline of the lower abdomen while introducing the device into the abdominal cavity and during morcellation. The morcellator's blade should be locked inside the shielding tube until aligned with the tissue and initiation of peeling. Morcellation should always be performed under continuous vision, preserving the conical tip of the shaft ('nozzle') upwards preventing penetration into the mass and avoid losing the tip out of sight and spinning the partly morcellated specimen. Retraction of the bowel and blood vessels away from the morcellation site diminishes the risk of injury to these structures [9].

The overall incidence of parasitic fibroids after laparoscopic surgery in general with the use of morcellation was reported to be between 0.12 and 0.9 % [10–13]. The reported incidence of parasitic myomas after laparoscopic myomectomy was found to be 0.2–1.2 % [14, 15]. In our survey, the risk for parasitic myoma after myomectomy reported as 0.08 % operations much lower than the ones reported in the literature. The risk of de novo formation of endometriosis after adenomyoma morcellation is much higher 0.16 % and may be attributed to the fact that many endometriosis cells are already buried below the peritoneal epithelium, while immunological factors might also be involved in favour of dissemination and growth [15]. In addition, we must take into consideration that 25 % of

the enlarged uteri with myomata concomitantly might also include adenomyosis [16]. The risk of parasitic myoma and de novo endometriosis after laparoscopic myomectomy might be also explained by the fact that this operation is performed more often in pre-menopausal women with higher oestrogen levels. A similar problem appears in post menopausal women treated with HRT, whereas the risk of de novo tissue complication is higher; hence, patients should be informed accordingly prior to the operation. The time of exposure to morcellation process, the bigger tissue volume to be morcellated and consequently the greater amount of fragments released, and the higher CO₂ intraabdominal pressure needed may all contribute rising the risk of de novo formation of uterine tissue implantation. Technical issues might be of particular importance, minimizing the development of parasitic fibroids and endometriosis after laparoscopic morcellation (<1 %). Stabilization of the specimen prevents fast rotation and spread of cells and tissue fragments in the abdominal cavity while in the bag morcellation is another option although under research. Efforts should be made to remove all tissue fragments after morcellation and use thorough irrigation and suction of the peritoneal cavity.

To prevent and minimize the risk of upstaging of uterine sarcomas and benign tissue such as fibroid and endometriosis tissue by power morcellation of a presumed fibroid can be performed in a laparoscopic bag. Research in tissue retrieval from the abdominal cavity mainly focuses on in-bag tumour morcellation that may prevent parasitic fibroids, upstaging eventual malignancies but also protect from direct morcellation traumas [17–19]. Upstaging of the disease in cases of sarcomas is not confirmed to be higher after laparoscopic myomectomy compared to abdominal myomectomy. Prevention from upstaging is a more complicated issue to be combined with the potential prevention from tissue spillage.

In urology, in-bag morcellation after laparoscopic removal of early stage and low-grade renal cell carcinoma is reported to be safe and effective. In difficult cases or during aggressive manipulations, the laparoscopic bags can be torn and spillage of tumour cells can occur. The use of methylene blue dye in the lap bag has been suggested in order to be aware once spillage has been occurred. Transvaginal in-bag morcellation has also been described; however, prospective and well-designed studies are further needed before establishing the potential value of in-bag morcellation in gynaecologic surgery [20–22].

The majority of the surgeons have been using a reusable morcellator device most probably due to financial and environmental reasons. The reusable devices seem to carry 50 % less risk of technical problems as compared to the disposable once as reported in this survey. The disposable devices are usually lighter and less volumic and there is no need of assembling. Probably due to battery energy supply, the cutting power is challenged by the consistency and volume of the

tissue and time needed for morcellation. Morcellator technical problems according to different types of laparoscopic surgery found also to be of low probability between 0.12 and 0.3 % as estimated for all endoscopic surgeries in lifetime of 188 surgeons. The most frequent technical problem was morcellator transient stack and the least frequent was the morcellator stopped working and colpotomy needed to evacuate the tissue out of the abdominal cavity 0.12 % operations.

The development of safer morcellation techniques in the abdominal cavity by technical innovation, including in-bag morcellation, is still under research. In-bag morcellation of fibroids potentially can reduce direct morcellation injuries, parasitic fibroids and endometriosis, port metastasis and probably the upstaging of morcellated sarcomas [23]. A retrospective study in-bag morcellation of low-grade renal cell carcinoma in 188 patients was compared to open nephrectomy and found no difference in survival rate of 21-month follow-up [22, 24]. According to the literature, 25 % of the intraoperative problems during laparoscopy are due to the equipment malfunction or technical problems that can be resolved by adopting a check list [23, 25]. A laparoscopist should master the equipment and be ready to resolve a problem which is due to settings, calibrations, wrong connection, etc. Similarly, he should be aware of the instruments used and familiar with their advantages and purposes. Injuries and accidents appear to occur most frequently during the initial stage of a device implementation and instrument usage. Increased morbidity and mortality result when laparoscopists do not recognize intra or post operative complications early or do not address them in a timely manner. The pernicious result is directly related to the time and accuracy of diagnosis and correct treatment. Introducing the laparoscope in the bag enables better visualization of the morcellator's tip and retracts the bowel, omentum and ovaries from the operative field. It is possible that future lap-bag frequent use might lead to easier and faster insertion, also facilitating the vaginal route when LH is performed. In-bag morcellation is to be introduced cautiously after thorough training and meticulously registered to detect adverse events in time and be able to improve the morcellation mechanism itself [26, 27].

Our survey is a retrospective study based on the data recollection of individual respondents. All were ESGE members using power morcellators. The possibility that data collected is a rough guess by the respondents, rather than being objectively collected data from formal registrations is another drawback of this study. However, a survey that always carries the risk of uncontrolled data with the potential of over- and under-reporting is the limitation of this study. Surgeons are known to underestimate the number of ensuing complications they meet. However, a survey probably can minimize this psychological defence mechanism known as denial resulting in recall bias. It is a weak study but it is a laudable effort by the ESGE society to present at least some data, in order to support its recommendations: (a) endoscopic operations must be

performed only by doctors who have had an adequate training and knowledge. (b) It is compulsory to know the publications about dangers, contraindications and complications before performing these operations. (c) A complete knowledge of techniques and principles of endoscopic surgery is needed to avoid and minimize complications. (d) A training session prior to morcellator first use might decrease further PMC.

The exact incidence of morcellation complications is unknown and probably underestimated. Medical literature mainly describes case reports and the vast majority of complications after tissue power morcellation are not reported. Like most of the human errors similarly power morcellation complications (PMC) can be prevented and avoided. Awareness, continuous education and training may all contribute to minimize complications. Industry can also substantially contribute to further decrease of PMC producing more reliable and safer devices. Probably training prior to usage of a morcellator can also assist to reduce PMC even further. The patients' safety after laparoscopic surgery in general gynaecology is well preserved presenting excellent treatment results with short hospitalization stay and immediate mobilization. Whether power morcellation poses a unique danger to the patient with occult LMS is still an unanswered question.

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Compliance with ethical standards This article does not contain any studies with human participants or animals performed by any of the authors.

Conflict of interest Dr. Campo Rudi: He is a consultant for Karl Storz endoscope.

Prof. Rudi Leon De Wilde: He receives reimbursement of travel expenses to International congresses by the Karl Storz Company.

Prof. Hans Brölmann: He does research project with Olympus, Gynesonics and Gedeon-Richter without any personal fees.

Prof. Peter O'Donovan: He provides consultancy advice to both Karl Storz and Lina medical in the last year in the field of ambulatory gynaecology nothing linked with morcellation.

They declare that their relation with the companies mentioned above have no impact upon the scientific value and the content of the submitted article entitled 'ESGE survey on tissue power morcellation complications other than leiomyosarcoma' assigned by manuscript number.

Prof. Vasilios Tanos declares that he has no conflict of interest.

Mrs. Elina Symeonidou declares that she has no conflict of interest.

Informed consent Informed consent was obtained from all individual participants included in the study.

This article does not contain patient data.

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