Recommendations for laparoscopic morcellation of uterus and leiomyomas. Position paper of the SEGi (Società Italiana di Endoscopia Ginecologica)

S. ANGIONI¹, M. MALZONI², S. SCHETTINI³

SUMMARY: Recommendations for laparoscopic morcellation of uterus and leiomyomas. Position paper of the SEGi (Società Italiana di Endoscopia Ginecologica).

S. ANGIONI, M. MALZONI, S. SCHETTINI

Recently the American Food and Drug Administration (FDA) published an alert about the risks of uterine tissue morcellation during laparoscopic procedures. In particular, the possible risk of spreading an undiagnosed malignant tumour was underlined. From then on, a fervent debate in the media has led the major scientific societies to express their position on the matter.

Given the crucial nature of this topic, with this document the Italian Society of Gynaecological Endoscopy (SEGi) intends to provide both its members and the Italian laparoscopists with an overview of the available scientific evidence and clinical indications for correct and responsible management of uterine diseases with the interest of the patient as the main objective.

KEY WORDS: Myoma - Fibroma - Sarcoma - Endometrial cancer - Laparoscopy - Morcellation.

Uterine fibroids

Leiomyomas or uterine fibroids are the most common tumours of the genitourinary tract in the female population. In some cases they are completely asymptomatic, allowing for conservative management. In other cases, the association with signs and symptoms such as hypermenorrhea, menometrorrhagia, pelvic pain and infertility, dictate treatment (1, 2).

Therapeutic options

There are conservative therapeutic options, either pharmacological or based on procedures of interventional radiology (embolisation of uterine arteries, ultrasonic treatment, radio-frequency), but in many cases the myomas require a surgical approach that consists of the removal of individual fibroids, by hysteroscopy, laparoscopy or laparotomy (3-5).

The more radical approach after the completion of reproduction consists of hysterectomy by laparotomy, laparoscopy or vaginal route (6).

The choice of the type of method depends primarily on the characteristics of the lesions, on the characteristics of the patient and, last but not least, on the degree of experience of the operator in the use of the specific surgical technique.
Laparoscopic approach

The laparoscopic approach in the hands of expert surgeons is associated with demonstrated benefits in terms of a lower rate of complications, better post-operative recovery, less pain and risk of infection and a shorter duration of the hospitalisation in comparison to laparotomy (7, 8). The diffusion and the increasing refinement of endoscopic techniques currently allows even the removal of formations of large dimensions or the entire uterus through small surgical incisions (5). For obvious reasons, in such cases, it is essential to fragment the specimens for the complete extraction. Indeed, surgical fragmentation of the specimen for extraction has been practiced for decades in the context of abdominal and vaginal procedures.

Morcellation

Electromedical fragmentation (morcellation) was introduced in 1993 and it is based on the use of a mechanical device characterised by a cylindrical blade which rotates at high speed. The electric morcellation may thus determine a micro diffusion of cells in the peritoneal cavity, with the possible implantation of fibromatous tissue in ectopic locations, even in cases of histological benignity. In fact, myomas are clonal tumours with an increased growth potential determined by genetic or chromosomal mutations (9-19). By the same kind of mechanism such a form of dissemination and subsequent implant is more likely to occur wherever the histological nature of the morcellated lesion corresponds to a preoperatively unexpected malignant condition (20, 21).

Uterine sarcomas

Uterine sarcomas are rare and represent only 7-8% of malignant conditions in the uterus. Leiomyosarcoma is the prevalent histopathological type (43% of uterine sarcomas) (22).

According to the case studies in the literature available, the possibility of post-operative histological diagnosis of these types of lesions, not previously identified, occurs from between 0.08 to 0.13% (the frequency reported by the FDA bulletin 4/2014 is 1:350) and this can worsen the prognosis of the patient, with a decrease of 73 to 46% in the 5 year survival rate, depending on whether the lesion has been extracted intact or after morcellation (20, 21, 23-28). The mean survival rate free from disease drops from 39.6 to 10.8 months with a tripled risk of relapse (hazard ratio, 3.18; 95% confidence interval, 1.5 -6.8; P = .003) (29-31).

In the case of morcellation of positive lesions for leiomyosarcoma during histological evaluation it is advisable to conduct a surgical re-exploration and eventually the use of chemotherapeutic treatment if there is suspicion of the disease spreading.

Surgical planning of morcellation

In all cases of surgical planning in which the morcellation of uterine neoformations is foreseen, it is advisable to perform an ultrasound assessment of the endometrium preventively, and possibly an endometrial biopsy in the event of abnormal uterine bleeding, besides a cervical cytology, in order to exclude the presence of a neoplastic disease in these locations, which would contraindicate the fragmentation of the specimen in the abdominal cavity. These procedures unfortunately, in most cases, do not allow the exclusion of the presence of a leiomyosarcoma and the diagnostic techniques of imaging available, although possessing a high degree of accuracy, do not always permit a clear preoperative diagnosis of the leiomyosarcoma before histological verification (32-36). It should be noted that the incidence of leiomyosarcoma is greater over the age of 40, whilst very rare below the age of 35, with an average age of 65 at diagnosis (22).

Therefore, planning surgery with intracavitary morcellation of lesions should be considered with caution in patients in peri- and post-menopausal age, and in the case of lesions with a high rate of growth. In fact these parameters can increase the possible diagnosis of leiomyosarcoma, even if they are not predictive.

Moreover, morcellation should be avoided in cases of patients with a history of exposure to tamoxifen or pelvic irradiation, both of which are risk factors for the disease. Other risk conditions are the history of retinoblastoma in childhood or familiarity with polycystic syndromes (Lynch, hereditary leiomyomatosis, renal cancer). Obviously, morcellation must be proscribed in cases where there is a diagnosis of uterine cancer (endometrial, epithelial, stromal, or cervical cancer) even if the laparoscopic approach could be suggested in many cases (37).

Some Authors have recently proposed the introduction of appropriate devices that allow morcellation of the lesions in the abdominal cavity in a “closed” system, i.e., by isolation in a suitable endobag (in-bag...
morcellation) (38, 39), in order to reduce the risk of intraperitoneal spread of disease in the case of hidden neoplasia. The use in routine clinical practice needs the development of dedicated devices, with the capacity to protect the entire abdominal cavity from the spread of tissue, without the risk of breakage of the device itself due to the action of the morcellator, and especially the ability to ensure adequate visibility to the surgeon so as not to increase the risk of mechanical injury to the surrounding organs.

Conclusions

Whilst awaiting the evaluations of dedicated scientific committees that can lead to conclusive indications on this topic many international scientific societies have expressed their recommendations on “open” morcellation in the abdominal cavity.

At the current time, the SEGi recommendations for endoscopic surgical treatment of patients suffering from pathologies which make them potential candidates for intra-abdominal morcellation of the lesions are the following:

- Planning of the surgical treatment cannot be separated from a thorough anamnestic and clinical evaluation of the patient (cervical cytology, ultrasound assessment and possibly hysteroscopic evaluation):
  - Morcellation should not be performed in the case of endometrial or cervical neoplastic disease;
  - Morcellation is not recommended in the case of fibromatous lesions with suspicions of malignancy in the preoperative diagnostic evaluation or in the case of elevated rhythm of growth (even if not completely predictive);
  - Morcellation is not recommended in the case of patients with a personal history of retinoblastoma or a family history of poly-neoplastic syndromes;
  - Caution in the use of morcellation in patients in peri-menopausal age.
- The use of a written form of consent which clearly informs the patient about the possibility of mechanical injury to other organs due to the action of the morcellator, and the possibility of spreading tissue associated with the technique in question, even in the case of benign disease, is recommended. The possible feedback of histological malignancy, not evaluable preoperatively, and the possible prognostic worsening that is associated with the eventual morcellation of these lesions should be specified, as well as the consequent necessity of a second surgical intervention in order to perform the staging of an unsuspected neoplastic disease.
  - Moreover the patient must be informed of all the possible surgical approaches: in the case of hysterection, based on the available evidence, the vaginal approach must be privileged, if possible. Likewise the benefits of mini-invasive endoscopic surgery in comparison to the risks related to the laparotomic approach should be shown (7, 40).
  - In the case of myomectomy, the advantages of the mini-invasive approach, including the possible alternative methods of specimen extraction (mini-laparotomic or vaginal-culdocentesis), should be clearly expressed. Informed consent should also include information about the possible risks of the conservative strategy of waiting so avoiding surgery, in addition to the alternative non-surgical treatment techniques (embolisation of uterine arteries, ultrasound, radio frequency, medical therapies) in cases of undiagnosed malignant conditions.
  - The development of devices dedicated to intracavitary morcellation in a closed system should be encouraged, in order to minimise the risk of tissue dispersion.
  - All the centres in which gynaecological surgery is carried out are invited to carry out a revision of their internal case studies, in order to create a National Registry for the control of uterine sarcomas (the total number of cases in relation to the total number of interventions for fibromatosis, the number of cases not identified before, the number of cases treated with endoscopic approach and possibly subjected to morcellation, follow-up of patients).

Acknowledgements

The Authors do not have conflict of interest.
The Authors thank Federica Sedda, MD, for her help in translating the manuscript.

References


