No. 317, January 2015

# Technical Update on Tissue Morcellation During Gynaecologic Surgery: Its Uses, Complications, and Risks of Unsuspected Malignancy

**This technical update has been prepared by the Clinical Practice–Gynaecology Committee of the Society of Obstetricians and Gynaecologists of Canada (SOGC) and the Executive of the Society of Gynecologic Oncology of Canada (GOC) and approved by the Executive and Board of the SOGC and the Board of Directors of the GOC.**

**PRINCIPAL AUTHORS**

Sukhbir S. Singh, MD, Ottawa ON

Stephanie Scott, MD, Vancouver BC

Olga Bougie, MD, Ottawa ON

Nicholas Leyland, MD, Hamilton ON

**SOGC CLINICAL PRACTICE–GYNAECOLOGY COMMITTEE**

Nicholas Leyland, MD (Co-chair), Hamilton ON

Wendy Wolfman, MD (Co-chair), Toronto ON

Catherine Allaire, MD, Vancouver BC

Alaa Awadalla, MD, Winnipeg MB

Annette Bullen, RN, Caledonia ON

Margaret Burnett, MD, Winnipeg MB

Susan Goldstein, MD, Toronto ON

Madeleine Lemyre, MD, Quebec QC

Violaine Marcoux, MD, Montreal QC

Frank Potestio, MD, Thunder Bay ON

David Rittenberg, MD, Halifax NS

Sukhbir S. Singh, MD, Ottawa ON

Grace Yeung, MD, London ON

**GOC EXECUTIVE COMMITTEE**

Paul Hoskins, MD, Vancouver BC

Dianne Miller, MD, Vancouver BC

Walter Gotlieb, MD, Montreal QC

Marcus Bernardini, MD, Toronto ON

**SPECIAL CONTRIBUTOR**

Laura Hopkins, MD, Ottawa ON

Disclosure statements have been received from all contributors.

## Abstract

**Objective:** To review the use of tissue morcellation in minimally invasive gynaecological surgery.

**Outcomes:** Morcellation may be used in gynaecological surgery to allow removal of large uterine specimens, providing women with a minimally invasive surgical option. Adverse oncologic outcomes of tissue morcellation should be mitigated through improved patient selection, preoperative investigations, and novel techniques that minimize tissue dispersion.

**Evidence:** Published literature was retrieved through searches of PubMed and Medline in the spring of 2014 using appropriate controlled vocabulary (leiomyomsarcoma, uterine neoplasm, uterine myomectomy, hysterectomy) and key words (leiomyoma, endometrial cancer, uterine sarcoma, leiomyosarcoma, morcellation, and MRI). Results were restricted to systematic reviews, randomized control trials/controlled clinical trials, and observational studies. There were no date limits but results were limited to English or French language materials. Searches were updated on a regular basis and incorporated in the guideline to August 2014. Grey (unpublished) literature was identified through searching the websites of health technology assessment and health technology assessment-related agencies, clinical practice guideline collections, clinical trial registries, and national and international medical specialty societies.

**Values:** The quality of evidence in this document was rated using the criteria described in the report of the Canadian Task Force on Preventive Health Care. (Table 1)

**Benefits, harms, and costs:** Gynaecologists may offer women minimally invasive surgery and this may involve tissue morcellation and the use of a power morcellator for specimen retrieval. Women should be counselled that in the case of

**Key Words:** leiomyoma, uterine sarcoma, leiomyosarcoma, morcellation, complications

J Obstet Gynaecol Can 2015;37(1):68–78

**Table 1. Key to evidence statements and grading of recommendations, using the ranking of the Canadian Task Force on Preventive Health Care**

| Quality of evidence assessment* | Classification of recommendations† |
|---|---|
| I: Evidence obtained from at least one properly randomized controlled trial | A. There is good evidence to recommend the clinical preventive action |
| II-1: Evidence from well-designed controlled trials without randomization | B. There is fair evidence to recommend the clinical preventive action |
| II-2: Evidence from well-designed cohort (prospective or retrospective) or case–control studies, preferably from more than one centre or research group | C. The existing evidence is conflicting and does not allow to make a recommendation for or against use of the clinical preventive action; however, other factors may influence decision-making |
| II-3: Evidence obtained from comparisons between times or places with or without the intervention. Dramatic results in uncontrolled experiments (such as the results of treatment with penicillin in the 1940s) could also be included in this category | D. There is fair evidence to recommend against the clinical preventive action |
| | E. There is good evidence to recommend against the clinical preventive action |
| III: Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees | L. There is insufficient evidence (in quantity or quality) to make a recommendation; however, other factors may influence decision-making |

*The quality of evidence reported in these guidelines has been adapted from The Evaluation of Evidence criteria described in the Canadian Task Force on Preventive Health Care.[59]

†Recommendations included in these guidelines have been adapted from the Classification of Recommendations criteria described in the Canadian Task Force on Preventive Health Care.[59]

unexpected uterine sarcoma or endometrial cancer, the use of a morcellator is associated with increased risk of tumour dissemination. Appropriate training and safe practices should be in place before offering tissue morcellation.

**Summary Statements**

1. Uterine sarcomas may be difficult to diagnose preoperatively. The risk of an unexpected uterine sarcoma following surgery for presumed benign uterine leiomyoma is approximately 1 in 350, and the rate of leiomyosarcoma is 1 in 500. (II-2) This risk increases with age. (II-2)
2. An unexpected uterine sarcoma treated by primary surgery involving tumour disruption, including morcellation of the tumour, has the potential for intra-abdominal tumour-spread and a worse prognosis. (II-2)
3. Uterus-sparing surgery remains a safe option for patients with symptomatic leiomyomas who desire future fertility. (II-1)

**Recommendations**

1. Techniques for morcellation of a uterine specimen vary, and physicians should consider employing techniques that minimize specimen disruption and intra-abdominal spread. (III-C)
2. Each patient presenting with uterine leiomyoma should be assessed for the possible presence of malignancy, based on her risk factors and preoperative imaging, although the value of these is limited. (III-C)
3. Preoperative endometrial biopsy and cervical assessment to avoid morcellation of potentially detectable malignant and premalignant conditions is recommended. (II-2A)
4. Hereditary cancer syndromes that increase the risk of uterine malignancy should be considered a contraindication to uncontained uterine morcellation. (III-C)
5. Uterine morcellation is contraindicated in women with established or suspected cancer. (II-2A) If there is a high index of suspicion of a uterine sarcoma prior to surgery, patients should be advised to proceed with a total abdominal hysterectomy, bilateral salpingectomy, and possible oophorectomy. (II-2C) A gynaecologic oncology consultation should be obtained.
6. Tissue morcellation techniques require appropriate training and experience. Safe practice initiatives surrounding morcellation technique and the use of equipment should be implemented at the local level. (II-3B)
7. Morcellation is an acceptable option for retrieval of benign uterine specimens and may facilitate a minimally invasive surgical approach, which is associated with decreased perioperative risks. Each patient should be counselled about the possible risks associated with the use of morcellation, including the risks associated with underlying malignancy. (III-C)

## ABBREVIATIONS

| | |
|---|---|
| BRCA | breast cancer |
| ESS | endometrial stromal sarcoma |
| FDA | Food and Drug Administration |
| LDH | lactic dehydrogenase |
| LESS | laparoendoscopic single site morcellation |
| LMS | leiomyosarcoma |
| MIS | minimally invasive surgery |
| MRI | magnetic resonance imagery |

## INTRODUCTION

Tissue morcellation during gynaecologic surgery has been widely practiced to facilitate removal of large uteri or uterine myomas through less invasive incisions than those used in a traditional laparotomy.[1] The first electronic