# A treatment option for laparoscopically-resected uterine leiomyosarcoma with morcellation

A new and frequently utilized treatment option for symptomatic uterine leiomyoma is laparoscopic resection with morcellation so the specimen can be extracted through a small abdominal incision or through the vagina. Despite meticulous preoperative evaluation , some of these tumors (approximately 0.2%) have malignant foci of uterine leiomyosarcoma (ULMS) that is widely disseminated in the process of morcellation prior to extraction. These patients are in need of effective additional treatments.

Fig. 1. Tubes and drains are placed after cytoreductive surgery in order to administer warm chemotherapy directly into the abdomen and pelvis.

Patients with morcellated ULMS were treated with a standardized cytoreductive surgery (CRS), hyperthermic perioperative chemotherapy (HIPEC), and early postoperative intraperitoneal chemotherapy (EPIC) specifically designed for sarcomatosis. Treatment was by cytoreductive surgery using visceral resections and peritonectomies to remove all visible sarcoma deposits. Normal organs or peritoneal surfaces were not resected. The exception to this rule was the greater

omentum which was completely resected even if it appeared normal. Greater omentectomy was considered sarcomatosis prophylaxis.

Hyperthermic perioperative chemotherapy (HIPEC) was used in the operating room.[1] Drugs administered intraperitoneally were cisplatin at 50 mg/m$^2$ and doxorubicin at 15 mg/m$^2$. These chemotherapy agents were diluted in 1.5% dextrose peritoneal dialysis solution in a volume of 1.5 l/m$^2$. Ifosfamide was administered by continuous infusion over the 90 minutes of HIPEC at 1300 mg/m$^2$. 2-Mercaptoethanesulfonate sodium (MESNA) at 256 mg/m$^2$ by bolus intravenous infusion was started 15 minutes before HIPEC and repeated at 4 hours and 8 hours later. Urine output was maintained at greater than 150 ml/15 minutes to prevent cisplatin-induced kidney damage. The heated chemotherapy solution was manually distributed in an attempt to maintain as uniform temperature as possible. Target temperature was 42.5°C. Intestinal reconstruction was performed and the abdomen closed after HIPEC was completed (Fig. 1.).

A Tenckhoff catheter and 5 closed suction drains were placed within the abdomen prior to its closure. On postoperative days 1 through 5, paclitaxel at 20 mg/m$^2$ in 1 liter of 1.5% hetastarch solution (Hespan, B. Braun Medical Inc., Bethlehem, PA) was administered as rapidly as possible into the peritoneal space. There was a 23-hour dwell before a one hour drainage prior to the next instillation. Distribution of disease by peritoneal cancer index (PCI) was recorded by preoperative CT or MRI and at the time of CRS (Fig. 2.). Completeness of cytoreduction score (CC-score) was determined after completion of CRS. Morbidity and mortality and interval to start systemic chemotherapy were prospectively recorded.

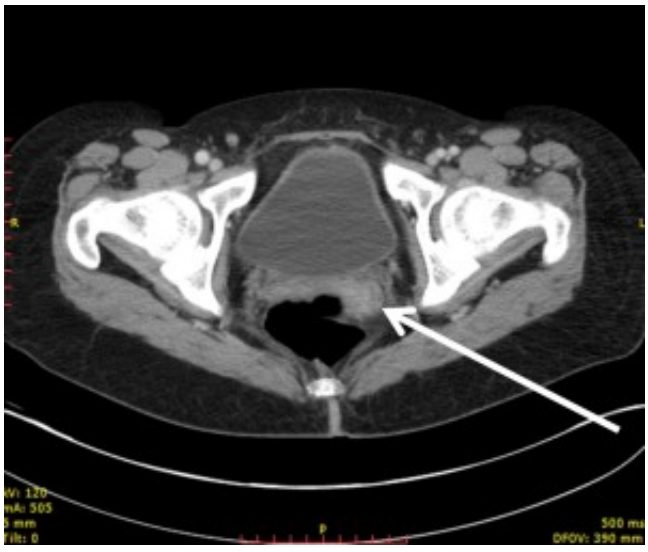

Fig. 2. Computed tomography of the pelvis in a patient with morcellation of the uterine leiomyosarcoma two months prior to definitive cytoreductive surgery with hyperthermic intraperitoneal chemotherapy and early postoperative intraperitoneal chemotherapy. A 1.6 cm soft tissue mass is demonstrated on the left pelvic sidewall anterior to the hypogastric vessels. This was not apparent on prior studies. At surgery, it was confirmed as a nodule of leiomyosarcoma.

Six patients with disseminated ULMS after morcellation or slicing have undergone CRS and HIPEC and 5 of the 6 had EPIC. All six patients had complete visible clearing of sarcoma prior to perioperative chemotherapy. Early intervention after morcellation was associated with a lesser extent of disease. No serious morbidity or mortality was observed in early referral patients. Patients eligible for systemic chemotherapy were treated within six weeks of the CRS with perioperative chemotherapy.

The future use of laparoscopic resection of ULMS with morcellation is currently under debate. However, patients after laparoscopic resection and morcellation have CRS and HIPEC plus EPIC as a treatment option. Results regarding short term benefit are suggested by these early data, especially with early referral. If minimally invasive treatment of uterine fibroids is to continue, there must be a careful screening for ULMS prior to the laparoscopic procedure. Then, extremely careful histopathologic examination should occur. Any patients who are found to have a possibility of sarcomatosis should immediately be referred for sarcomatosis prophylaxis using CRS and perioperative chemotherapy. All data from the study of peritoneal surface malignancy suggests that the earlier the definitive intervention and the lower the PCI, the better the prognosis and less the morbidity.

## Publication

Cytoreductive Surgery and HIPEC as a Treatment Option for Laparoscopic Resection of Uterine Leiomyosarcoma with Morcellation: Early Results.
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