



Minimally invasive cytoreductive surgery and hyperthermic intraperitoneal chemotherapy

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Things do change, and it is important to notice when that happens.

Cytoreduction of peritoneal tumors now has a good and growing evidence base but is still a major procedure with a very large incision and a morbidity with grade III/IV complications in half of the patients (1-3).

Hand-assisted laparoscopic cytoreductive surgery with hyperthermic intraperitoneal chemotherapy (HIPEC) was recently reported for the first time by Salti and Naffouje from Chicago (4).

Eleven hand-assisted and 11 matched (not randomised) controls with either colorectal cancer or pseudomyxoma were compared, lower blood loss and length of hospitalization were reported in the hand-assisted group.

There is also a larger experience of laparoscopic cytoreductive surgery (CRS)/HIPEC (5) outcome in 90 patients as reported by Arjona-Sanchez *et al.* (6) with good short-term outcomes.

The principal issue that is a concern in either approach is what will the long-term outcomes be?

Even in the hands of very experienced peritoneal oncology surgeons of RENAPE, laparoscopy failed to identify all lesions in 26 patients where laparoscopy was regarded as technically satisfactory. Open assessment of the same patient revealed that peritoneal cancer index (PCI) had been underestimated by laparoscopy in 44% (7). Laparoscopy has a very clear staging role in identifying colorectal carcinoma (CRC) patients with PCI >15 who are most unlikely to benefit from CRS/HIPEC (8,9) and palliative laparoscopic HIPEC has very encouraging ascites control and surprisingly

long-term survival in some peritoneal malignancy patients including peritoneal mesothelioma (10).

What would the significance of “missed lesions” be? In CRC it is widely believed that there are no long-term survivors unless a CC0 resection is done (11) and if lesions are missed at laparoscopy they will clearly not be removed. In pseudomyxoma the importance of a CC0 cytoreduction is not as clear, long-term survival certainly can occur in CC1 patients after CRS/HIPEC (11-20).

The issue of morbidity is also not entirely clearly proven to be better after laparoscopic approaches—the cancer selected for these approaches are low-PCI patients—and morbidity and mortality following open surgery will also be low. High grade morbidity following open CRS/HIPEC is in our experience due to sepsis and intestinal anastomosis leaks. And one would wonder if in a patient with 5, 10 or 15 suture lines will the morbidity and mortality be lower with a laparoscopic approach?

PIPAC (pressurized intraperitoneal chemotherapy) is also a rapidly developing area but this is currently reserved for use in inoperable patients for palliation and/or downstaging (21,22). Its role as an alternative to peritonectomy/HIPEC has not yet been evaluated.

The next few years offer a great opportunity to resolve these issues but clearly things are changing. And less invasive treatment of peritoneal cancers is coming.

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