

## Laparoscopic gastrectomy: advances enable wide clinical application

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Received: 4 October 2007 / Accepted: 8 November 2007 / Published online: 10 April 2008  
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The current trend is toward laparoscopic gastrectomy. Although no level 1 randomized evidence or cost-effective analysis exists to show the superiority of laparoscopic gastrectomy over open gastrectomy, the indications and use of laparoscopic gastrectomy in clinical practice have been expanded beyond the carefully selected older patients described in the report by Singh et al. [1] in a recent issue of this journal. A current published report shows the clinical use of laparoscopic gastrectomy for early-stage gastric cancer with a trend also toward locally advanced carcinoma [2] and for carriers of *CDH1* mutations to prevent hereditary diffuse gastric cancer (HDGC) syndrome [3, 4]. As laparoscopic gastrectomy currently is being applied in an environment of strong competition within various countries and among specialized institutions worldwide to attract patients, what are the benefits and risks of the laparoscopic approach?

Laparoscopic gastrectomy is unlikely to improve survival or cure rates for gastric cancer patients, but evidence supports its superiority over open gastrectomy in improving quality of life (QOL). Singh et al. [1] report on a series of 20 elderly patients who underwent laparoscopic gastrectomy procedures. These patients were at risk for high morbidity and mortality with the use of conventional gastric surgery. There were no perioperative deaths. Four patients experienced significant complications, with two patients requiring reoperation.

Extended D2 lymphadenectomy should be considered for patients with gastric cancer. Lee et al. [2] recently reported on laparoscopically assisted distal gastrectomy (LADG) with extended D2 lymphadenectomy for patients with early-stages gastric cancer. Two surgeons performed the procedure for 64 patients over an 8-month period, with a postoperative complication rate of only 3% and no deaths. The high-volume surgeons who performed the procedures are the key for these excellent results. The D2 lymphadenectomy compliance rate for the LADG was similar to that for open gastrectomy.

Should D2 gastrectomy be the standard procedure for localized gastric cancer? Despite a long-term debate in the West [5–8], D2 surgery is a standard approach in Eastern countries [9, 10]. High cure rates have been reported with D2 surgery for early-stage gastric malignant tumors [9, 11, 12], but there still is no level 1 evidence in favor of D2 surgery [13]. The current status of the treatment for localized gastric cancer [14] includes either D2 surgery performed by experienced surgeons [15, 16] or, if this criterion is not met, limited D1 surgery plus chemoradiotherapy [17, 18].

With the randomized evidence for the safety and efficacy of the laparoscopic approach for colorectal cancer, laparoscopic gastrectomy has been growing rapidly. The advantages of laparoscopic over open gastrectomy include quicker return of gastrointestinal function, faster ambulation, and earlier discharge from the hospital, although the operating time is longer than for open gastrectomy [19].

Another important field of laparoscopic approach is the primary prevention of gastric cancer for individuals with familial susceptibility to the disease. This patient-friendly technique may increase the number of health individuals who are carriers of germ-line mutations in the *CDH1* (E-cadherin) gene. For these carriers, who face a very high

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lifetime risk of gastric cancer (60–80%), a risk-reducing prophylactic gastrectomy is recommended [3, 4, 20–22]. Given that in the prevention setting a D2 node dissection is unnecessary, laparoscopically assisted total gastrectomy (LATG) is an attractive preventive intervention. Currently, with the availability of a safe LATG [23], many carriers of the *CDH1* mutation who are skeptical about the invasive open surgery may be convinced to undergo this minimal access surgery for prevention of the HDGC syndrome.

Women with *CDH1* mutations also have a high risk (~40%) for breast cancer. For these carriers, as for women with germ-line *BRCA1/2* mutations [24], prophylactic bilateral mastectomy [25–27] or close surveillance could be considered [28, 29].

Although large-scale randomized trials are needed for evidence-based decision making on the use of laparoscopic gastrectomy in the prevention and treatment setting, encouraging accumulating data are indicative of a wider clinical use of laparoscopically assisted gastrectomy in high-volume institutions by experienced surgeons. In the future, laparoscopic resections and novel genetic and genomic-based markers will allow personalized preventive and therapeutic interventions improving both QOL and survival of cancer patients [30–34].

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