

# Prophylactic Gastrectomy for CDH1 Mutation Carriers

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A recent story in the *Philadelphia Inquirer* (Donn, 2001) carried this headline: "To avoid cancer, stomach removed." The headline caught my eye and prompted a careful reading and follow-up.

The story began with a brief account of the experiences of N.B., a Canadian whose twin sister was dying of a rare hereditary stomach cancer. Gastric cancer also was diagnosed in N.B.'s mother, who died at age 29; her grandmother; great-grandfather; and great-aunt. N.B. had surgeons remove her seemingly healthy stomach to prevent a similar fate, and she has been cancer-free for eight years. The newspaper story cited the first name and surname of the proband (affected individual) and included a summary of the findings from a study of five cases of prophylactic gastrectomy reported in *The New England Journal of Medicine (NEJM)*.

In this article, I will discuss stomach cancer and prophylactic gastrectomy and summarize the *NEJM* article.

## Gastric Cancer: Causes, Prevalence, Effects, and Gastrectomy as a Treatment

Stomach cancer is the 13th most common cancer. The four main types of gastric carcinoma, or cancer of the stomach, are glandular, isolated cell, solid, and mixed carcinoma (Carneiro, Seixas, & Sobrinho-Simoes, 1995). Gastric cancer may be part of hereditary syndromes such as nonpolyposis colorectal cancer, Li-Fraumeni

Gastric cancer is difficult to diagnose at an early stage. Signs and symptoms of the disease often only occur when advanced or metastatic disease is present. A very small number of gastric cancers are hereditary. The mutation to the E-cadherin gene has high penetrance and confers a lifetime risk of gastric cancer of 80% for carriers. Because of the high penetrance of the mutation and the difficulty of diagnosing gastric cancer at an early stage, carriers of the mutation may be candidates for prophylactic gastrectomy. Although limited data are available about the complications and outcomes associated with prophylactic gastrectomy, nurses should be knowledgeable about prophylactic surgery for hereditary cancers and prepared to answer patients' questions about their prevention.

syndrome, familial adenomatous polyposis, and Peutz-Jeghers syndrome (Lindor & Greene, 1998). Gastric cancer has been linked to germline inactivating (truncating) E-cadherin/CDH1 mutations on the long arm of chromosome 16 (Guilford et al., 1999). Typically, gastric cancer is diffuse.

Diagnosing gastric cancer in its early stages is difficult. The condition produces few signs and symptoms until late in the disease. When symptoms occur, they generally are nonspecific. Therefore, in two-thirds of the cases of stomach cancer, diagnosis occurs after the cancer has reached an incurable advanced stage (Yoshida & Saito, 1996).

The most common signs and symptoms of gastric cancer are associated with local-regional and systemic disease. Local-regional manifestations are weight loss, abdominal pain, emesis, change in bowel habits, anorexia, dysphagia, and early satiety. Systemic manifestations are weakness, hepatic mass, abdominal or bony pain, jaundice, ascites, and lymphadenopathy. Early identification of precancerous lesions is important for opti-

mum survival. This can be accomplished by detailed endoscopic mucosal examination (Caldas et al., 1999).

Hereditary diffuse gastric cancer accounts for no more than 1%–2% of all stomach cancers. The mutation to the E-cadherin gene has high penetrance and confers a lifetime risk of 80% for carriers. Because of the high penetrance of the gene mutation and the difficulty of diagnosing gastric carcinoma at an early stage, genetic counselors should inform carriers about the option of prophylactic gastrectomy.

Patients should consider this surgery if their families have a history of stomach cancer and genetic testing is informative (i.e., reveals the mutation associated with the disease).

Counselors must advise candidates of the consequences of this risk-management strategy. For example, without stomachs, people lose weight and must eat smaller amounts more frequently. Candidates must receive information about methods of gastrointestinal reconstruction and the effects of gastrectomy on nutrition. (The small intestine can digest most foods fairly well.) Candidates also must be aware that data about the morbidity and mortality of the prophylactic procedure are scarce. The data that do exist are limited by the fact that most of the patients who undergo the preventive surgery are young and healthy, a fact that may skew available outcome statistics. The mortality

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