Use of the Pleurx® Pleural Catheter for the Management of Malignant Pleural Effusions

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Malignant pleural effusion (MPE), the accumulation of excess fluid in the pleural space secondary to cancer, is a complex problem experienced by many patients with cancer. Lung cancer, breast cancer, and lymphoma are the cancers most commonly associated with MPE. Lung and breast cancer account for about 75% of pleural effusions (Camp-Sorrell, 1999). The presence of MPE often is indicative of advanced disease and poor prognosis, but MPE also can be the presenting symptom that leads to a diagnosis of cancer (Lawler, 1999).

Physiology of Malignant Pleural Effusion

The pleural space is a potential space between the parietal pleura, which is the inner lining of the thoracic cavity, and the visceral pleura, which is the outer lining of the lung. The pleural space normally contains only about 5–15 ml of fluid at one time, but about 100–200 ml of fluid moves through the pleural space in a 24-hour period (Camp-Sorrell, 1999).

Cancer can cause accumulation of excess fluid in the pleural space in different ways. A tumor can mechanically block lymphatic vessels or lymph nodes, which inhibits the drainage of fluid out of the pleural space, or a tumor can directly infiltrate the pleura. A tumor can obstruct pulmonary veins, preventing fluid from being reabsorbed into the bloodstream. A tumor also can perforate the thoracic duct and cause an effusion (Works & Maxwell, 2000). Another way cancer can lead to MPE is via the shedding of malignant cells into the pleural space, which also decreases reabsorption of pleural fluid back into the lymphatic system (Lawler, 1999; Works & Maxwell). This accumulation of excess fluid compresses the lung and can cause severe dyspnea as well as cough and chest discomfort. Dyspnea is the primary symptom of MPE and can be detrimental to patients' comfort, functional status, and quality of life.

Treatment of Malignant Pleural Effusion

Sometimes MPE responds to systemic treatment with chemotherapy given to treat the underlying disease, but if dyspnea persists, palliative treatment of MPE is necessary. Relief of the symptoms of MPE is the short-term goal, but if the disease is not controlled, fluid almost always will reaccumulate (Works & Maxwell, 2000). Treatment must be individualized and must take into account patients’ functional status and expected survival probability.

Treatment options for MPE include pleurectomy, thoracentesis, pleuroperitoneal shunt, chest tube insertion (with or without the instillation of a sclerosing agent), external beam radiation, and insertion of an indwelling pleural catheter (Pleurx®, Denver Biomedical, Golden, CO). Table 1 reviews MPE treatment methods.

The Pleurx Catheter

The Pleurx catheter is a 66-cm, 15.5 French flexible silicone catheter that is surgically inserted into the pleural space for intermittent drainage of pleural effusions. Numerous openings are found on the distal 25 cm of the catheter, which is placed in the pleural space to drain excess pleural fluid (Denver Biomedical, 2000) (see Figure 1). The catheter is intended for long-term placement. It is held in place by a polyester cuff.