client is obese. If bile flow is obstructed, fat-soluble vitamins (A, D, E, and K) and bile salts may need to be administered.

**Other Therapies**

In some cases, shock wave lithotripsy may be used with drug therapy to dissolve large gallstones. In extracorporeal shock wave lithotripsy (ESWL), ultrasound is used to align the stones with the source of shock waves and the computerized lithotripter. Positioning is of prime importance throughout the procedure, which usually takes an hour. Mild sedation may be given during the procedure. Postprocedure nursing care includes monitoring for biliary colic that may result from the gallbladder contracting to remove stone fragments, nausea, and transient hematuria. Percutaneous cholecystostomy, ultrasound-guided drainage of the gallbladder, may be done in high-risk clients to postpone or even eliminate the need for surgery.

**Complementary Therapies**

The herb goldenseal has been used in treating cholecystitis. One of the active ingredients in goldenseal, berberine, stimulates secretion of bile and bilirubin. It also inhibits the growth of many common pathogens, including those known to infect the gallbladder. A study of the effectiveness of berberine in clients with cholecystitis demonstrated relief of all symptoms. Goldenseal can stimulate the uterus, so it is contraindicated for use during pregnancy. It also should not be used by nursing mothers.

**NURSING CARE**

**Health Promotion**

While most risk factors for cholelithiasis cannot be controlled or modified, several can. Modifiable risk factors include obesity, hyperlipidemia, extreme low-calorie diets, and diets high in cholesterol. Encourage clients who are obese to increase their activity level and follow a low-carbohydrate, low-fat, low-cholesterol diet to promote weight loss and reduce their risk for developing gallstones. Discuss the dangers of “yo-yo” dieting, with cycles of weight loss followed by weight gain, and of extremely low calorie diets. Encourage clients with high serum cholesterol levels to discuss using cholesterol-lowering drugs with their primary care provider.

**Assessment**

Assessment data related to cholelithiasis and cholecystitis include the following:

- Health history: current manifestations, including RUQ pain, its character and relationship to meals, duration, and radiation, nausea and vomiting or other symptoms; duration of symptoms; risk factors or previous history of symptoms; chronic diseases such as diabetes, cirrhosis, or inflammatory bowel disease; current diet; use of oral contraceptives or possibility of pregnancy
- Physical assessment: current weight; color of skin and sclera; abdominal assessment including light palpation for tenderness; color of urine and stool

**NURSING CARE OF THE CLIENT WITH A T-TUBE**

- Ensure that the T-tube is properly connected to a sterile container; keep the tube below the level of the surgical wound. *This position promotes the flow of bile and prevents backflow or seepage of caustic bile onto the skin. The tube itself decreases biliary tree pressure.*
- Monitor drainage from the T-tube for color and consistency; record as output. Normally, the tube may drain up to 500 mL in the first 24 hours after surgery; drainage decreases to less than 200 mL in 2 to 3 days, and is minimal thereafter. Drainage may be blood tinged initially, changing to green-brown. Report excessive drainage immediately (after 48 hours, drainage greater than 500 mL is considered excessive). Stones or edema and inflammation can obstruct ducts below the tube, requiring treatment.
- Place in Fowler’s position. *This promotes gravity drainage of bile.*
- Assess skin for bile leakage during dressing changes. *Bile irritates the skin: it may be necessary to apply skin protection with karaya or another barrier product.*
- Teach client how to manage the tube when turning, ambulating, and performing activities of daily living. *Direct pulling or traction on the tube must be avoided.*
- If indicated, teach care of the T-tube, how to clamp it, and signs of infection. *Clients may be discharged home with the tube in place. Reporting early signs of infection facilitates prompt treatment.*