

# Use of Hepatic Artery Infusion Pumps in the Treatment of Hepatic Metastases

Lisa Parks, MS, APRN-CNP, ANP-BC, and Allison Ann De Villiers, MSN, APRN-CNS, OCN®, ACNS-BC



The first trials of hepatic artery infusion pump (HAIP) chemotherapy occurred in the 1990s. The high percentage of recurrent disease after curative resection of colon cancer and perioperative systemic chemotherapy has renewed interest in HAIP adjuvant chemotherapy. With the increased use of HAIP therapy in cancer treatment, it is important that oncology nurses be trained in HAIP management. This article aims to describe the HAIP, indications for the use of HAIPs in oncology, possible complications from HAIPs, and the nursing management of patients with HAIPs.

## AT A GLANCE

- Nurses manage HAIPs and the potential complications that can occur.
- Nurses can provide education regarding activities of daily living for patients with HAIPs.
- In addition to monitoring patients receiving chemotherapy, nurses can assess patient adherence to HAIP filling procedures.

## KEYWORDS

hepatic artery infusion pump; liver chemotherapy; HAIP; metastatic colon cancer

## DIGITAL OBJECT IDENTIFIER

10.1188/22.CJON.602-605

The liver is the primary metastatic site for patients with colorectal, biliary, and pancreatic cancer. Many patients initially present with liver metastases, whereas others will develop liver metastases during their cancer journey. In more than 60% of patients with colon cancer who undergo complete surgical resection, the tumor will recur in the liver within two years of resection (Buisman et al., 2020, 2021; Turley et al., 2022). The hepatic artery infusion pump (HAIP) was developed as a treatment for hepatic metastases. Studies show that HAIP chemotherapy can improve disease-free survival in patients who have hepatic metastases, including patients with intrahepatic cholangiocarcinoma and pancreatic cancer (Peng et al., 2021; Rossi et al., 2022).

HAIPs, which were developed in the 1960s, were originally connected externally to patients. HAIP technology has evolved, with pumps currently about the size of a hockey puck and able to be implanted in the abdomen. A catheter is inserted directly into the gastroduodenal artery (GDA) to deliver concentrated, high-dose, nonsystemic chemotherapy to the liver. The National Comprehensive Cancer Network recommends HAIP use only at institutions with medical and surgical expertise in HAIP (category 2B recommendation) (McFadden et al., 2022).

## HAIP

HAIP chemotherapy allows high concentrations (as much as a 400-fold increase) of drugs to enter the tumor while sparing normal liver tissue and minimizes adverse events (Buisman, Grünhagen, et al., 2019; Muaddi et al., 2021). Floxuridine (FUDR) is the most commonly used agent for HAIP because of its short half-life (Peng et al., 2021). This therapy is often combined with traditional systemic chemotherapy.

## Patient Selection

To be considered as a candidate for HAIP chemotherapy, a patient must have liver-predominant metastases and adequate renal and hepatic function. A tumor burden greater than 70% of the liver is a contraindication to the insertion of an HAIP (Thiels & D'Angelica, 2020). Patients with portal vein thrombosis, portal hypertension, and hepatic artery occlusion are excluded because of the high risk of hepatic ischemia. An arteriogram is performed before surgical implantation to identify aberrant hepatic vessels, which occur in one-third of the patient population and can affect pump placement.