The safety and convenience of peripherally inserted central catheters (PICCs) have proven to be useful for the administration of anesthetics and toxic drugs, as well as for parenteral nutrition supply (Abedin & Kapoor, 2008; Ahn, Illum, Wang, Sharma, & Dowell, 2013). In modern nursing, PICCs have been widely used for long-term infusion in adults and children. The average retention time of a PICC line is 44–161 days (Yap, Karapetis, Lerose, Iyer, & Koczwara, 2006). A number of significant complications are related to the insertion and maintenance of PICC lines, including catheter malposition, migration, venous thrombosis, and line fracture (Amerasekera, Jones, Patel, & Cleasby, 2009). If the catheter tip is inserted into the heart, precordial discomfort, arrhythmia, cardiac tamponade, and heart valve damage may occur (Song & Li, 2013). If the catheter remains in a peripheral vein, it may induce swelling, pain, edema of the limb, discomfort, and pain at the site where the catheter tip is inserted through the vessel wall. In addition, the placement of the catheter tip in the jugular vein may result in discomfort, difficulty in turning the head and neck, and soreness in the affected side (Moraza-Dulanto et al., 2012). The current study aimed to evaluate and summarize the impact of factors associated with catheter malposition by evaluating a large sample of PICC cases to inform best clinical practices.

Methods

Data from 2,084 patients with cancer with PICCs inserted at vascular access centers and hospital wards were retrospectively analyzed from December 2012 to November 2013. None of the patients had a history of radiation treatment, superior vena cava (SVC) syndrome, or vascular surgery. The tumors were confirmed by pathologic diagnosis.