SHORT COMMUNICATION

Experience in the Use of Chemoports in the Institute of Radiotherapy and Oncology, Hospital Kuala Lumpur

G C C Lim, FRCR*, M N Lakhwani, FRCS**, N A Yahya, MD*, S A Samad, FRCR***, A K H Lim, FRCR*, * Institute of Radiotherapy & Oncology, Hospital Kuala Lumpur, ** Department of Surgery, Hospital Kuala Lumpur, *** Department of Radiology, Universiti Kebangsaan Malaysia, Kuala Lumpur

Summary

This retrospective study reviews the experience with implantation and use of subcutaneous chemoports in 86 patients over a one-year period from July 1993 to June 1994. The ages of the patients ranged from 11 to 74 years but peaked in the fifth decade. In 90% of the patients, the procedures were carried out under local anaesthesia. The chemoports were implanted to function as intravenous access for chemotherapy mainly in colorectal and breast cancer patients. Complications occurred in less than 25% of patients, the majority occurring in those patients who required a second operation for catheter malposition.

Key Words: Chemoport, Chemotherapy, Intravenous access, Complications

Cancer patients generally need long term venous access for infusion of chemotherapy drugs, fluids, blood products, as well as blood sampling. When these procedures are done repeatedly, problems of venous access due to thrombosis, direct damage to the peripheral veins and extravasation of drugs leading to tissue necrosis may arise. One of the methods to overcome this problem is to implant a venous access device (chemoport). The clinical and pathological records of all oncology patients receiving chemoports at the Institute of Radiotherapy and Oncology, Hospital Kuala Lumpur from June 1993 to July 1994 were studied.

Antibiotic prophylaxis with cloxacillin or cefuroxime was given. The procedure was carried out under strict aseptic technique. The location for chemoport implantation was chosen at the infraclavicular region. Marcaine 0.5% was used as the local anaesthetic. The catheter was premeasured, cut and inserted into the cephalic vein for approximately 15 centimetres without fluoroscopic control. The external end of the catheter was connected to the port which was tunnelled subcutaneously and anchored to the chest wall with permanent monofilament sutures. Flushing of the chemoport was performed with 10 mls of heparinized saline via a deflected point Huber needle. After the procedure has been completed a chest radiograph was taken on the same or next day to determine the position of the catheter within the vein. If the catheter was malpositioned or coiled, repositioning was carried out by exposing the port again. Postoperatively, the skin over the chemoport was observed for integrity, erytherma, swelling or infection. Use of the chemoport was delayed by at least a fortnight after its insertion. Flushing of the port with heparinized saline was performed during each cycle of chemotherapy or follow-up.

There were 86 patients whose ages ranged from 11 years to 74 years. The distribution of age, sex and race are shown in Table I. The youngest patient was

an 11-year-old boy with advanced Non Hodgkin's lymphoma.

The underlying malignancies were colorectal cancer (45%), breast cancer (15.1%), nasopharyngeal cancer (9.3%), ovarian epithelial cancer (3.5%), ovarian germ cell tumour (3.5%) and Non Hodgkin's lymphoma (3.5%). Either advanced metastatic disease or recurrent disease was present in 27.9%.

The chemotherapy regimes used most frequently were 5-Fluorouracil alone (44.2%), Cyclophosphamide+Methotrexate+5-Fluorouracil (11.6%), and cisplatin-based ones (20.9%).

Table I
Patient characteristics

Age at presentation (years)	number	(%)
10 - 19	5	(5.8)
20 - 29	6	(6.0)
30 - 39	15	(17.4)
40 - 49	30	(35.0)
50 - 59	15	(17.4)
60 or more	15	(17.4)
Total	86	(100.0)
Sex	**number**	**(%)**
Male	36	(41.9)
Female	50	(58.1)
Total	86	(100.0)
Race	**number**	**(%)**
Malay	26	(30.3)
Chinese	50	(58.1)
Indian	8	(9.3)
Others	2	(2.3)
Total	86	(100.0)

Three quarters of the patients underwent the insertion of their chemoports in the radiotherapy operating theatre. At least 95% of the insertions were performed under local anaesthesia and sedation.

Nineteen patients developed complications as depicted in Table II. Repositioning was accomplished under fluoroscopic guidance in 3 patients in the Radiology department with the assistance of the radiologist. The techniques used were the withdraw and advance manoeuvre of the catheter in 2 patients, and in the third patient the catheter was advanced beyond the cephalic vein with the aid of a Terumo glide wire.

A total of seven patients had their chemoports removed; 3 patients had completed their treatment, 2 had a blocked catheters, while 2 had infected chemoports.

The pattern of age distribution was influenced by the type of cancers being treated with the aid of chemoports. Its usefulness in palliative treatment is attested to by the fact that more than one quarter of the patients in this study had metastases or recurrence of their tumours; venous access is a recognized problem in such patients.

The chemoport is undoubtly a most important tool for vascular access for blood sampling, bolus and infusion chemotherapy and fluid or blood replacement

Table II
Complications of chemoport insertion in 19 patients

Complication	No.	%
Malposition	9*	10.5
Blocked catheter	4	4.6
Hematoma	3	3.5
Extravasation	2	2.3
Leaking	1	1.2
Total	19	22.1

** 4 of the 9 patients with malpositioned catheters developed wound infection after repositioning.*

therapy[1]. The aforementioned routines performed by the nursing staff are greatly facilitated[2]. The main advantage in the use of chemoport in our institution has been in infusion chemotherapy as the morbidity of venous irritation, the need for multiple venepunctures and risk of extravasation are decreased. Advantages of chemoports in our experience included the ease of maintenance once the wound at the reservoir site had healed. Daily activities such as showering, bathing and even swimming were not hindered compared to Hickman's catheters. The usefulness of chemoports in children has been demonstrated by previous authors[3].

The most important obstacle to a successful chemoport insertion in our experience was the unavailability of an intra-operative fluoroscopic facility. This resulted in malpositioned catheters in 9 patients (10.5%) which required repositioning. These measures had incurred significant morbidity in terms of patient inconvenience, wound infection, wound hematoma, blocked catheters and venous thrombosis.

In contrast to most other studies whereby thrombosis (10-16%) and sepsis (9-16%) were among the most important complications[4], the main complications encountered in this study were malposition and blocked catheters. Sepsis, a problem with any foreign body or chronic venous access, was infrequent, probably because of our stringent use of prophylactic antibiotics. Only 3.5% of patients had a port infection and this occurred only in the patients who required manipulation of a malpositioned chemoport. Meticulous aseptic techniques and sterile needle insertion unfortunately did not obviate the risk of sepsis completely. Compared to studies on Hickman catheters[5], pneumothorax as an acute complication had not been seen in our series. The supporting role of the radiologist in the chemoport service has been highlighted in this study.

In conclusion, chemoport insertions can be performed under local anaesthesia with acceptable complication rates. Nonetheless, fluoroscopic guidance or an intra-operative check X-ray before wound closure is strongly recommended as the morbidity and cost associated with malposition of the chemoports are significant.

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