



: 2001 4 2002 10 95  
 , 103  
 (n=39) (n=64) (n=35),  
 (n=5), (n=9), (n=54)  
 : 8-  
 554 ( 159 , 17,872 )  
 (n=1), (n=1) (n=2)  
 (n=5), (n=3), (n=1) (n=11)  
 15 (14.5%) (13%, p=.008). 10.7% (0.61 per  
 1000 catheter days)  
 : 가

(8, 9)  
 가 ,  
 , 1988 Brothers (1) 가 가  
 2001 4 2002 10  
 95 103  
 가 17-70 ( 52 ) 가 53 ,  
 가 가 42  
 가 가 (2-5). 9 , 9 , 21 , 12 ,  
 10 ,  
 (5-7) 가 34 (n=35), (n=5),  
 가 (n=9), (n=54)

1  
2



) (p=0.08). 가 (8/11, p=.02) 68 - 246

25 가 (median 161 )

가 10 ,  
가 4 (3.9%, 0.22/1000 catheter days),

가 11

(10.7%, 0.61/1000 catheter days)

가 15 (14.5%)

36 가

1  
peel - away sheath

가

가 1 가 100%  
5

2  
peel - away sheath가

가

가 1 가

가

1

가

가

가

가 5

가 3

(p=0.008).

1

가

2

가

(6, 7).

1

가

가

가

10

11 (10.7%, 0.61/1000

catheter days)

7

가

1

가

2

2

4

2

가

peel away sheath

가

acinebactor jejuni가

2

가

:

가 peel-away sheath 2 가  
가 . 가 .

가  
peel away sheath가 가

가  
가 .

Hickmann catheter

가

42 - 80%

가 . 가  
가

가  
(7, 11, 12).

가 가 . , .

가 가 가 .

peel away

sheath

1

가

가

Vesely (10)

0.13% (15/11583)  
100%

24% 3 11.7%가

(11),

가 valsava maneuver

peel away sheath

(3, 10).

valsalva

가

(11).

(fibrin sheath)

가

86

25

가

19

catheter pinch-off



1. Brothers TE, von Moll LK, Niederhuber JE, Roberts JA, Walker-Andrews S, Ensminger WD. Experience with subcutaneous infusion ports in three hundred patients. *Surg Gynecol Obstet* 1988; 166:295-301
2. Reeves AR, Seshadri R, Trerotola SO. Recent trends in central venous catheter placement: a comparison of interventional radiology with other specialties. *J Vasc Interv Radiol* 2001;12:1211-1214
3. Funaki B. Central venous access: A primer for the diagnostic radiologist. *AJR Am J Roentgenol* 2002;179:309-318
4. : 557 1999;40: 845-850
5. : 2002;47:467-472
6. Macdonald S, Watt AJ, McNally D, Edwards RD, Moss JG. Comparison of technical success and outcome of tunneled catheters inserted via the jugular and subclavian approaches. *J Vasc Interv Radiol* 2000;11:225-231
7. Trerotola SO, Kuhn-Fulton J, Johnson MS, Shah H, Ambrosius WT, Kneebone PH. Tunneled infusion catheters: increased incidence of symptomatic venous thrombosis after subclavian versus internal jugular venous access. *Radiology* 2000;217:89-93
8. 1998;38:437-440
9. 가: 2000;43:47-52
10. Vesely TM. Air embolism during insertion of central venous catheters. *J Vasc Interv Radiol* 2001;12:1291-1295
11. Luciani A, Clement O, Halimi P, et al. Catheter-related upper extremity deep venous thrombosis in cancer patients: A prospective study based on doppler US. *Radiology* 2001;220:655-660
12. Funaki B, Szymiski GX, Hackworth CA, et al. Radiologic placement of subcutaneous infusion chest ports for long-term central venous access. *AJR Am J Roentgenol* 1997;169:1431-1434
13. Groeger JS, Lucas AB, Thaler HT, et al. Infectious morbidity associated with long-term use of venous access devices in patients with cancer. *Ann Intern Med* 1993;119:1168-1174

## Implantable Central Venous Chemoport: Comparison of Results According to Approach Routes and Methods<sup>1</sup>

Byung Suck Shin, M.D., Moonsang Ahn, M.D.<sup>2</sup>

<sup>1</sup>Department of Diagnostic Radiology, Chungnam National University Hospital

<sup>2</sup>Department of General Surgery, Chungnam National University Hospital

**Purpose:** To evaluate the results and complications of placement of implantable port according to approach routes and methods.

**Materials and Methods:** Between April 2001 and October 2002, a total of 103 implantable chemoport was placed in 95 patients for chemotherapy using preconnected type ( $n=39$ ) and attachable type ( $n=64$ ). Puncture sites were left subclavian vein ( $n=35$ ), right subclavian vein ( $n=5$ ), left internal jugular vein ( $n=9$ ), right internal jugular vein ( $n=54$ ). We evaluated duration of catheterization days, complications according to approach routes and methods.

**Results:** Implantable chemoport was placed successfully in all cases. Duration of catheterization ranged from 8 to 554 days (mean 159, total 17,872 catheter days). Procedure related complications occurred transient pulmonary air embolism ( $n=1$ ), small hematoma ( $n=1$ ) and malposition in using preconnected type ( $n=2$ ). Late complications occurred catheter migration ( $n=5$ ), catheter malfunction ( $n=3$ ), occlusion ( $n=1$ ) and infection ( $n=11$ ). Among them 15 chemoport was removed (14.5%). Catheter migration was occurred via subclavian vein in all cases (13%,  $p=.008$ ). Infection developed in 10.7% of patients (0.61 per 1000 catheter days). There were no catheter-related central vein thrombosis.

**Conclusion:** Implantation of chemoport is a safe procedure. Choice of right internal jugular vein than subclavian vein for puncture site has less complications. And selection of attachable type of chemoport is convenient than preconnected type. Adequate care of chemoport is essential for long patency.

**Index words :** Catheters and catheterization, technology  
Catheters and catheterization, central venous access

Address reprint requests to : Byung Suck Shin, M.D., Department of Diagnostic Radiology, Chungnam National University Hospital,  
640, Daesa-dong, Jung-gu, Taejon 301-040, Korea.  
Tel. 82-42-220-7333 Fax. 82-42-253-0061