

[illegible]

845

(dacron cuff)  
 . J-wire 5F  
 12F peel away sheath(GISH /  
 Cook) J-wire  
 peel-away sheath  
 . 100unit/ml

38.3 °

|      |     |
|------|-----|
| 517  | 557 |
| 100% | . 2 |

4 356 , 112 ± 4.6

가 170 (67.5%),  
가 23 (9.1%),  
2 (0.8%),  
53 (21.0%)

가 3 (1.2%),  
가 1 (0.4%)  
·  
116 (20.8%)

(Table 1).

(0.7%), 10 (1.8%), 3 (0.5%), 1 (0.2%)

가 2 (0.3%),

1 가



**Fig. 1. A 33-year-old woman with Non-Hodgkin's lymphoma. Digital subtraction angiogram with contrast injection through Hickman catheter shows leakage of contrast material (arrows) at subcutaneous tissue.**

Table 1. Complications in 557 Cases of Hickman Catheter Placement

| Complications            | Number (%)  |
|--------------------------|-------------|
| Early                    | 10 (1.8%)   |
| Pneumothorax             | 3 (0.5%)    |
| Local bleedings/hematoma | 4 (0.7%)    |
| Primary malposition      | 2 (0.3%)    |
| Catheter leakage         | 1 (0.2%)    |
| Late                     | 106 (19.0%) |
| Infection                | 42 (7.5%)   |
| Venous thrombosis        | 40 (7.2%)   |
| Migration                | 18 (3.2%)   |
| Catheter occlusion       | 5 (0.8%)    |
| Pseudoaneurysm           | 1 (0.2%)    |

(Fig. 1).

(13).

106 (19.0%)  
 42 (7.5%)  
 18 (methicillin resistant *Staphylococcus aureus*:6, methicillin sensitive *Staphylococcus aureus*:3, *Streptococcus* species:4, *Trichosporon beigelli*:1, *E. coli*:1, *Bacillus* species:1, *Candida Albican*:1, *Actinobacter*:1)

가 24  
 가 10  
 가가 14  
 1.57  
 18 (3.2%)  
 18 (3.2%)  
 16  
 (Fig. 2), 2  
 1:1.64  
 1:2  
 가 5 (0.8%)  
 (p=0.38).  
 3  
 1 (0.1%)

McBride (4)

(8-11).

26.1%,

37%

Lameris (8) 40  
 (blind percutaneous)

45%,

67%

가

98%

(14-16).

5.0-8.9%

(3, 17),

4.5% (10).

100%

Lokich (12)

5

5

bolus regimen

10

24

ambulatory chemotherapy regi-

mens

2



Fig. 2. A 35-year-old woman with cholangiocarcinoma presenting with swelling and pain in the left upper extremity. Digital subtraction angiogram shows migration of left Hickman catheter with its tip in the left innominate vein (arrowheads). There is total occlusion at the left distal innominate vein with multiple collateral vessels.

(4, 5, 8, 9).

20.8%

26-67%

1.7 - 6

%  
 (0.5%)

(3, 10, 14, 18)

3

14-18G

21G

3

가

0.4%

1.2-5%

(7, 9, 10, 16),

. 1

가

(Fig. 1).

가

가

10 - 30%, 1000

0.47-4.0

(4, 18, 19, 20)

(4, 19). 43

1000  
1.23 2.24 (exit site) , (recanalization)  
(21). 5,000  
(induration) (drainage) 4 3 (14).  
가 5 1 5 3  
38.3 가  
(11, 14).  
(Implantable subcutaneous ports)  
(16, 가  
17, 22, 23). 42 (7.5%)  
18 , 24 10  
가가 14  
가가  
1000 1.57  
(24). (29-31).  
42 - 80% Hickman  
(18, 25, 26)  
40 (7.2%)  
10 . 40  
, 2  
가  
(27), 가  
(procoagulant activity) 가 (28).  
18 (3.2%) 10  
7 , 가 1  
10  
, 6 , 2  
(55.6%)  
(p = 0.054). 18 10  
1:1.64 가  
1:2  
(p = 0.38). 가

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## Interventional Radiologic Placement of Tunneled Central Venous Catheters : Results and Complications in 557 Cases<sup>1</sup>

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**Purpose:** To evaluate prospectively the results of interventional radiologic placement of tunneled central venous catheters, and subsequent complications.

**Materials and Methods:** Between April 1997 and April 1998, a total of 557 tunneled central venous catheters were percutaneously placed in 517 consecutive patients in an interventional radiology suite. The indications were chemotherapy in 533 cases, total parenteral nutrition in 23 and transfusion in one. Complications were evaluated prospectively by means of a chart review, chest radiography, central vein angiography and blood/catheter culture.

**Results:** The technical success rate for tunneled central venous catheter placement was 100% (557/557 cases). The duration of catheter placement ranged from 4 to 356 (mean,  $112 \pm 4.6$ ) days; Hickman catheters were removed in 252 cases during follow-up. Early complications included 3 cases of pneumothorax(0.5%), 4 cases of local bleeding/hematoma(0.7%), 2 cases of primary malposition(0.4%), and 1 case of catheter leakage(0.2%). Late complications included 42 cases of catheter-related infection(7.5%), 40 cases of venous thrombosis (7.2%), 18 cases of migration (3.2%), 5 cases of catheter / pericatheter of occlusion(0.8%), and 1 case of pseudoaneurysm(0.2%) . The infection rate and thrombosis rate per 1000 days were 1.57 and 1.50, respectively.

**Conclusions:** The technical success rate of interventional radiologic placement of tunneled central venous catheters was high. In comparison to conventional surgical placement , it is a more reliable method and leads to fewer complications.

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

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