

가

1

2

2

가

9

7 5

2

8

10mm,

7-10cm

Wallstent

1

10mm,

8cm

5

1 7

2

8

100%

가
8 3

1

1

snare

7

, 8

15

,

2

가

(1,2).

가

(; 7 , ; 2)

9
가 5 ,

(access)

가 4

36-68 (; 54.2)

(3-6).

9

200ml/min

170mmHg-210mmHg

(; 191mmHg) 가

(7-9).

8 , Gortex

가

1

1 2 -3

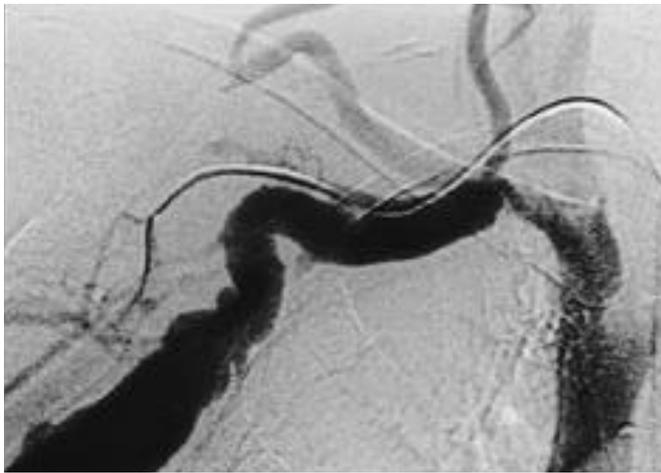
(; 1 7) . 8

43 (; 35)

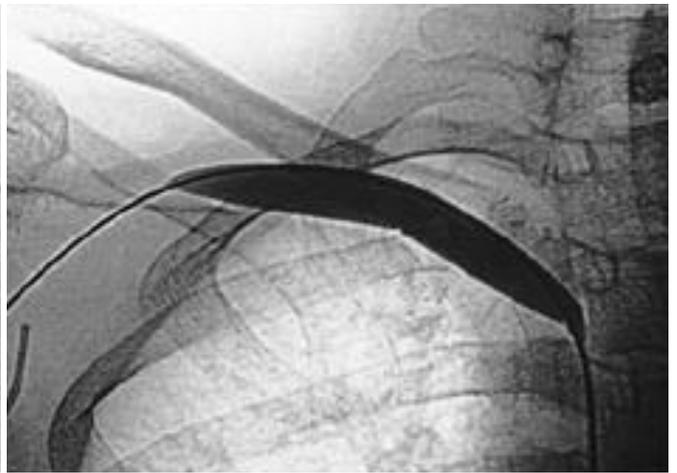
1

2

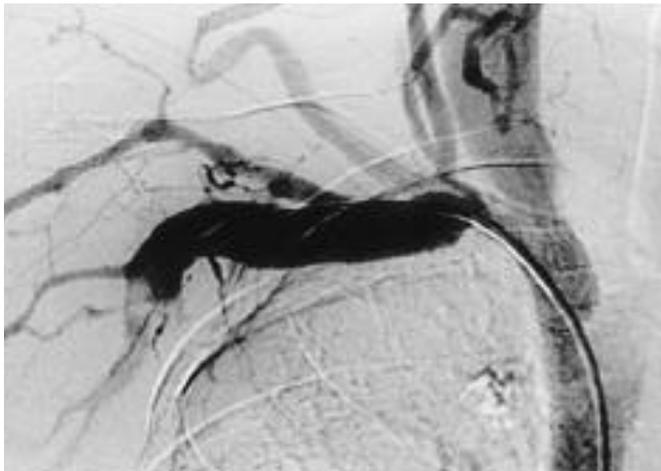
1 Siregraph D2/Digtron 3(Siemens, Erlangen, Germany) 8 Multistar T.O.P(Siemens, Erlangen, Germany)
 Wallstent (Schneider, Buelach, Switzerland) 10mm, 8cm () 가
 6 가 가 3 가 Wallstent 가
 9 7 8mm, 10mm (Cook, Bloomington, USA) 12-14 5000 IU 1000 IU
 2 7 10mm, 7-10cm 200ml/min 150mmHg



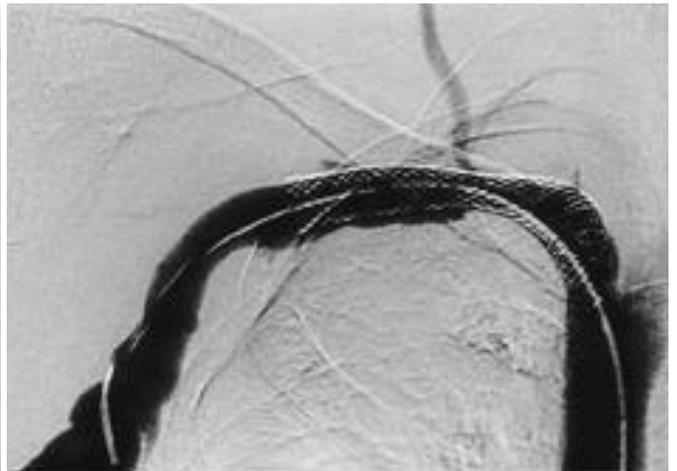
A



B



C



D

Fig. 1. Collapsing stenosis in a 63-year-old woman.

A. Venogram obtained via the venous side of the A-V fistula shows severe stenosis of right subclavian vein with multiple collateral vessels.

B. Balloon angioplasty is done and the stenosis opens sufficiently.

C. Immediately after dilatation with balloon angioplasty the dilated segment is collapsed.

D. After stent placement, full patency is restored.

80-90%

(Fig. 2).

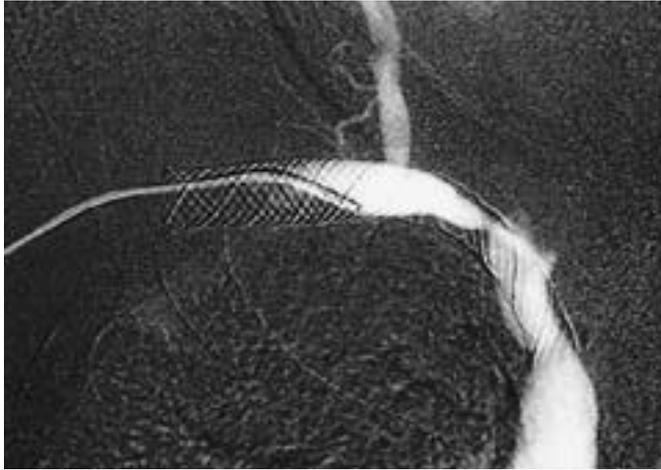
Table 1

8
 1
 0.3-3cm 1cm 가
 6 80-95% 3 1 3
 7 3 (가 1 가
) 가 가 가
 2 (Fig. 1), 가 11% (10,11).
 30% , 2
 70% 2 1
 9 가 6 가
 가 70-90% 40-42% (12-15).
 1 2
 3 가 1 가 (costoclavicular space)
 Nitinol gooseneck snare(Microvena Corp., White Bear Lake, USA) (scalenus anticus muscle)
 5 2 6
 가 3 가
 7 , 8 15 가
 155mmHg, 154mmHg, 가
 160mmHg 1 2 9 8 30 43 (
 : 35)
 20-30% 1

Table 1. Summary of Clinical Data

Case	Age /Sex	Preangio-plasty	Stent	Cx*	Restenosis (duration)	Final outcome (duration)
1	63/M	+	Wallstent(10mm,7cm)	-	-	patent(7Mo)
2	57/M	+	Wallstent(10mm,7cm)	-	-	patent(1Yr 5Mo)
3	68/M	-	Wallstent(10mm,7cm)	-	-	patent(5Mo)
4	45/F	+	Hanaro (10mm,8cm)	migration	.	not evaluated
5	63/F	-	Wallstent(10mm,9cm)	-	+(1Yr 3Mo)	patent(1Yr 7Mo)
6	36/F	+	Wallstent(10mm,10cm)	-	-	patent(9Mo)
7	60/M	+	Wallstent(10mm,7cm)	-	+(7Mo)	patent(1Yr 1Mo)
8	54/F	+	Wallstent(10mm,9cm)	-	-	patent(1Yr)
9	42/F	+	Wallstent(10mm,7cm)	-	+(8Mo)	not evaluated

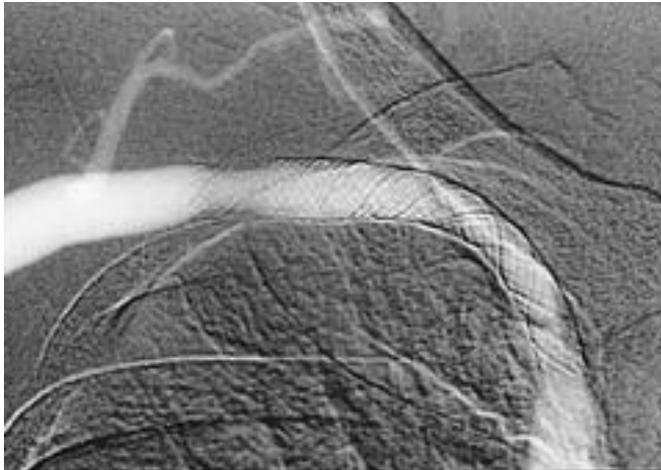
Cx*:complication



A



B



C

Fig. 2. Restenosis in a 60-year-old man.

A. Venogram obtained 7 months later shows restenosis within the subclavian vein stent.

B. Compression of underlying neointima by PTA using a 10-mm balloon catheter is done.

C. After balloon angioplasty the stent is shown to be widely patent.

(7,16,19)
가 (19,20).
(3-6).
109 ±
200-250ml/min
7mmHg . 196 ± 8.9mmHg (highly rigid stenosis),
2.3mmHg) (113 ±
150mmHg
가 (collapsing stenosis),
(9,10). 가 (kinked stenosis)
(16). 가 (7,16,19). 2 ,
2 가 3
1
2
(17,18). 가
가 1 (21).
12-26%, 1 45%-62%

가 가 , 가 가

(22).

가

(19).

10-16mm

가

14-16

(19-21). Vorwerk

6

(21)

88%, 1

86%

8

6 5

가

(23,24).

(19).

1

가

Wallstent

Wallstent

(20) Wallstent

stent

가

가

Wallstent

가

가

가

가

가

가

가

(21).

가
(19).

6

가

3

Wallstent

가

가

(19).

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Hemodialysis Shunts-related Subclavian Vein Stenosis : Treatment with Self-expandable Metallic Stent¹

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Purpose: To evaluate the usefulness of placement of self-expandable stents in hemodialytic shunt-related subclavian vein stenosis.

Materials and Methods: Self-expandable metallic stent was placed in nine patients with hemodialytic shunt-related subclavian vein stenosis. In seven cases, angioplasty was attempted before stent placement; in five, stents were placed immediately after failed angioplasty; and in two, due to restenosis after angioplasty. Procedures involved a 10mm diameter, 7-10cm length Wallstent in eight cases, and a 10mm diameter, 8cm length Hanaro stent in one. In all cases, clinical follow-up, which included physical examination and the measurement of venous resistance pressure during hemodialysis, was performed. The follow-up period was between 5 months and 1 year 7 months. Repeated intervention was performed if restenosis was detected.

Results: The stenotic sites were in eight cases the site of a previous subclavian venous line, and in one, the site of anatomic narrowing at the thoracic inlet of the subclavian vein. The technical success rate was 100%; a resulting complication was stent migration into the right atrium in one case in which a Hanaro stent had been used; this was removed by snaring. During follow-up of the eight patients in whom stent placement was successful, restenosis developed in three cases. This occurred during the 7th, 8th, and 15th month, respectively. Two such cases were treated by balloon dilatation.

Conclusion: In hemodialytic shunt-related subclavian vein stenosis, treatment involving the use of a self-expandable metallic stent is useful, especially for treating a lesion which has not responded to angioplasty with a high patency rate.

Index words : Dialysis, shunts
Stents and prostheses
Veins, stenosis or obstruction
Veins, subclavian

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