

가

1

.

: CT 가

: 14 CT

33 - 68 (50.1) 3 11 CT

1 - 14 (5) 가 CT 가

6 - 31 (18.9) (n=9) (n=5)

(May - Thurner) (n=9)

(n=8) (n=3), (n=2) 1 (n=3),

(n=3) (n=4)

2 (May - Thurner)

1 CT

: CT

가

가 65%, 60% (1).

(1).

30% (2). , Doppler 3

, CT가

CT

CT

CT

CT

Doppler

(3 - 5). CT

6 , 12

가

가가 가

CT

가

2003 6 19

2003 8 13

가

42 Urokinase
224 IU 26

50%

1999 10 2002 3 8 - 14 mm 12 -
14 mm 4 - 8 cm (Niti - S stent, Taewoong,
Seoul, Korea)

11 14 33 - 68 (50) 3 3 - 8 mg/ 6

14

5 CT

CT 가

CT (Somatom plus - 4; Siemens,
Erlangen, Germany)

CT 5 mm

10 - 12 mm feed (Fisher's exact test) 0.05

CT iopromide (Ultravist 370; Schering,
Seoul, Korea) 150 ml 3 ml/sec 가 (May -

5 3 mm 6 mm feed Thurner)

가 CT
가

(5 - Fr. micropuncture introducer set,
Cook, Bloomington, IN, U.S.A.)

6 - Fr. sheath (Cook, Bloomington, IN, U.S.A.) CT 3 - 4

sheath side arm Doppler

Doppler 가

CT 6

(MTI, San Clemente, CA, U.S.A.) Urokinase (Green - 31 (18.9)
Cross, Seoul, Korea) 20 - 30 IU 19.9 , 17.0

6 - 10 IU 18.2 (Mann - Whitney test)

Table 1. Extent of Thrombus and Anatomic Cause of Iliac Venous Stenosis in 14 Patients

patient	Sex/Age	Patency	Extent of DVT (Thrombosed veins)										Anatomic cause of iliac venous stenosis		Follow-up	
			IVC	CIV	EIV	IIV	CFV	SFV	DFV	PV	CV	GSV	Location	Compressing Structures	Duration (Months)	Symptoms
1	53/F	Good	-	+	+	+	-	-	-	-	-	-	LCIV	RCIA/Spine (MT)	24	-
2	52/F	Good	-	+	+	+	-	-	-	-	-	-	LCIV	RCIA/Spine (MT)	24	-
3	66/M	Good	-	+	+	+	+	+	+	-	-	+	LCIV	RCIA/Spine (MT)	12	-
4	40/F	Good	-	+	+	+	-	-	-	-	-	-	LCIV	RCIA/Spine (MT)	14	-
5	33/F	Good	-	+	+	-	+	-	-	-	-	-	LCIV	RCIA/Spine (MT)	30	-
6	44/F	Good	-	+	+	+	+	-	-	-	-	-	LCIV	RCIA/Spine (MT)	30	-
7	60/F	Good	-	+	+	+	+	+	+	+	-	-	LCIV	RCIA/Spine (MT)	17	pain
8	59/F	Good	-	+	+	+	+	+	+	+	-	+	LCIV	RCIA/Spine (MT)	12	-
9	59/F	Good	-	+	+	+	+	+	+	+	+	+	LCIV	RCIA/Spine (MT)	16	pain
10	47/M	Poor	+	+	+	+	+	+	+	+	+	+	LCIV	RCIA/Spine (MT)	16	pain/swelling
11	68/F	Poor	-	+	+	+	+	+	+	+	+	+	LCIV	RCIA/Spine (MT)	31	pain/swelling
12	43/F	Poor	+	+	+	+	+	+	+	+	+	+	LCIV	LCIA/Spine	6	pain/swelling
13	42/F	Poor	-	+	+	+	+	+	+	+	+	+	LCIV	LCIA/Spine	11	pain/swelling
14	45/M	Poor	-	-	+	-	+	-	-	-	-	-	RCIV	RCIA/RSM/Spine	21	pain/swelling

IVC: inferior vena cava, CIV: common iliac vein, LCIV: left common iliac vein, RCIV: right common iliac vein, RCIA: right common iliac artery, EIV: external iliac vein, IIV: internal iliac vein, CFV: common femoral vein, SFV: superficial femoral vein, DFV: deep femoral vein, PV: popliteal vein, CV: calf vein, GSV: greater saphenous vein, RSM; right psoas muscle, MT: May-Thurner syndrome

(p=0.635).

CT

가 .

(Fig. 3)

(p=0.180, p=1.000,

p=0.661, p=0.160).

8/14 (57.1%)

4 (44.

CT

4%),

4 (80.0%)

(p=0.301).

(64%) 5

CT

(36%)

9

(50.0%)

3 (42.9%),

2/9

4 (80.0%)

5/5

(p=0.266).

5/14 (35.7%)

(Table 1).

1 (11.1%),

(Fig. 4) 4 (80.0%)

(p=0.032).

2/14 (14.3%)

13

1

7/14 (50.0%)

Table 1

9

May - Thurner

30

syndrome

(Fig. 1).

5

가

가

May - Thurner syndrome

(40%)

3

(5 - 7).

(8).

(Fig. 2).

Wallstent

가

가

(9, 10).

Table 1

. 13/14 (92.8%)

(10).

, 14/14 (100%)

, 12/14 (85.7%)

, 11/14 (78.6%)

80%



Fig. 1. A 44-year-old woman with swelling of the left leg for 4 days (Patient 6).

Enhanced axial CT image shows intraluminal thrombus in the left common iliac vein (arrow) compressed by the right common iliac artery (*) and bony spur.

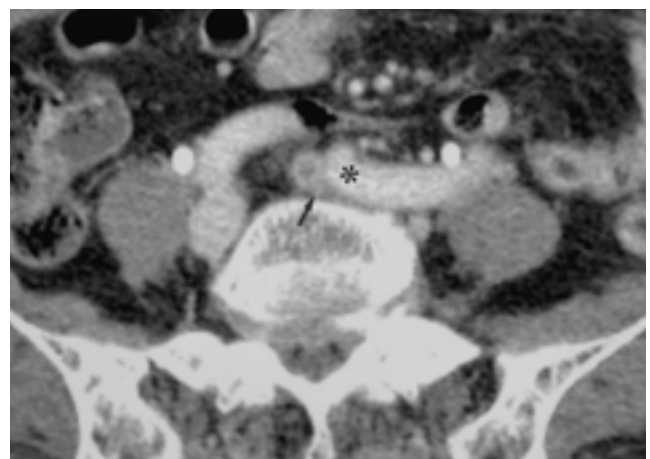
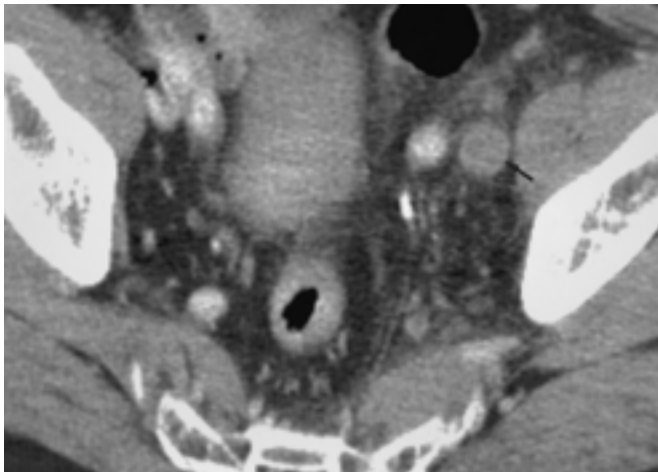


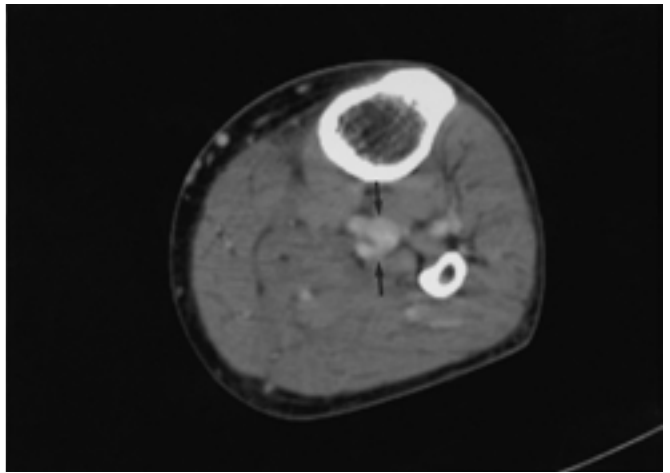
Fig. 2. A 43-year-old woman with swelling of the left leg for 9 days (Patient 12).

Enhanced axial CT image shows stenosis of the left common iliac vein (arrow) compressed by left common iliac artery (*) and bony spur.

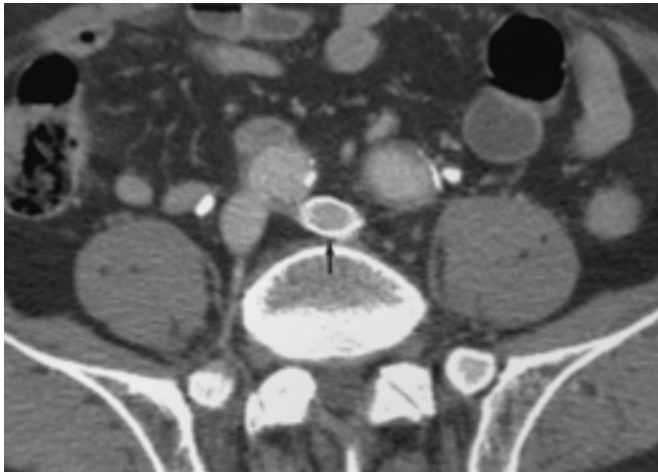
(11).



A



B



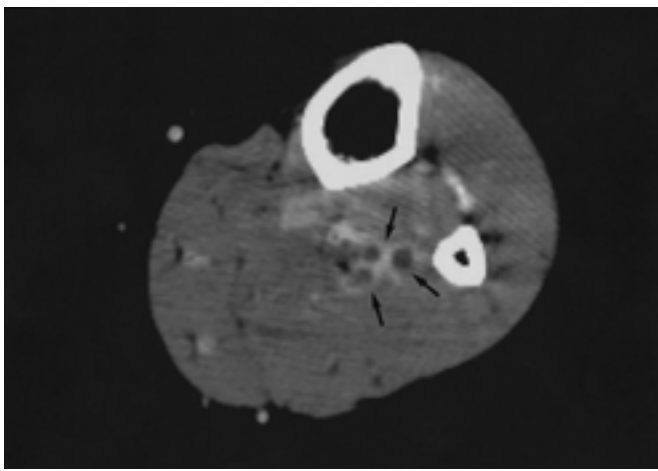
C

Fig. 3. A 66-year-old man with swelling of the left leg for 6 days (Patient 3).

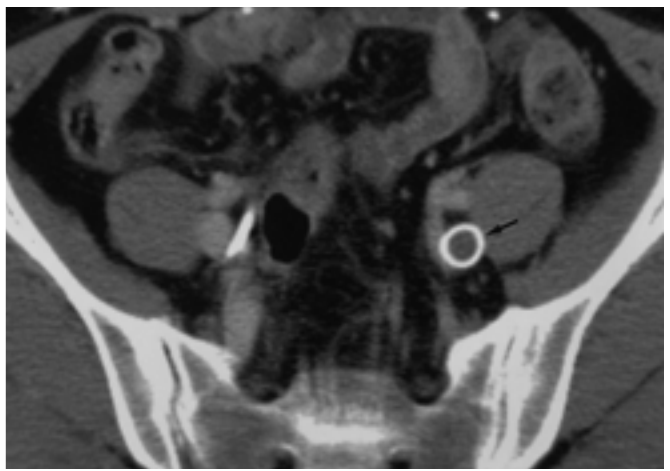
A. Enhanced axial CT image shows intraluminal thrombus in the left external iliac vein (arrow).

B. Enhanced axial CT image shows no intraluminal thrombus in the calf vein (arrows).

C. Follow-up enhanced axial CT image shows widely patent stent in the left common iliac vein (arrow).



A



B

Fig. 4. A 42-year-old woman with swelling of the left leg for 12 days (Patient 13).

A. Enhanced axial CT image shows intraluminal thrombus in the distended left calf veins (arrows).

B. Follow-up enhanced axial CT image shows totally occluded stent in the left external iliac vein (arrow).

Effect of Cause of Iliac Vein Stenosis and Extent of Thrombus in the Lower Extremity on Patency of Iliac Venous Stent Placed after Catheter-Directed Thrombolysis of Acute Deep Venous Thrombosis in the Lower Extremity¹

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Purpose: To assess the CT findings of acute deep venous thrombosis (DVT) in a lower extremity prior to catheter-directed thrombolysis, and to evaluate their relevance to the patency of an iliac venous stent placed with the help of CT after catheter-directed thrombolysis of DVT.

Materials and Methods: Fourteen patients [M:F = 3:11; age, 33 - 68 (mean, 50.1) years] with acute symptomatic DVT of a lower extremity underwent CT before and after catheter-directed thrombolysis using an iliac venous stent. The mean duration of clinical symptoms was 5.0 (range, 1 - 14) days. The CT findings prior to thrombolysis were evaluated in terms of their anatomic cause and the extent of the thrombus, and in all patients, the patency of the iliac venous stent was assessed at CT performed during a follow-up period lasting 6 - 31 (mean, 18.9) months.

Results: All patients were assigned to the patent stent group ($n=9$) or the occluded stent group ($n=5$). In the former, the anatomic cause of patency included typical iliac vein compression (May-Thurner syndrome) ($n=9$), and a relatively short segmental thrombus occurring between the common iliac and the popliteal vein ($n=8$). Thrombi occurred in the iliac vein ($n=3$), between the common iliac and the femoral vein ($n=3$), and between the common iliac and the popliteal vein ($n=2$). In one case, a relatively long segmental thrombus occurred between the common iliac vein and the calf vein. In the occluded stent group, anatomic causes included atypical iliac vein compression ($n=3$) and a relatively long segmental thrombus between the common iliac and the calf vein ($n=4$). Typical iliac vein compression (May-Thurner syndrome) occurred in two cases, and a relatively short segmental thrombus between the external iliac and the common femoral vein in one.

Conclusion: Factors which can affect the patency of an iliac venous stent positioned after catheter-directed thrombolysis are the anatomic cause of the stenosis, and the extent of a thrombus revealed at CT of acute DVT and occurring in a lower extremity prior to thrombolysis.

Index words : Computed tomography (CT)
Thrombosis, venous
Thrombolysis
Stents and prostheses

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