

1

2

6

fistula) , 3

(intracavernosal arteriovenous
(pseudoaneurysm)

가

4

가 6

가 50% (1).

2가

6

30 (8-42)

(2) 가 가

2 - 14

가 (11)

(1-3).

(3)

(4-10). 2가

(aspiration of corpora cavernosa)

()

Acuson model 128(Mountain View, Calif) ATL model
ULTRAMARK 9(U.S.A.) , 7-MHz

가

(color gain)

가 가

가 가
2 (24)

4
6 5

(high O2 saturation) 1 (4

(low O2 saturation)

(Table 1) . 1 (4)

3

¹

²

가 5 (6)
 , 1 (2) 24
 50%
 가 6 , 4.5
 (Table 2). 1 (4)
 (internal pudendal artery)
 (Tornado coil ;
 3 (glans-cavernosal, cavernoso-
 spongiosal, cavernoso-saphenous shunt)
 1 4
 (Table 2).
 가
 (Table 3), 2 (3, 4)
 2 (1,6)
 ()
 (1) ;
 (2, 3) ; (4
) ; (5, 6).

Table 1. Clinical Evaluation before Ultrasonography or Angiography

No.	Age (years old)	Onset	Clinical Symptom	Initial Cavernosal Blood Gas Analysis
1.	28	1week	Painless	High O2 saturation
2.	42	2weeks	Painful	High O2 saturation
3.	34	1day	Painless	High O2 saturation
4.	39	2days	Painful	Low O2 saturation
5.	33	6days	Painless	High O2 saturation
6.	8	1week	Painless	High O2 saturation

No. means number of patients.

가 (1,4),
 가
 가 , ,
 (4,5).
 가 가
 (醫因性)
 (13).
 papaverine

Table 2. Angiographic Diagnosis and Selective Embolization

Patient No.	Angiographic Diagnosis	Embolic Material	Time of 50% detumescence	Erectile Restoration at Follow-up
1.	Fistula/Pseudoaneurysm at the proximal cavernosal artery to cavernosal sinuses	Gelfoam	3days	1 month
2.	Bilateral fistulous tract at the CA (Rt; bulbous cavernosum, Lt; shaft)	Gelfoam	7days	1 month
3.	Fistula at the right proximal CA to cavernosal sinuses	Gelfoam & Coil	3days	4 months
4.	Fistula/Pseudoaneurysm at the left proximal cavernosal artery to cavernosal sinuses Fistula/Pseudoaneurysm at right accessory penile artery to the bulbous cavernosum Fistula at the left penile artery to the bulbous cavernosum	Gelfoam	5days	3 months
5.	Left cavernosal arteriovenous fistula	Gelfoam	4days	1month
6.	Left cavernosal arteriovenous fistula	Gelfoam	5days	1 month

CA means cavernosal artery.

(cavernosal sinusoid) 가 ,

(cavernosal aspiration), (4).
(4-6).
(n=3),
shunt; n=1) (4),
(7-10).
가

Table 3. Result of Doppler Ultrasonography

No.	Gray Scale US Finding	PV	Color and/or Power Doppler US Finding
1.	Dilated cavernosal sinuses	68	Color flow blush into right cavernosum
2.	Dilated cavernosal sinuses	35.3	Color flow blush from left mid-shaft CA into cavernosum
3.	Dilated cavernosal sinuses	120	Noncontributory for the detection of fistulous tract
4.	Dilated cavernosal sinuses	N	Noncontributory for the detection of fistulous tract
5.	Dilated cavernosal sinuse	54	Color flow blush from the right CA into cavernosum
6.	Dilated cavernosal sinuse	132	Color flow turbulance at the lacerated left CA

PV means peak systolic velocity of the cavernosal artery.
CA means cavernosal artery. N : not checked

Witt 7
(n=3),
(spongicavernosal 가
(4), 가
가 가

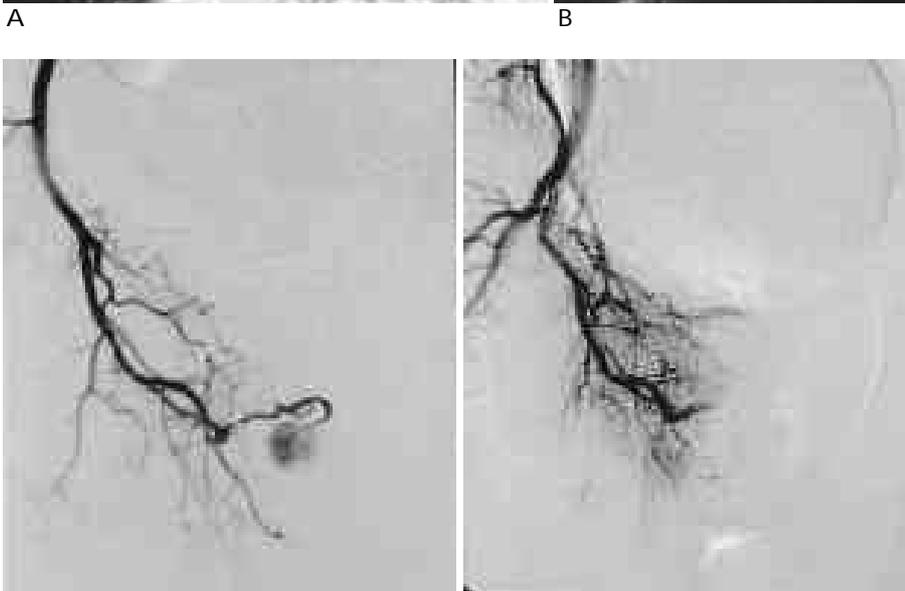
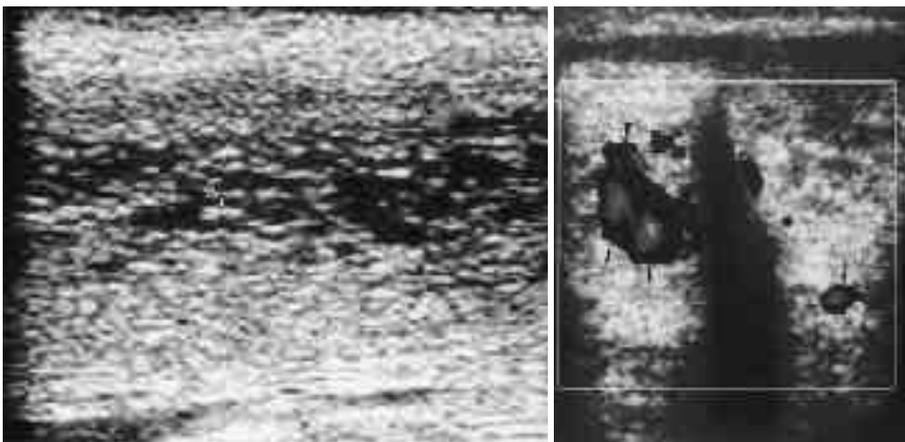


Fig. 1. A 28 year-old male patient complained of painless priapism.
A. Parasagittal gray scale image shows dilated cavernosal sinuses.
B. Coronal power Doppler image shows asymmetrical increased color flow within the right corpus cavernosum suggestive of pseudoaneurysm (arrowheads) and cavernosal artery (arrow).
C. Arterial phase of the right internal pudendal angiogram shows a contrast-filled cavernosal space suggesting pseudoaneurysm of the right proximal cavernosal artery.
D. After transcatheter embolization with gelfoam into the right proximal cavernosal artery, selective right internal pudendal angiogram demonstrates the successful embolization.

(7,11, 12,16,17). Autologous clot 가 6

1 (4,10)

(24) . 50%

() 4.5 (3-7) (7,8,11,12,16)

autologous blood clot (12,17)

2 (1-4)

가 , microcoil 1 (3)

4 bucrylate (17)

au-

tologous blood clot

가 ()

(10,16).

(recanalization)

()

1. LaRocque MA, Cosgrove MD. Priapism : a review of 46 cases. *J Urol* 1974;112:770-773
2. Hinman F Jr. Priapism: reasons for failure of therapy. *J Urol* 1960; 83:420-428

3. Puppo P, Belgrano E, Germinale F, Bottino P, Guiliani L. Angiographic treatment of high-flow priapism. *Eur Urol* 1985;11: 397-400
4. Witt MA, Goldstein I, Saenz de Tajada I, Greenfield A, Krane RJ. Traumatic laceration of intracavernosal arteries: the pathophysiology of nonischemic, high flow arterial priapism. *J Urol* 1990;143: 129-132
5. Winter CC, McDowell G. Experience with 105 patients with priapism: update review of all aspects. *J Urol* 1988;140:980-983
6. Lue TF, Hellstrom WJG, McAnich JW, Tanagho EA. Priapism : a refined approach to diagnosis and treatment. *J Urol* 1986;136:104-108
7. Visvanathan K, Burrows PE, Schillinger JF, Khoury AE. Posttraumatic arterial priapism in 7-year-old boy: successful management by percutaneous transcatheter embolization. *J Urol* 1992; 148:382-383
8. McLeod RE, Clyden GR, Bonnel G. Post-traumatic priapism : successful treatment by percutaneous transcatheter embolization. *J Can Assoc Radiol* 1981;32:238-239
9. Crummy AB, Ishizuka J, Madsen PO. Posttraumatic priapism : successful treatment with autologous clot embolization. *AJR* 1979;133:329-330
10. Feldstein VA. Posttraumatic " high-flow "priapism evaluation with color flow Doppler sonography. *J Ultrasound Med* 1993;12:589-593
11. Kang SJ, Choi YJ, Seong DH, Choi HK. A case of post-traumatic priapism secondary traumatic bilateral cavernosal arteries. *J Korean Androl Soc* 1995;13:61-64 [Korean]
12. Lee HB, Hwang JC, Kim JC, Yoon JY, Hwang TK. Post-traumatic arterial priapism in a child. *J Korean Androl Soc* 1996;14:55-58. [Korean]
13. Lue TF, Mueller SC, Jow YR, Hwang TIP. Functional evaluation of penile arteries with duplex ultrasound in vasodilator-induced erection. *Urol Clin North Am* 1989;16:799-807
14. Hattery RR, King BF Jr, Lewis RW, James EM, McKusick MA. Vasogenic impotence: duplex and color Doppler imaging. *Radiol Clin North Am* 1991;29:629-645
15. : 가 . 1997;36:3-7-311
16. Miller SF, Chait PG, Burrows PE, Steckler RE, Khoury AE, McLorie GA, et al. Posttraumatic arterial priapism in children : management with embolization. *Radiology* 1995;176:59-62
17. Walker TG, Grant PW, Goldstein I, Krane RJ, Greenfield AJ. " High-flow "priapism : treatment with superselective transcatheter embolization. *Radiology* 1990;174:1053-1054
18. Gonzalez EA, Pamplona M, Rodriguez A, Garcia-Hidalgo E, Nenez V, et al High flow priapism after blunt perineal trauma : resolution with bucrylate embolization. *J Urol* 1994;151:426-428

Therapeutic Effectiveness of the Superselective Arterial Gelfoam Embolization in Post-traumatic Arterial Priapism¹

Byung Chul Kang, M.D., Je Hwan Won, M.D.²

¹*Department of Diagnostic Radiology, Mokdong Hospital, Ewha Womans University College of Medicine*

²*Department of Diagnostic Radiology, Ajou University College of Medicine*

Purpose : We retrospectively evaluated superselective embolization with Gelfoam for the management of post-traumatic arterial priapism.

Materials and Methods : Six male patients with post-traumatic priapism underwent pudendal angiography and embolization. We evaluated the time and incidence of detumescence after embolization and compared normal erectile function and its duration with the results of other reports. In all patients, color Doppler sonography was performed pre- and post-angiographically.

Results : On pudendal arteriography, intracavernosal arteriovenous fistulas were observed in all patients, and pseudoaneurysm of the cavernosal artery (or common penile artery) in three. Detumescence and normal erectile function were achieved in all patients after superselective embolization. Using color Doppler sonography, the location of the lesion causing priapism was found, in four patients, to be the proximal or middle one-third of the cavernosal artery.

Conclusion : Pudendal angiography with superselective embolization with Gelfoam is a safe and effective method for the correction of post-traumatic arterial priapism.

Index words : Penis, US
Penis, diseases
Arteries, therapeutic blockade

Address reprint requests to : Byung Chul Kang, M.D., Department of Diagnostic Radiology, Mokdong Hospital, Ewha Womans University College of Medicine, Seoul, Korea. #911-1 Mok-dong, Yangcheon-ku, Seoul 158-710, South Korea.
Tel. 82-2-650-5173, 5092 Fax. 82-2-644-3362 E-mail. kangbc@mm.ewha.ac.kr