



Iliac artery stent fracture associated with hip joint flexion

Takahito Doi^{1,2} · Osami Kawarada¹ · Takeshi Yagyu¹ · Teruo Noguchi¹ · Satoshi Yasuda^{1,2}

Received: 19 March 2018 / Accepted: 30 April 2018 / Published online: 5 May 2018
© Japanese Association of Cardiovascular Intervention and Therapeutics 2018

Although iliac artery stenting has been recognized as a durable treatment, stent fracture in iliac artery had a prevalence of 5.1% in one study [1]. However, the clinical significance of iliac artery stent fracture might be underappreciated, and few reports are available regarding its mechanism.

A 67-year-old man on hemodialysis for end-stage renal disease due to diabetic nephropathy had undergone bilateral stenting with self-expanding nitinol stents (LUMINEXX[®]) for calcified iliac artery occlusive disease 5 years ago. He was admitted to our institution for elective complex percutaneous coronary intervention. Vascular ultrasonography at the pre-interventional workup revealed significant in-stent restenosis in the right external iliac artery. Confirmatory angiography demonstrated a type 2 stent fracture at the point of significant in-stent restenosis in the right external iliac artery (Fig. 1a) [2]. In addition, intravascular ultrasound identified disconnection of the stent struts (Fig. 1b). Fluoroscopy demonstrated that the stent fracture became more pronounced with stimulated

bending motions of the right iliac artery during the right hip joint flexion (Fig. 1c, d, Video). We needed vascular access via femoral artery for elective complex percutaneous coronary intervention, although no established strategy exists regarding iliac artery stent fracture. Thus, we successfully implanted another brand of self-expanding nitinol stent (SMART[®]) that has a different stent platform from the fractured stent in a stent-in-stent fashion.

These images suggest a significant relationship between iliac artery stent fracture and hip joint flexion. Increasing awareness of the potential for iliac artery stent fracture is essential in the management of iliac artery disease.

Electronic supplementary material The online version of this article (<https://doi.org/10.1007/s12928-018-0525-x>) contains supplementary material, which is available to authorized users.

✉ Osami Kawarada
kawarada.osami.hp@ncvc.go.jp

¹ Department of Cardiovascular Medicine, National Cerebral and Cardiovascular Center, 5-7-1 Fujishiro-dai, Suita, Osaka 565-8565, Japan

² Department of Advanced Cardiovascular Medicine, Tohoku University Graduate School of Medicine, Sendai, Japan

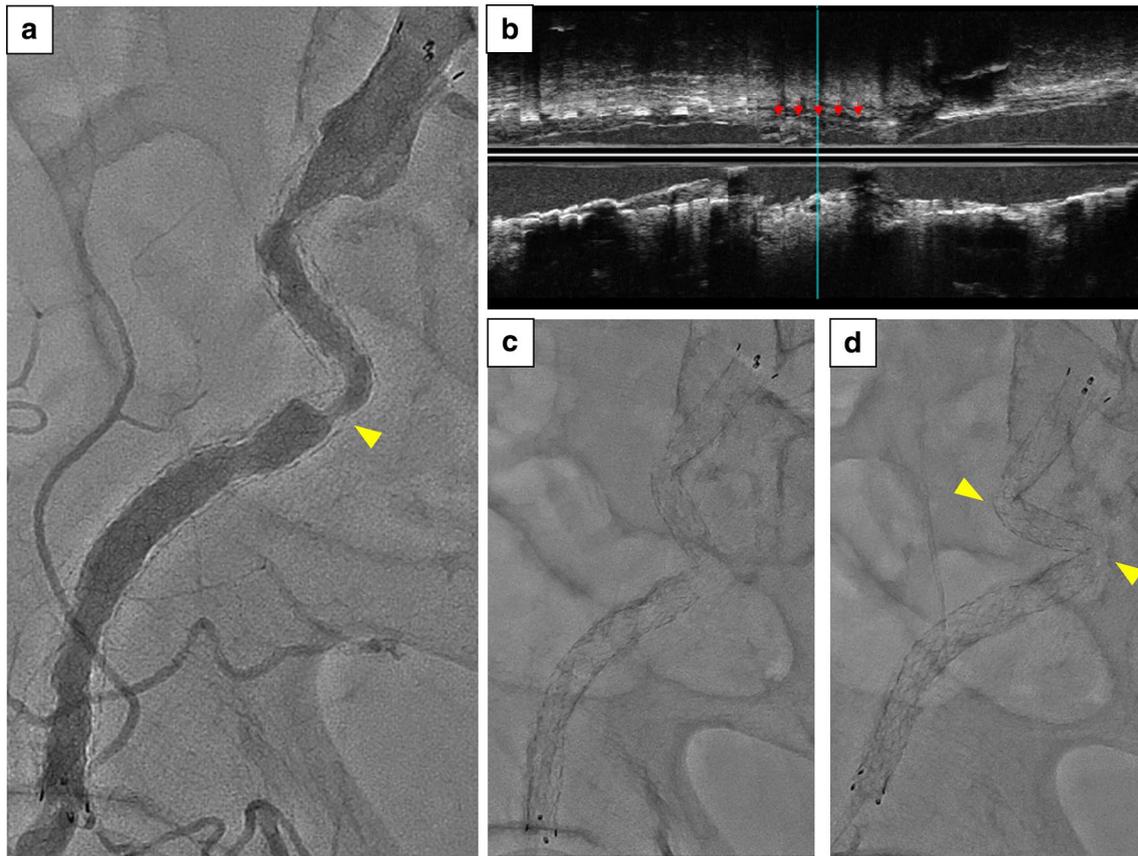


Fig. 1 **a** Confirmatory angiography of the right external iliac artery. Confirmatory angiography revealed significant in-stent restenosis in the middle of the right external iliac artery stent, associated with a type 2 stent fracture (arrow). **b** Intravascular ultrasound findings. Intravascular ultrasound indicated disconnection of the stent strut in the stenotic lesion of the right external iliac artery (arrows). Blue line

indicates angiographically significant in-stent restenosis. **c, d** Fluoroscopic imaging of the right external iliac artery stent during hip joint motion. **c** Hip joint extension. **d** Hip joint flexion. The stent fracture became more pronounced with stimulated bending motions of the iliac artery during hip joint flexion (arrow)

References

1. Higashiura W, Kubota Y, Sakaguchi S, Kurumatani N, Nakamae M, Nishimine K, Kichikawa K. Prevalence, factors, and clinical impact of self-expanding stent fractures following iliac artery stenting. *J Vasc Surg.* 2009;49:645–52.
2. Jaff M, Dake M, Pompa J, Ansel G, Yoder T. Standardized evaluation and reporting of stent fractures in clinical trials of noncoronary devices. *Catheter Cardiovasc Interv.* 2007;70:460–2.