

SIMULTANEOUS KISSING STENT TECHNIQUE (SKS) IN A PATIENT WITH AORTOILIAC OCCLUSIVE DISEASE

Muhammad Nadir Khan¹, Hamid Sharif Khan², Mohsin Saif³

¹⁻³ Department of Interventional Cardiology, AFIC NIHD, Rawalpindi - Pakistan

Address for Correspondence:

Dr. Muhammad Nadir Khan,
Department of Interventional Cardiology, AFIC NIHD, Rawalpindi - Pakistan

E-mail: nadir_36@yahoo.com

Date Received: November 13, 2012

Date Revised: November 30, 2012

Date Accepted: December 15, 2012

Contribution

All the authors contributed significantly to the research that resulted in the submitted manuscript.

All authors declare no conflict of interest.

ABSTRACT

A 44 year old smoker and hypertensive male presented with complaints of claudication of the hip and impotence. Investigations revealed stenosis in distal aorta (infra renal) extending into the origin of common iliac arteries. The patient was managed with endovascular reconstruction by using the novel simultaneous kissing stent technique. Six month follow up showed considerable improvement of symptoms with repeat angiogram exhibiting 100% patency of the stents.

Key Words: Aorto iliac occlusive disease, Stenting, Kissing technique.

BACKGROUND

In patients with atherosclerotic peripheral vascular disease, the infra renal abdominal aorta and the iliacs are the most frequently involved.¹

Surgery is considered the treatment of choice for localized aorto iliac occlusive disease with aorto iliac and aorto femoral bypass being the common modalities.² However although surgery delivers durable results, it is associated with significant peri-operative mortality and morbidity.^{3,4} The potential for graft infection is a particular drawback of extra-anatomic bypass. Endovascular treatment delivers hemodynamically acceptable results that are likely to be better than those of extra anatomic bypass. With the development of larger stent technology, selective and, more recently, primary stenting of the aorto-iliac segments has been advocated with bare metal stents⁵ and covered stent-grafts.⁶ Many subsequent studies have demonstrated the initial advantages of PTA over surgery, including shorter hospital stay, lower complication rate, and less invasive technique.⁷

We describe a case of endovascular reconstruction of the aortic bifurcation in a patient with Leriche syndrome (aortoiliac occlusive disease) with simultaneous kissing stent technique.

CASE REPORT

A 44 year old male smoker presented with a history of hypertension controlled on medications presented with complaints of claudication of the hip and impotence.

On examination he had bilaterally weak femoral pulses. He was advised Doppler ultrasound and CT Angiogram of lower limbs which showed obstruction at the level of infra renal abdominal aorta at its bifurcation into left and right common iliac arteries. He was subjected to an angiogram which confirmed the findings. The angiogram is shown in (Figure 1).

The treatment options of Aortofemoral bypass and endovascular stenting was discussed with the patient. The patient opted for surgery but during anaesthesia he developed profound hypotension and surgery was abandoned. He was referred by the vascular surgeon for percutaneous intervention.

Right and left femoral arteries were used for vascular access. Two BMW angioplasty wires were passed through the both femoral arterial sheaths into the iliac arteries and were parked in the descending Aorta. Guide catheters were not used and the whole procedure was performed with arterial sheaths in both femoral arteries. Origins of both the common iliac arteries were pre dilated with 4.5 x 8 mm Voyager Non Compliant balloon. 6.0 x 18 mm Express Vascular SD stent deployed in left common iliac artery and 7.0 x 19 mm Express Vascular SD stent deployed in right common iliac artery were both inflated simultaneously using kissing stent (SKS) technique at 20 bars of pressure (Figure 2 and 3).

Figure 1: The Angiogram



Figure 2



Figure 3



Figure 4

There were no complications encountered and the patient was discharged after an overnight stay in the hospital. He was advised tablet Aspirin (75mg once daily), tablet Clopidogrel (75 mg once daily), tablet Atorvastatin (20 mg once daily) and tablet Lisinopril (10 mg once daily). Clopidogrel was stopped after one month and the rest of the medications were continued.

The patient was reviewed after 6 months and he was completely asymptomatic. He had stopped smoking and his blood pressure was controlled on medication. Angiogram done after 6 months showed patent stents as shown in (Figure 4).

DISCUSSION

Percutaneous transluminal angioplasty of the lesions located at the aortic bifurcation has long been considered as contraindicated because of the risk of occlusion and embolization to the contralateral side. With the initial utilization of double balloons and subsequent introduction of the kissing stents technique⁸ such lesions can now be safely and effectively treated via the endovascular route.

The primary concern about kissing stents is the lack of contact between the vessel wall and the opposing stents, which may prevent endothelialization or induce intimal hyperplasia owing to variations in the wall shear stress.⁹ Despite these concerns, early results of aortoiliac kissing stents were quite promising.¹⁰

In the literature, the technical success of aortoiliac kissing stents implantation was reported to be 86% to 100%. Complications occurred in 0% to 16%, including hematoma, pseudoaneurysm, arteriovenous fistula, distal embolism,

and aortoiliac dissection.¹¹ In our case the procedure was free of any complication and the patient showed considerable improvement of his symptoms. Although at an interval of six months the stents in our case exhibited 100% patency, the patency rate is variable in different studies dependent upon atherosclerotic and thrombotic burden of occlusions and co morbid conditions like age, diabetes and hypertension. In one study the patency rate was 62% at 1 year follow up.¹²

Although surgery provides an excellent long-term outcome in patients with aortic occlusive disease, it has also been associated with a perioperative mortality rate of up to 1%-7% and a major early complication rate of 9%-27%, including sexual dysfunction, ureteral damage, intestinal ischemia, and spinal cord injury.¹³ Initial studies with endovascular reconstruction with kissing technique have shown encouraging results in terms of technical success and minimal complications.

CONCLUSION

Recognition that occlusive disease of the infrarenal aorta can be safely treated by endovascular therapy is essential for the promotion of this technique. Prospective studies are required to compare endovascular techniques with the conventional surgical alternatives in terms of safety, efficacy, durability, and economy.

REFERENCES

1. DeBakey ME, Lawrie GM, Glaeser DH. Patterns of atherosclerosis and their surgical significance. *Ann Surg* 1985;201:115.

2. Brewster DC Review Current controversies in the management of aortoiliac occlusive disease. *J Vasc Surg* 1997;25:365-79.
3. Brewster DC. Direct reconstruction for aortoiliac occlusive disease. In: Rutherford RB, editor. *Vascular surgery*. Philadelphia: W. B. Saunders; 1995. p. 766-94.
4. de Vries SO, Hunink MG. Results of aortic bifurcation grafts for aortoiliac occlusive disease: a meta-analysis. *J Vasc Surg* 1997;26:558-69.
5. Sheeran SR, Hallisey MJ, Ferguson D. Percutaneous transluminal stent placement in the abdominal aorta. *J Vasc Interv Radiol* 1997;8:55-60.
6. Ali AT, Modrall JG, Lopez J, Brawley JG, Welborn MB, Clagett GP, et al. Emerging role of endovascular grafts in complex aortoiliac occlusive disease. *J Vasc Surg* 2003;38:486-91.
7. Houlon S, Mounier-Vehier C, Gaxotte V, Koussa M, Lions C, Haouari BA, et al. Percutaneous reconstruction of the aortoiliac bifurcation with the "kissing stents" technique. *J Endovasc Ther* 2002;9:363-8.
8. Greiner A, Dessl A, Klein-Weigel P, Neuhauser B, Perkmann R, Waldenberger P, et al. Kissing stents for treatment of complex aortoiliac disease. *Eur J Vasc Endovasc Surg* 2003;26:161-16.
9. Saker MB, Oppat WF, Kent SA, Ryu RK, Chrisman HB, Nemcek AA, et al. Early failure of aortoiliac kissing stents: histopathologic correlation. *J Vasc Interv Radiol* 2000;11:333-6.
10. Mohamed F, Sarkar B, Timmons G, Mudawi A, Ashour H, Uberoi R. Outcome of "kissing stents" for aortoiliac atherosclerotic disease, including the effect on the non-diseased contralateral iliac limb. *Cardiovasc Intervent Radiol* 2002;25:472-5.
11. Mouanoutoua M, Maddikunta R, Allaqaband S, Gupta A, Shalev Y, Tumuluri R, et al. Endovascular intervention of aortoiliac occlusive disease in high-risk patients using the kissing stents technique: long-term results. *Catheter Cardiovasc Interv* 2003;60:320-6.
12. Yilmaz S, Sindel T, Golbasi I, Turkay C, Mete A, Lüleci E. Aortoiliac kissing stents: long-term results and analysis of risk factors affecting patency. *J Endovasc Ther* 2006;13:291-301.
13. Poncyjucz W, Falkowski A, Garncarek J, Karasek M, England S, Zaierucha D. Primary stenting in the treatment of focal atherosclerotic abdominal aortic stenoses. *Clin Rad* 2006;61:691-5.