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Author(s)	竹川, 鉦一; 高橋, 正樹; 工藤, 功男 他
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研究速報

Combined Use of Percutaneous Transluminal Laser Irradiation and
Balloon Dilatation Angioplasty in the Treatment of
Arteriosclerotic Stenoses of Iliac
and Femoral Arteries

Shoichi D. Takekawa, Masaki Takahashi, Isao Kudo,
Junji Tanaka and Taisuke Sasaki

Department of Radiology, Koshigaya Hospital, Dokkyo University School of Medicine, Koshigaya, Saitama

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動脈硬化性狭窄に対する経皮経管的レーザー照射と
バルーンの併用による血管拡張術

獨協医科大学越谷病院放射線科

竹川 鉦一 高橋 正樹 工藤 功男
田中 淳司 佐々木泰輔

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Laser angioplasty or recanalization of stenosed arteries by arteriosclerosis has been recently investigated by various researchers (1—5). We have also studied the effects of Argon and YAG Laser irradiation on the walls of aorta and arteries of autopsy specimens since 1984.

In March, 1985, we irradiated YAG Laser to stenosed arteries to open up stenoses to a certain degree, in order to make the passage of a guide wire and a balloon catheter easier.

Case 1. A 49 year-old man with intermittent claudication and non-palpable dorsalis pedis artery on the left.

Intravenous digital subtraction angiography revealed marked stenosis of a short segment of the left common iliac artery (Fig. 1a). A 7F Medi-Tech balloon catheter was inserted into the aorta through the right femoral artery percutaneously, and then the tip of the catheter was deflected so that the tip would enter the left common iliac artery proximal to the stenosed segment. A 8.5F Cook Check-Flo sheath was inserted into the left femoral artery by Seldinger's technique, and an endoscope, Olympus PF-25M, was inserted into the left common iliac artery distal to the stenosed segment to check the degree of clearing of the lumen of the artery. Infusion of normal saline at the rate of 2 ml/sec. through the Medi-Tech catheter after inflating the balloon was satisfactory to clear the lumen.

The endoscope was then replaced by a probe of YAG Laser, Olympus MYL-1, and the tip of the probe was advanced to the point about 0.5 cm distal to the stenosed segment under fluoroscopic control. Laser irradiation was carried out at 80 Watts for 5 seconds in total at 3 increments.

The blood pressure in the left external iliac artery rose to 110/72 mmHg from 38/2 mmHg after the Laser

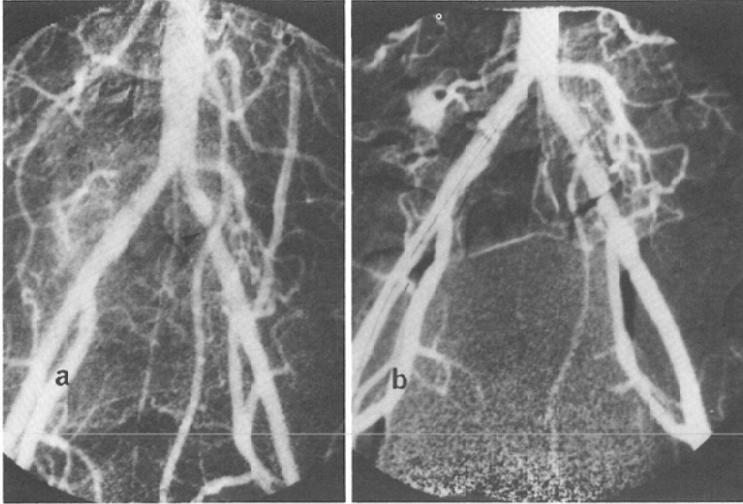


Fig. 1a IVDSA before combined use of laser and balloon. There is marked stenosis of a short segment (arrow head) in the left common iliac artery.

Fig. 1b IADSA after combined use of laser and balloon angioplasty. The stenotic left common iliac artery is moderately dilated.

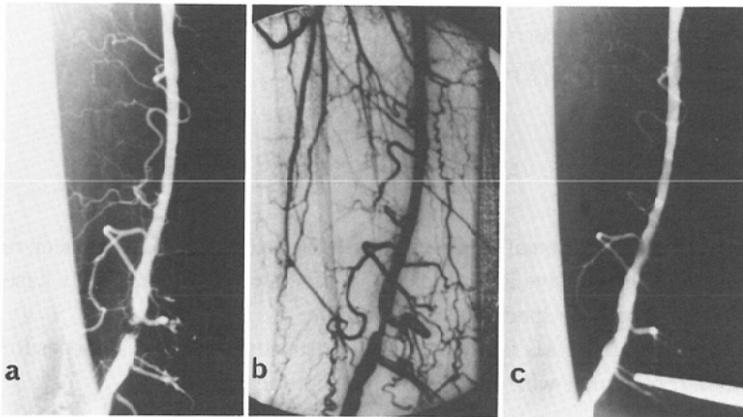


Fig. 2a Right femoral arteriography before angioplasty. Note marked stenosis of a short segment in the distal femoral artery.

Fig. 2b IADSA of the right femoral artery after laser irradiation. Note a recanalized lumen in the stenosed segment.

Fig. 2c Right femoral arteriography after balloon dilatation angioplasty. Note moderately widened lumen in the stenosed segment of the right femoral artery.

irradiation. Balloon dilatation was added and the final blood pressure in the left external iliac artery rose to 140/80 mmHg.

The pulse of the left dorsalis pedis artery was restored, and his claudication was completely healed.

Case 2. A 50 year-old man with weariness in the right leg and intermittent claudication.

Femoral arteriography revealed marked stenosis in the distal right femoral artery (Fig. 2a).

A 8.5F Cook Check-Flo sheath introducer was inserted into the right femoral artery antegradely.

Endoscopy of the right femoral artery was carried out. Forceful flush of normal saline by hand was

adequate to see the stenotic artery, eliminating the blood from the lumen.

Laser light was then irradiated at 80 Watts for 5 seconds in total. Intraarterial digital subtraction angiography of the right femoral artery showed slight widening of a portion of the stenotic segment (Fig. 2b). A balloon dilatation was added to dilate the stenosis, and the result was satisfactory (Fig. 2c).

The patient was discharged with palpable dorsalis pedis artery and without claudication.

Comments

Laser angioplasty or recanalization seems to be an ideal method of treatment of arteriosclerotic stenosis, since Laser irradiation vaporizes the atheroma.

However, we have to be cautious not to perforate the artery by Laser irradiation. Therefore, we elected to combine Laser irradiation and balloon dilatation in angioplasty.

It seemed to be expected that less compression was needed to widen the stenotic segment, when we inflated the dilating balloon.

In conclusion, combined use of Laser irradiation and balloon dilatation angioplasty is a new and useful method of treatment of arteriosclerotic stenosis, although Laser angioplasty under direct endoscopic control is the most ideal method under investigation, and it will be available in near future.

Acknowledgments

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