



1
00:00:11,030 --> 00:00:08,950
each year some 200 000 americans undergo

2
00:00:12,310 --> 00:00:11,040
bypass surgery for coronary heart

3
00:00:16,870 --> 00:00:12,320
disease

4
00:00:18,470 --> 00:00:16,880
arteries clogged with plaque and fatty

5
00:00:20,710 --> 00:00:18,480
deposits

6
00:00:23,429 --> 00:00:20,720
in a very limited number of cases an

7
00:00:25,269 --> 00:00:23,439
inflatable balloon catheter can be used

8
00:00:26,310 --> 00:00:25,279
to squeeze the obstruction out of the

9
00:00:28,790 --> 00:00:26,320
way

10
00:00:31,589 --> 00:00:28,800
to treat multiple blockages bypass

11
00:00:34,870 --> 00:00:31,599
surgery is the only available treatment

12
00:00:36,790 --> 00:00:34,880
20-30 000 procedure requiring weeks of

13
00:00:39,590 --> 00:00:36,800

recovery time

14

00:00:41,750 --> 00:00:39,600

new technology like this eczema laser

15

00:00:44,229 --> 00:00:41,760

and the fiber optic device called an

16

00:00:45,830 --> 00:00:44,239

angioscope hold great promise for

17

00:00:48,150 --> 00:00:45,840

revolutionizing the treatment of

18

00:00:50,549 --> 00:00:48,160

coronary heart disease

19

00:00:53,430 --> 00:00:50,559

pulsing a billionth of a second bursts

20

00:00:55,430 --> 00:00:53,440

of ultraviolet light the eczema laser

21

00:00:57,510 --> 00:00:55,440

represents technology originally

22

00:00:59,750 --> 00:00:57,520

developed by a group of researchers at

23

00:01:01,990 --> 00:00:59,760

nasa's jet propulsion laboratory in

24

00:01:04,310 --> 00:01:02,000

pasadena california

25

00:01:06,310 --> 00:01:04,320

doctors at the cedars sinai medical

26
00:01:08,310 --> 00:01:06,320
center in los angeles have teamed up

27
00:01:10,710 --> 00:01:08,320
with jpl and are working on an

28
00:01:13,350 --> 00:01:10,720
angioscope which will allow a surgeon to

29
00:01:16,070 --> 00:01:13,360
see obstructions as well as transmit

30
00:01:18,070 --> 00:01:16,080
laser energy to vaporize plaque from

31
00:01:19,670 --> 00:01:18,080
arteries

32
00:01:21,910 --> 00:01:19,680
cedars sinai's director of

33
00:01:24,070 --> 00:01:21,920
cardiovascular research dr james

34
00:01:26,870 --> 00:01:24,080
forrester the way we would plan to do

35
00:01:29,990 --> 00:01:26,880
the procedure is to make a small

36
00:01:34,230 --> 00:01:30,000
incision either in the arm or the leg

37
00:01:36,630 --> 00:01:34,240
and pass a catheter or small tube

38
00:01:39,109 --> 00:01:36,640

up to the location where an obstruction

39

00:01:41,350 --> 00:01:39,119

in a blood vessel existed

40

00:01:43,429 --> 00:01:41,360

we would be able to see it through our

41

00:01:46,389 --> 00:01:43,439

fiber optic device

42

00:01:49,270 --> 00:01:46,399

and then we would under visual control

43

00:01:51,590 --> 00:01:49,280

deliver energy that would instantly

44

00:01:53,510 --> 00:01:51,600

vaporize that obstruction

45

00:01:54,870 --> 00:01:53,520

restoring blood flow in that blood

46

00:01:57,190 --> 00:01:54,880

vessel

47

00:01:59,510 --> 00:01:57,200

the technique called laser coronary

48

00:02:01,510 --> 00:01:59,520

angioplasty is in the pre-clinical

49

00:02:03,350 --> 00:02:01,520

stages of development with patient

50

00:02:04,630 --> 00:02:03,360

testing scheduled to begin in a couple

51
00:02:06,789 --> 00:02:04,640
of years

52
00:02:09,270 --> 00:02:06,799
the key to this surgical technique is

53
00:02:11,910 --> 00:02:09,280
being able to vaporize plaque with true

54
00:02:14,470 --> 00:02:11,920
precision removing small amounts at a

55
00:02:16,309 --> 00:02:14,480
time without causing any heat damage to

56
00:02:18,630 --> 00:02:16,319
the tissue what we'd like to show is

57
00:02:20,949 --> 00:02:18,640
that we could remove material without

58
00:02:23,270 --> 00:02:20,959
doing heat damage to surrounding tissue

59
00:02:27,430 --> 00:02:23,280
so i'll take an ordinary match and i'll

60
00:02:31,110 --> 00:02:29,430
you can see i've eaten away half the

61
00:02:36,869 --> 00:02:31,120
head of the match with the laser beam

62
00:02:41,830 --> 00:02:39,110
this demonstrates how we can

63
00:02:44,309 --> 00:02:41,840

cut tissue without causing thermal

64

00:02:46,390 --> 00:02:44,319

damage to the surrounding cases

65

00:02:48,949 --> 00:02:46,400

okay can you just give me a test shot

66

00:02:51,430 --> 00:02:48,959

stuart mcdermott of the jpl laser group

67

00:02:53,430 --> 00:02:51,440

demonstrates the eczema's capability on

68

00:03:03,190 --> 00:02:53,440

a section of human aorta heavily

69

00:03:06,949 --> 00:03:04,869

you can see this clean

70

00:03:08,070 --> 00:03:06,959

precisely cut hole has been made by the

71

00:03:09,350 --> 00:03:08,080

laser

72

00:03:11,589 --> 00:03:09,360

note that there's no evidence of

73

00:03:14,309 --> 00:03:11,599

blackening or any thermal damage either

74

00:03:16,470 --> 00:03:14,319

in the hole or to the surrounding areas

75

00:03:19,190 --> 00:03:16,480

this is a magnified cross-section of

76

00:03:20,949 --> 00:03:19,200

tissue cut with an eczema laser

77

00:03:23,990 --> 00:03:20,959

if you compare this to the work of an

78

00:03:26,390 --> 00:03:24,000

argon laser being used in surgery today

79

00:03:28,390 --> 00:03:26,400

it is easy to understand why the eczema

80

00:03:31,110 --> 00:03:28,400

has so much potential

81

00:03:33,190 --> 00:03:31,120

argon lasers are very heat intense and

82

00:03:35,509 --> 00:03:33,200

cause burning and carbonization of the

83

00:03:39,190 --> 00:03:35,519

tissue often this effect will cause

84

00:03:41,190 --> 00:03:39,200

blockages to reform in the arteries

85

00:03:44,149 --> 00:03:41,200

originally developed for atmospheric

86

00:03:46,309 --> 00:03:44,159

ozone testing the eczema laser may prove

87

00:03:48,710 --> 00:03:46,319

to simplify the treatment of coronary