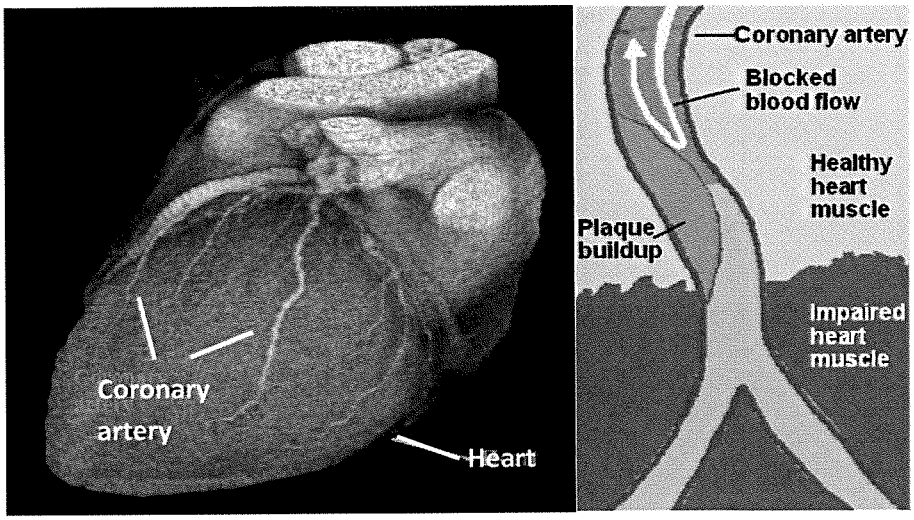

Fig. 1

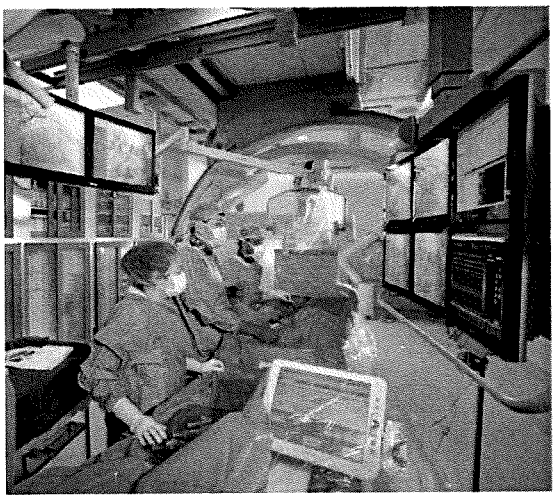

Fig. 2(a)

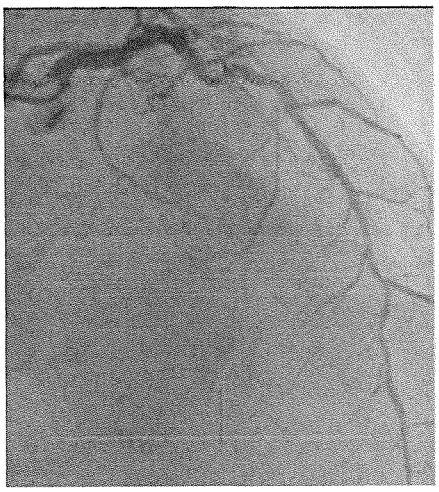

Fig. 2(b)

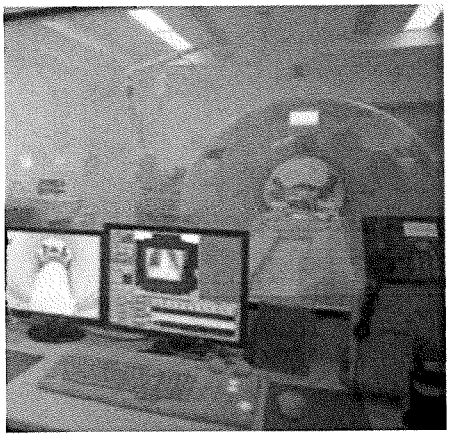

Fig. 3(a)

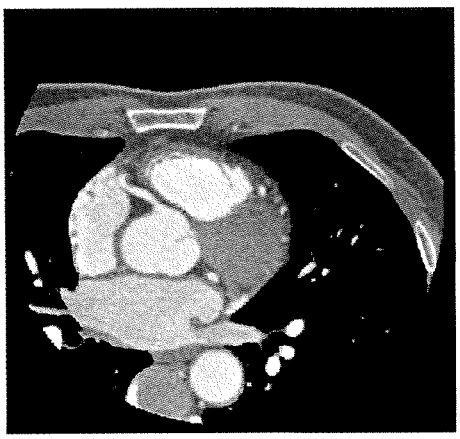

Fig. 3(b)

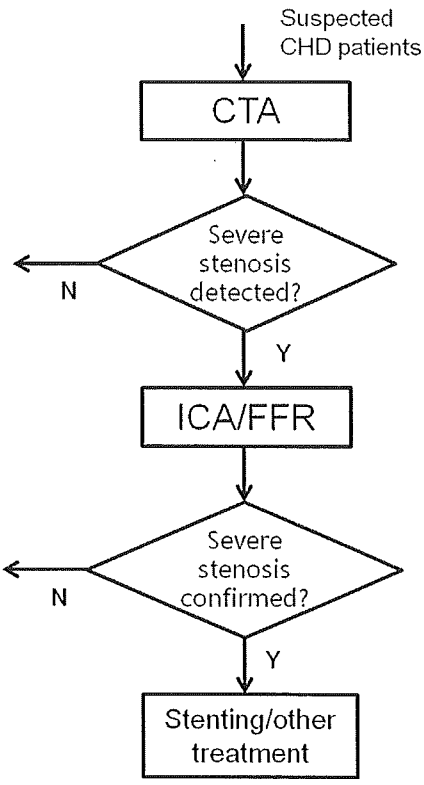
Suspected
CHD patients
CTA
Severe
stenosis
detected?
N
Y
ICA/FFR
Severe
stenosis
confirmed?
N
Y
Stenting/other
treatment

Fig. 4

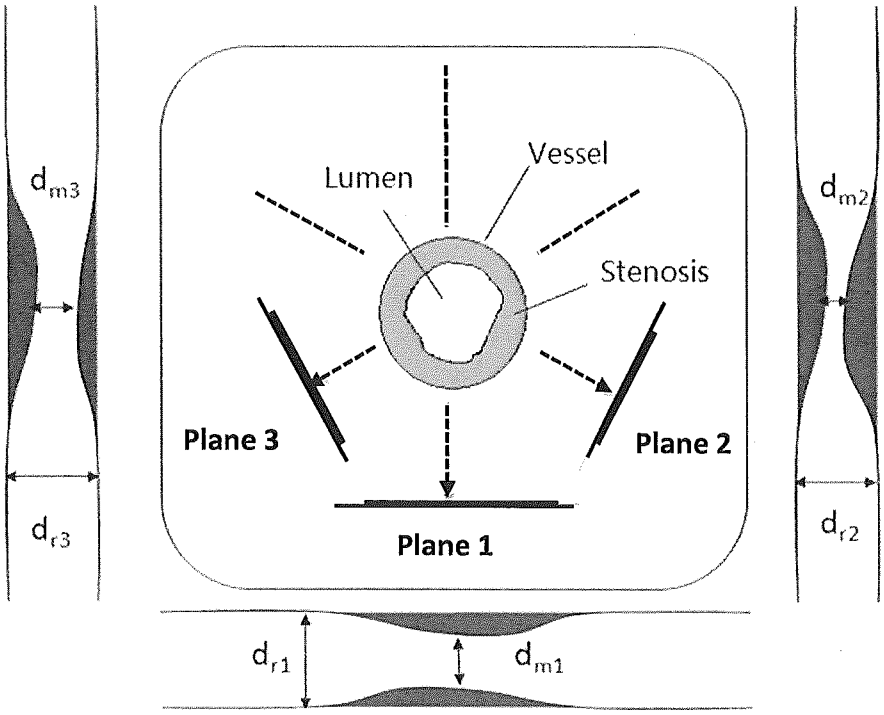
d_{m3}
d_{r3}
Lumen
Vessel
Stenosis
Plane 3
Plane 2
Plane 1
d_{m2}
d_{r2}
d_{r1}
d_{m1}

Fig. 5

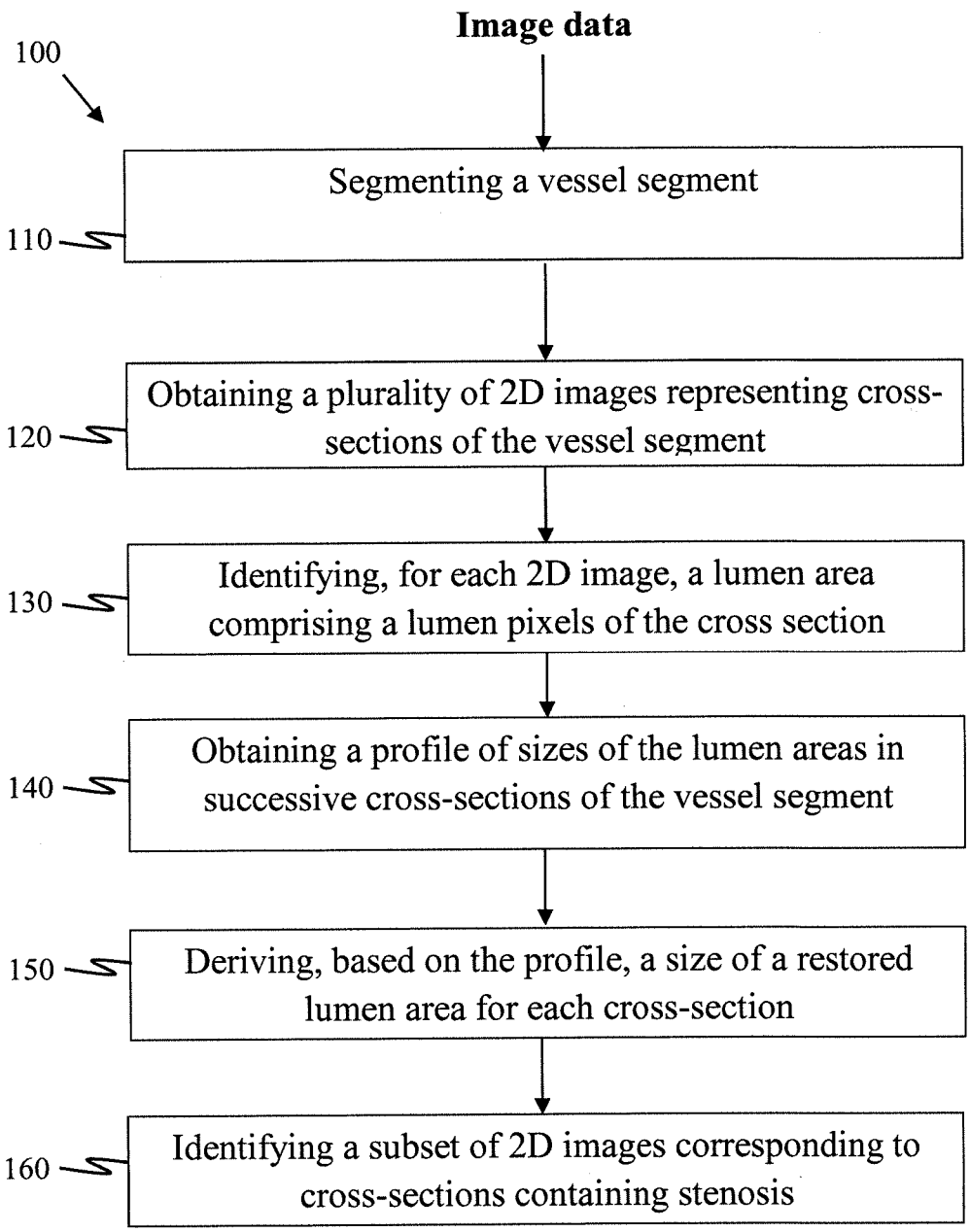
Image data
100
Segmenting a vessel segment
110
Obtaining a plurality of 2D images representing cross-sections of the vessel segment
120
Identifying, for each 2D image, a lumen area comprising a lumen pixels of the cross section
130
Obtaining a profile of sizes of the lumen areas in successive cross-sections of the vessel segment
140
Deriving, based on the profile, a size of a restored lumen area for each cross-section
150
Identifying a subset of 2D images corresponding to cross-sections containing stenosis
160

FIG. 6(a)

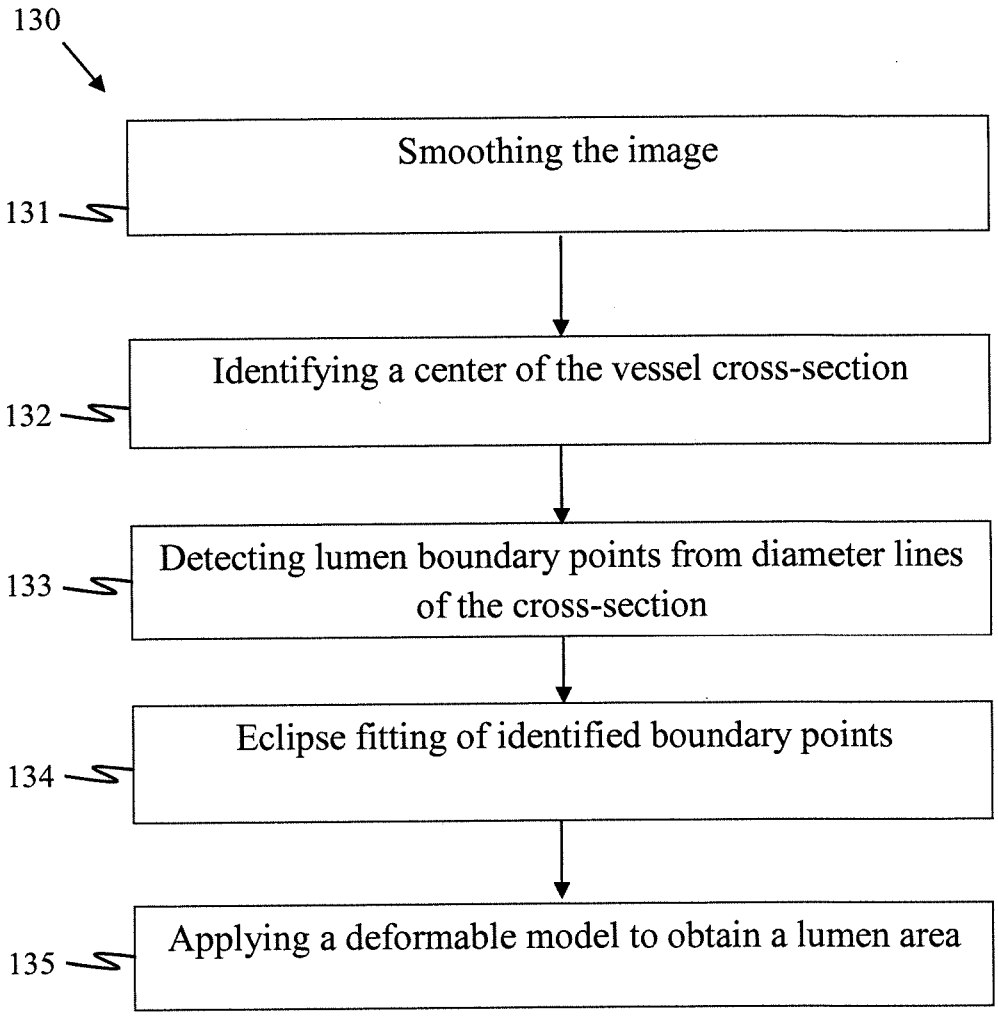
130
Smoothing the image
131
Identifying a center of the vessel cross-section
132
Detecting lumen boundary points from diameter lines of the cross-section
133
Eclipse fitting of identified boundary points
134
Applying a deformable model to obtain a lumen area
135

FIG. 6(b)

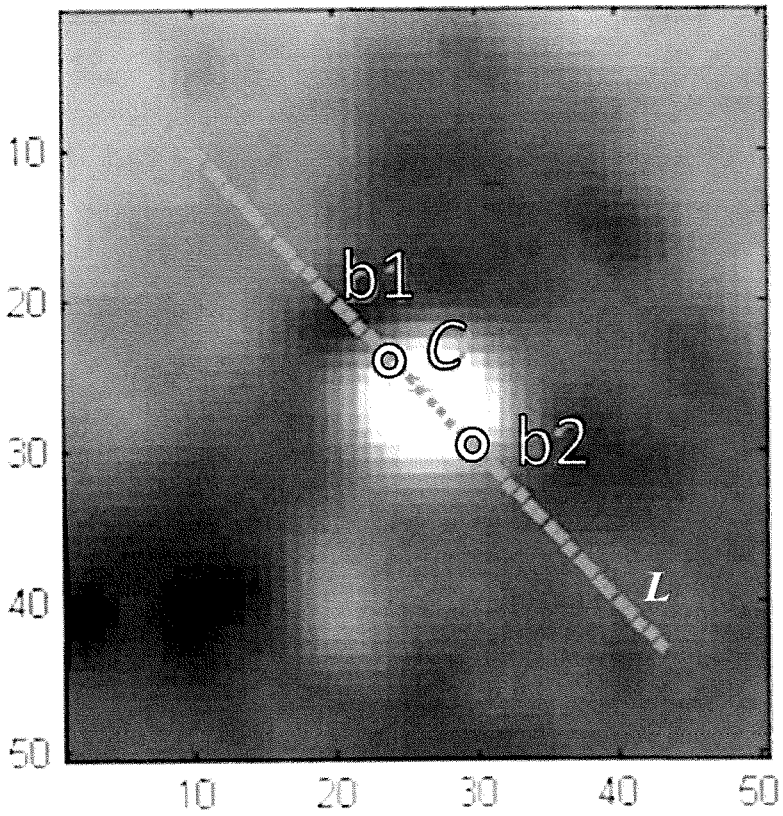
10
20
30
40
50
b1
C
b2
L
10
20
30
40
50

Fig. 7(a)

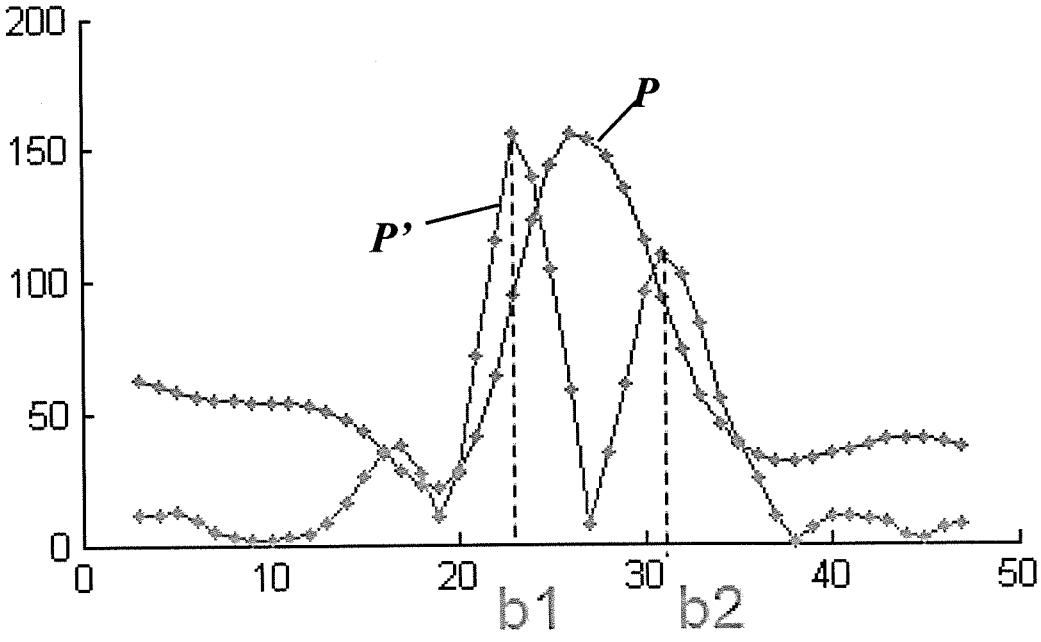
200
150
100
50
0
P
P'
0
10
20
30
40
50
b1
b2

Fig. 7(b)

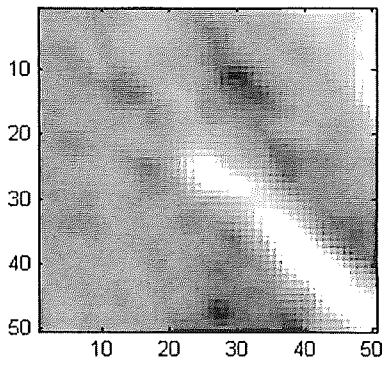

Fig. 8 (a)

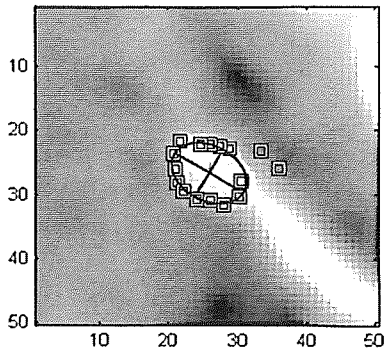

Fig. 8(b)

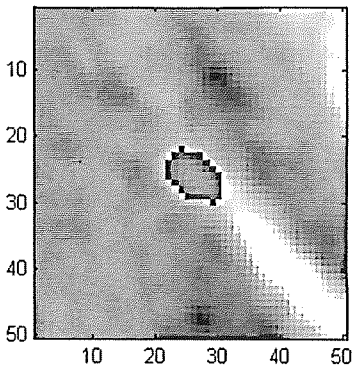

Fig. 8(c)

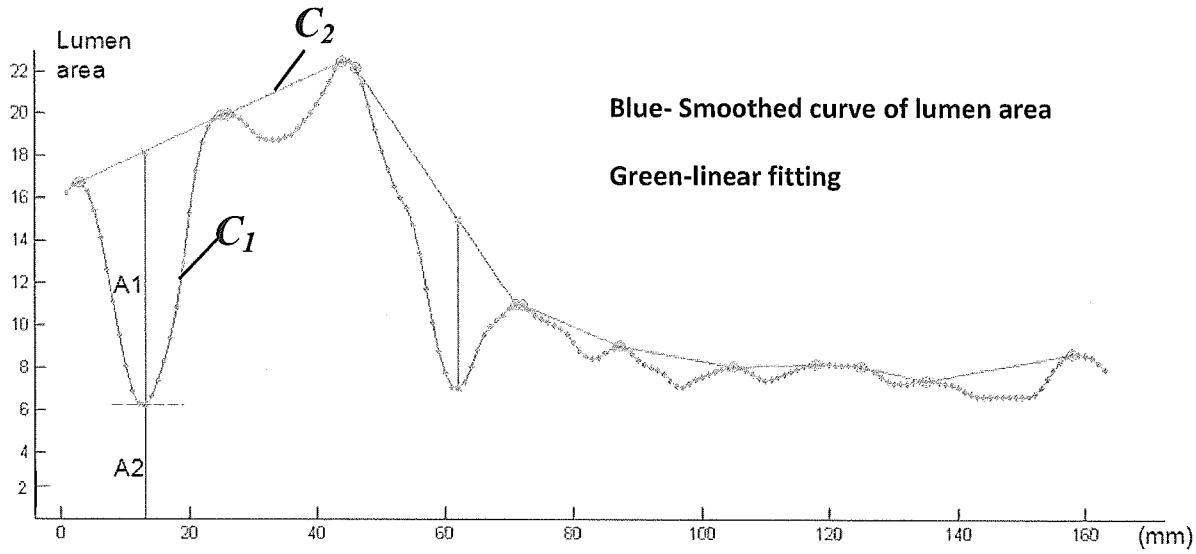

Fig. 9

Fig. 10(a)

Fig. 10(b)

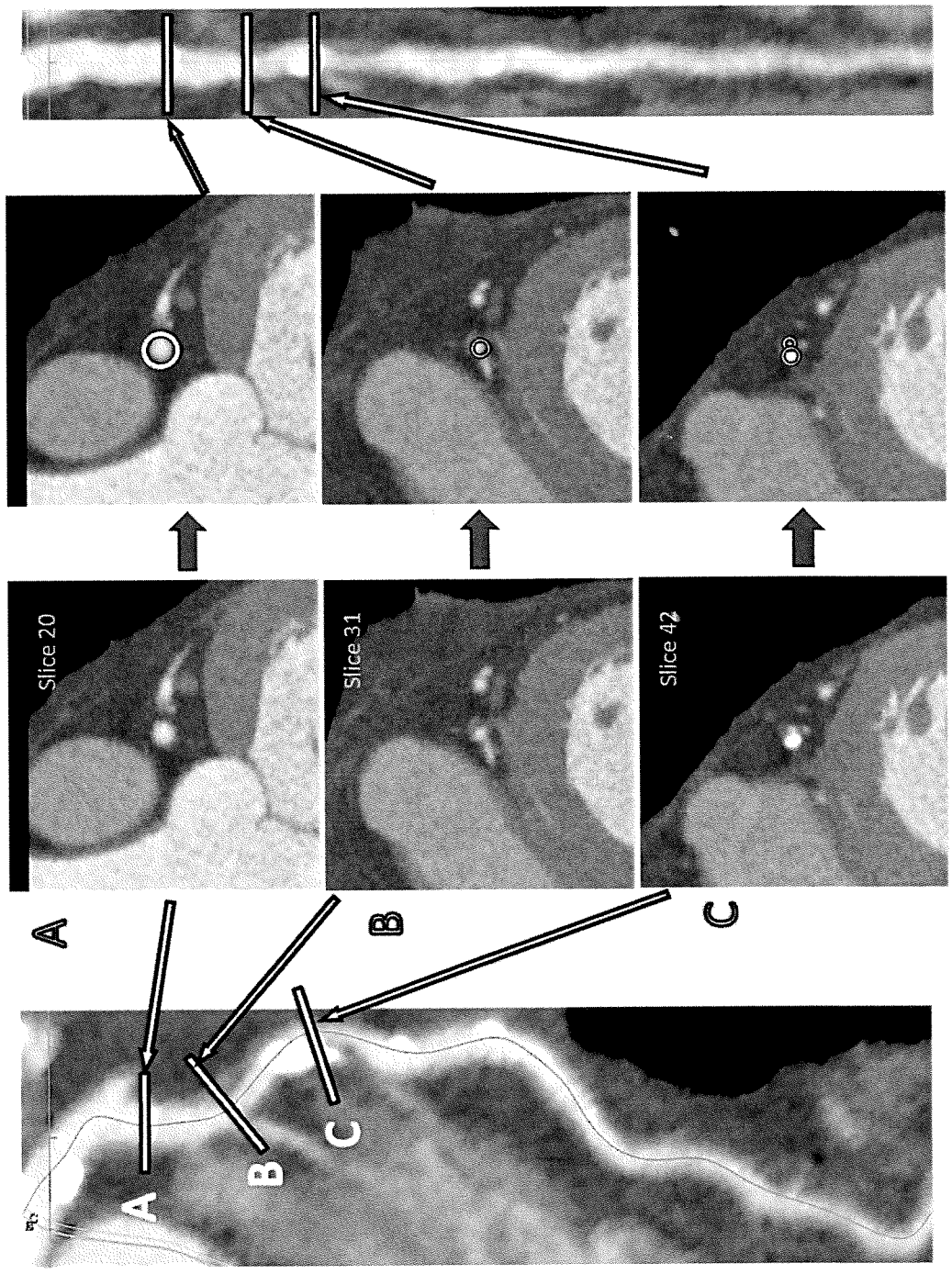

FIG. 10(c)

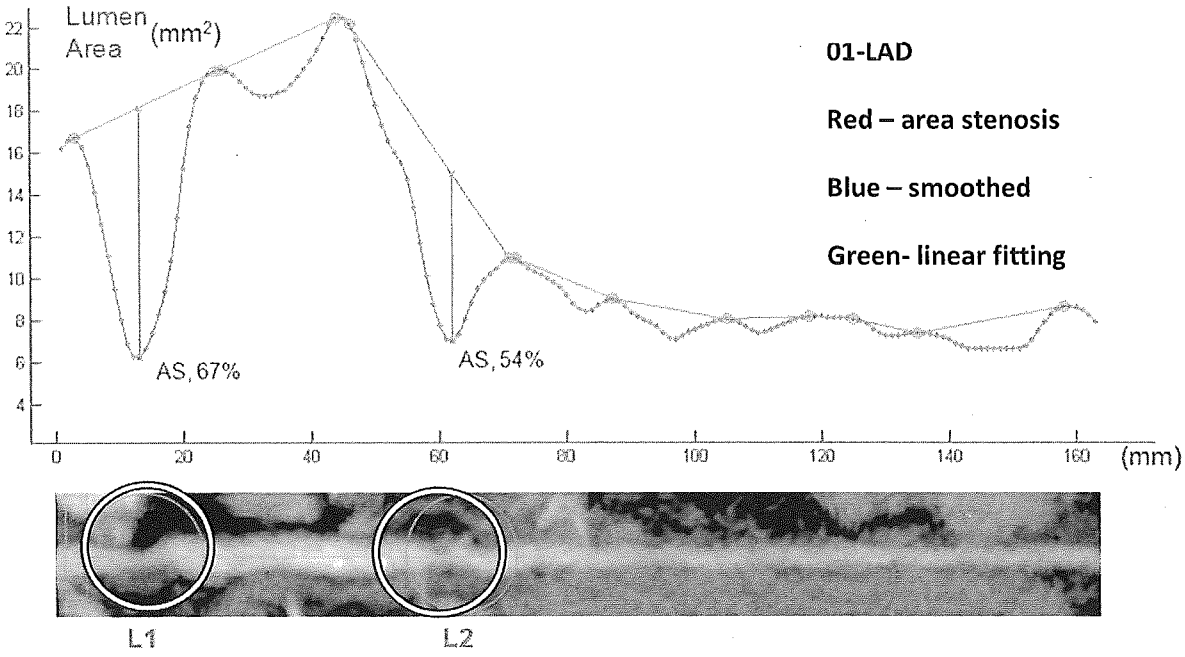

Fig. 11(a)

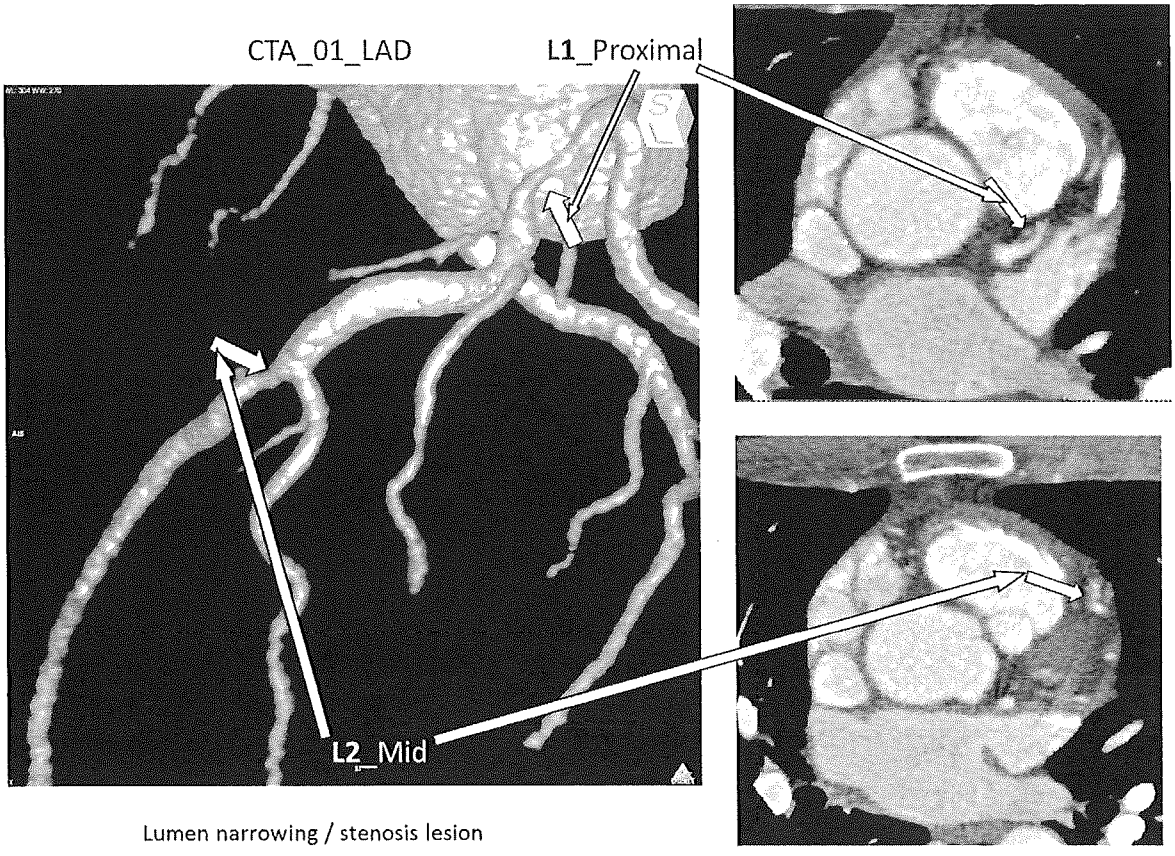

Fig. 11(b)

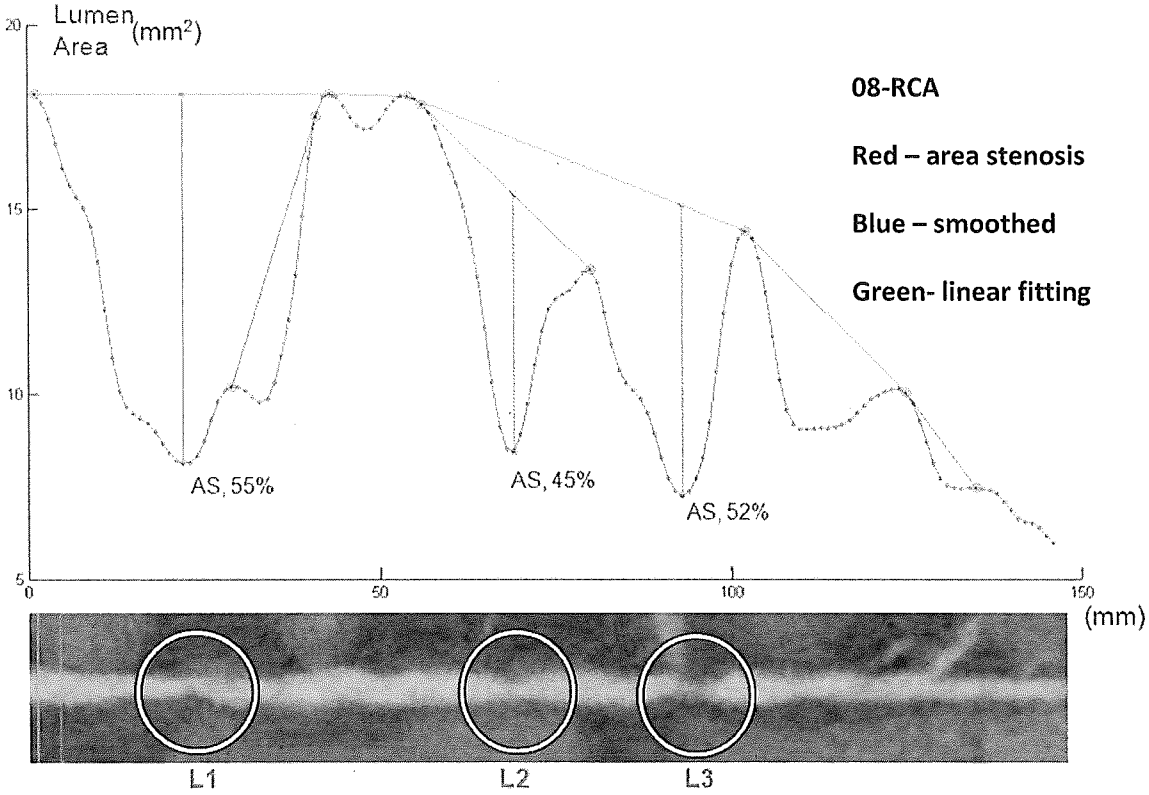

Fig. 12(a)

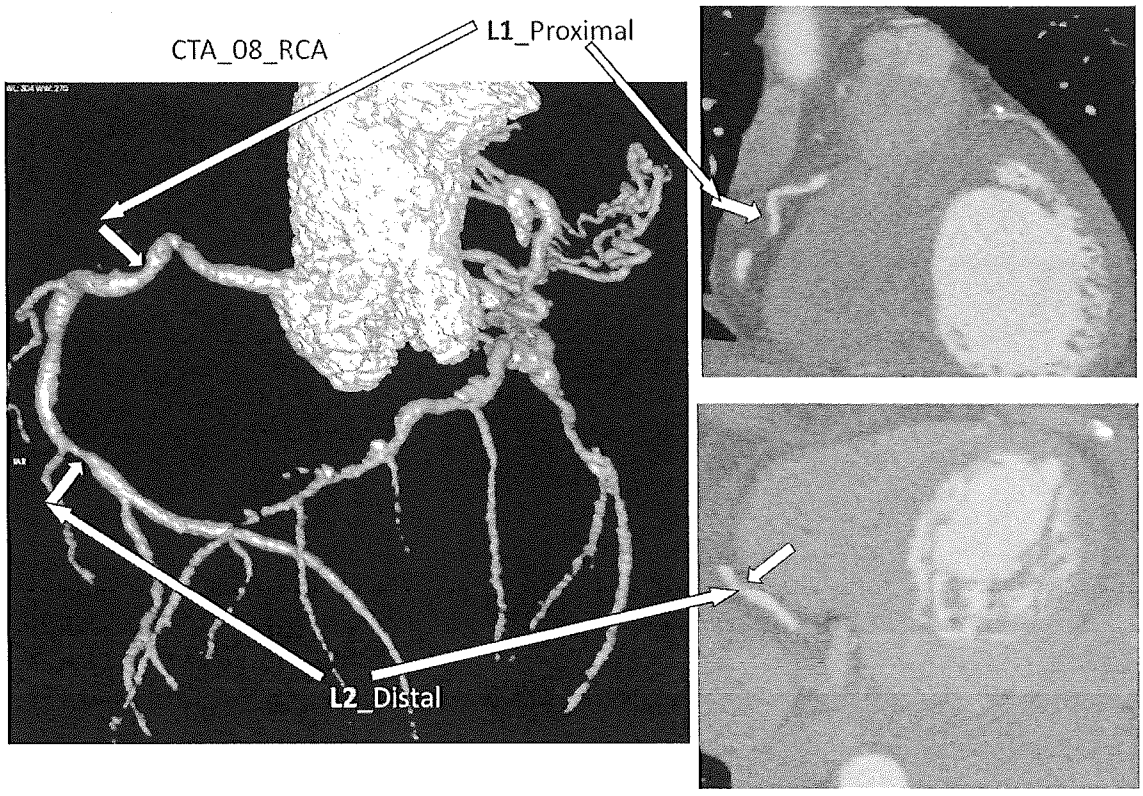

Fig. 12(b)