regards to in-hospital and long-term clinical outcomes. In 154 lesions, DESs were deployed in the true lumen; and in 19 (11%) lesions, DES were deployed in the subintimal space (95% confidence interval: 6.3% to 15.6%). IVUS showed that the prevalence of dissection was two times and intramural hematoma was three times as higher in the subintimal stenting group ($p<0.001$ and $p<0.01$, respectively). Subintimal stenting was associated with a significant increase in minor perforations 6/19 (31.6% vs. 8.4%, p=0.002). At one year follow up, both groups had similar cumulative rates of binary restenosis and target lesion revascularization (p=0.73 and p=0.97, respectively). Six patients (4.6%, 6/129 patients) in the true lumen group and none in the subintimal group died at one year.

IVUS Findings

	True Lumen (n=154 lesions)	Subintimal Stenting¶ (n=19 lesions)	p value
Qualitative Findings:			
Subintimal GW tracking, n (%)*	33 (21.1)	19 (100)	<0.001
Dissection Flap, n (%)	64 (41.6)	16 (84.2)	<0.001
Dissected segment location			
Proximal, n (%)	27 (17.5)	9 (47.4)	
Distal, n (%)	24 (15.6)	5 (26.3)	0.003
Body, n (%)	13 (8.4)	2 (10.5)	
Coronary Hematoma, n (%)	17 (11)	6 (32)	0.01
Calcification (>30° arc), n (%)	141 (92)	16 (84)	0.29
Calcification morphology			
Superficial, n (%)	98 (64)	7 (37)	0.02
Deep, n (%)	43 (28)	9 (47)	0.08
Quantitative Findings:			
Dissection length, mm	5.4 (4 to 9)	4.2 (3 to 8.5)	0.27
Maximum arc of calcium,°	274±132	150±106	0.68
Proximal reference EEM CSA, mm^2	15.7±4.4	14.4±3.6	0.2
Proximal reference lumen CSA, mm^2	9.7±2.9	8.2±2.3	0.03
Distal reference EEM CSA, mm^2	8.2±3.3	7.2±2.2	0.08
Distal reference lumen CSA, mm^2	5.3±2	5.1±2	0.74
Post-Stent IVUS measurements:			
Mean stent CSA, mm^2	6.9±1.9	6.7±2.3	0.71
Stent Expansion	0.87±0.32	0.92±0.30	0.55
Stent symmetry index	0.89±0.02	0.92±0.086	0.23

Values are mean ± SD, median (interquartile range), or n (%). CSA = cross-sectional area; EEM = external elastic membrane; IVUS = intravascular ultrasound. *Immediately after wiring or after pre-dilation with a 1 to 2.0-mm balloon. ¶final guidewire position in a false lumen with subsequent stent deployment in subintimal space.

Conclusions: Subintimal stent deployment in a recanalized CTO segments, using second generation DES and IVUS guidance, might have similar success rate and long-term angiographic and clinical outcomes as true lumen stenting

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Feasibility and safety of intracoronary imaging in spontaneous coronary artery dissection

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Background: Intracoronary imaging (ICI) provides unique findings in spontaneous coronary artery dissection (SCAD). However, spontaneously dissected arteries have a propensity to suffer iatrogenic damage from vessel manipulation. The present study aims to provide real-world data regarding the use of ICI in SCAD, describing feasibility and safety of these techniques.
Methods: From a single centre experience, we scrutinised procedures where ICI was used for diagnosis or surveillance of SCAD. The main objectives were: (1) to describe the cases were ICI was unfeasible (fail to assess target lesion) and/or where ICI potentially caused iatrogenic damage (worsening in TIMI flow or new/propagated dissection to a different vessel); (2) to analyse differences between complicated and uncomplicated cases; (3) to describe the number of true SCAD diagnoses and non-SCAD aetiologies found with ICI
Results: Regarding feasibility, ICI was intended for ascertaining SCAD diagnosis in 38 patients and was used for surveillance/follow-up in 10 patients. In the 10 follow-up cases, ICI was successfully acquired. In the 38 diagnostic cases, ICI was unfeasible in 4 (incomplete advancement of the imaging catheter or vessel trauma) and successful in 34. Of these latter, 25 were confirmed as SCAD and 9 were attributed a different aetiology i.e. eroded/ulcered plaque, adhered thrombus, spasm or false angiographic image. Of the 4 failed cases, 3 were confirmed to be SCAD by the finding of spontaneous vessel restoration on repeat angiography. Overall, ICI successfully diagnosed 93% (25/28) of the attempted SCAD lesions and was able to assess 100% (10/10) of the follow-up SCAD vessels.
Regarding safety, in 6 out of 38 confirmed SCAD cases (28 diagnostic + 10 follow-up cases) ICI produced some degree of iatrogenic damage. All complicated cases were diagnostic procedures, and all occurred when ICI was obtained ad hoc during the first angiography, with a significantly shorter time from symptom onset to ICI procedure among diagnostic cases (21±27 vs 101±132 hours, p=0.04). In contrast, there were no complications when diagnostic ICI was staged (mean deferral time 3.8 days) nor when it was performed at follow-up (mean follow-up time of 6 months). No other significant differences were found. Of the 6 complicated cases, iatrogenic damage was attributed to wiring (4), guiding catheter (1) or to the imaging catheter (1). One case was managed conservatively whereas the other 5 required PCI, with no further complications during admission. There were no differences noted in hard clinical events between complicated and uncomplicated cases after a median follow-up of 6 years (minimum 1 year).
Conclusions: Intracoronary imaging employed for diagnosis or surveillance of SCAD was feasible in the majority of cases. ICI related complications were infrequent and happened invariably in the acute setting, with a shorter time from symptoms onset to artery manipulation in complicated cases.

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Validation of optical coherence tomography coronary tissue characterization in the reference to plaque histopathology obtained by directional coronary atherectomy

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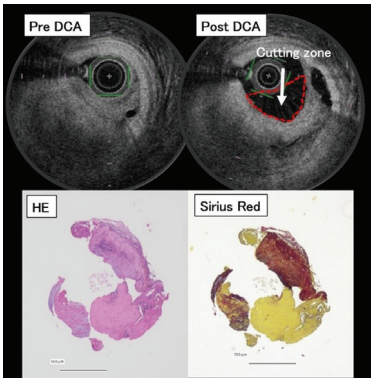
Background: Coronary plaque component in vivo could be obtained by Directional Coronary Atherectomy (DCA) and compared with histological examination. Layered structure within plaque was sometimes observed in OCT imagine. However, histological characteristics of layered plaque is still unclear. The purpose of this study was to evaluate the histological layered plaque characteristics by using DCA.
Methods: A total of 14 stable angina patients underwent OCT guide PCI using DCA was analysed in this study. Histological specimens obtained by DCA were stains by HE and picrosirius red stainings, their matched OCT images were evaluated whether layered structure were identified qualitatively using histology as gold standard.
Results: A total of 24 specimens from 14 patients was obtained by DCA. In these specimen, 6 specimens were obtained from layered plaque in OCT images. All 6 layered plaque visualized in OCT contained organized thrombosis.



OCT images and corresponding histology

Conclusion: Organized thrombosis was characterized as layered structure within coronary plaque in OCT images. These data suggests that layered structure within coronary plaque might be associated with healed plaque following plaque rapture without clinical event.

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Effect of coronary artery calcification on response to adenosine during fractional flow reserve measurement

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Background: During invasive fractional flow reserve (FFR) adenosine is regularly used to obtain maximal hyperemia by vasodilation. Severe coronary artery calcification (CAC) is associated with impaired vasodilation. This might influence the response to adenosine during FFR.
Purpose: We investigated the influence of CAC on the response to adenosine during FFR measurements.
Method: We retrospectively selected 236 patients who underwent both CAC scoring and invasive FFR in 304 vessels with visually intermediate coronary stenoses. FFR before the administration of adenosine minus FFR after the administration of adenosine was determined to investigate the response to adenosine (FFR Difference). Multivariate analyses were performed to investigate the potential association between the severity of CAC and the response to adenosine.
Results: Mean age of the population was 65±10 years, 65% was male. Median CAC score was 510 (range 0 to 6141). FFR after the administration of adenosine was more often ≤0.80 in vessels with severe CAC in comparison with vessels with mild CAC (p=0.045). Overall, mean FFR Difference was 11.0±0.06. Large FFR Difference (FFR Difference ≥15.0) was observed in younger patients (p=0.05). FFR Difference was not influenced by the severity of CAC in the according vessel.
Conclusion: There is no association between severity of CAC and the response to adenosine during FFR measurements in intermediate coronary artery stenoses.