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Treatment of severe calcified lesions with PCI has been associated with a lower success rate and more procedural complications. Rotational atherectomy (PTCRA) can improve acute results, but the high restenosis rate remains a problem. Successful drug-eluting stent (DES) have reduced angiographic restenosis rates by 75% compared with bare-metal stents. Our experimental report might introduce PCI strategy for the small and complex lesions with presenting some clinical cases. We report IVUS-guided stenting cases using a PTCRA device. All cases, angiography showed severe calcified long lesions (over 30 mm) with critical stenosis and less than 2.5 mm in reference diameter. Case-1; We challenged to implant DES after POBA and PTCRA, however stents could not cross the lesion due to lesion complexity. At 3-month follow up diffuse restenosis occurred, we easily got successful direct stenting with DES. We hypothesize that plaque modification and vessel healing after first angioplasty might promote stents to cross the easily. Case-2; The angiography showed < 2.0 mm in the reference diameter. Further stent diameter is selectable to the positive remodeling in IVUS with the vessel diameter < 2.0 mm by the angiography. Conclusion: The combination of PTCRA, IVUS and DES implantation might be useful for the complex lesions.