hemostasis after femoral artery access cardiovascular interventions in everyday practice.

METHODS This study was a prospective, single-arm clinical investigation. We enrolled patients who scheduled to undergo an interventional coronary and peripheral procedure via femoral artery puncture. We didn’t set any exclusion criteria. The primary endpoint was a composite of exactly procedure without arterial access-related complications and time to hemostasis and ambulation within four hours. Secondary endpoint was to assess the prediction factors of the failure cases in multivariate model analysis.

RESULTS This study included 218 consecutive patients (239 procedures). The mean age was 69.8 ± 9.6 years old. Eighty (36.7%) patients were hemodialysis and 144 (66.0%) were diabetic.

Eighty six percent were retrograde approach and the other (13.8%) were retrograde approach. Primary endpoint was 89.9% (215/239). One case developed pseudo-aneurysm and one case occurred access site hemorrhage requiring transfusion. The seven percent of procedures were technical unsuccessful. Average time to ambulatory was 4.26±0.91 hours and time to discharge was 1.44±1.81 days. The prediction factor of unsuccessful in multivariate analysis were severe calcification (p=0.0038) and closely site stenting (p=0.01).

CONCLUSION The use of Exoseal after transfemoral interventional procedures was efficacy and safety also for high risks patients. But it is necessary to be careful in some situation.

TCTAP A-106
Endovascular Therapy by CO2 Angiography to Prevent Contrast - Induced Nephropathy in Patients with Chronic Kidney Disease
Masahiko Fujihara
1Kishiwada Tokushukai Hospital, Japan

BACKGROUND Patients with peripheral vascular disease (PVD) often have chronic kidney disease (CKD) and the use of iodinated contrast media may enhance the risk of contrast-induced nephropathy (CIN). Contrast volume reduction is an effective CIN preventive strategy.

METHOD A prospective multi center registry was developed and six clinical centers participated in the study. Patients with an estimated glomerular filtration rate (eGFR) of <60 ml/min/1.73 m2 andstage-3 CKD were recruited between February 2012 and March 2013. CO2 angiography-guided EVT was performed; incomplete CO2 angiograms were supplemented by intravascular ultrasound, pressure wire, and/or minimal iodinated contrast media. The primary endpoint was a composite of freedom from renal events and freedom from major CO2 angiography related complications.

RESULTS This study included 98 patients with 109 lesions. The mean eGFR baseline was 35.2 ± 12.7 ml/min. CO2 angiography-guided angioplasty were performed in 16 renal arteries, 31 aortoiliac arteries, and 62 superficial femoral arteries. The technical success rate was 97.9%. Average CO2 consumption was 281.4 ± 72.6 ml, average dose of iodinated contrast media was 15.0 ± 8.1 ml. Primary endpoint was 92.8% (91/98). Incidence of CIN was 5.1% (5/98) and CO2 angiography-related complications occurred in 17.3% (17/98). Two cases (2%) developed severe, fatal, nonocclusive mesenteric ischemia (NOMI).Further analysis, CIN occurred the patients those SFA lesions, chronic total occlusion and high volume CO2 injection.

CONCLUSION This trial showed that CO2 angiography-guided angioplasty was effective for preventing CIN, however, CO2 angiography related complication was somewhat high. And large amount of CO2 can cause CIN.

PHYSIOLOGIC LESION ASSESSMENT (TCTAP A-107 TO TCTAP A-111)

TCTAP A-107
Medium Term Safety of Deferring Coronary Intervention by Measuring Fractional Flow Reserve
Ping Tim Tsui,1 Ngai-Yin Chan,1 Hoi Fan Danny Chow,2 Ngai Shing Mok,1 Jenny P.S. Chu,1 Johnny Yuen1
1Princess Margaret Hospital, Hong Kong, China; 2Hospital Authority, Hong Kong, China

BACKGROUND Functional studies performed before percutaneous coronary intervention (PCI) can determine whether a coronary artery is causing ischemia and thus need for PCI. Measuring fractional flow reserve (FFR) is a functional test that can be done during PCI by a pressure wire to identify which artery or specific lesion is causing ischemia. Recent studies have shown that PCI guided by FFR reduced long term mortality or myocardial infarction compared with PCI guided by visual angiographic assessment.

METHODS This was a retrospective case series study conducted in cardiac intervention center of Princess Margaret Hospital on patients who had FFR measured during PCI. Either adenosine or adenosine triphosphate were given by intravenous infusion or intracoronary bolus injection. The aim was to examine the medium term safety of deferring PCI.

RESULTS Three hundred and six consecutive patients (53 female, 253 male) of age 63±11 were recruited. Measuring FFR was unequivocal and successful in 384 lesions. There was no procedure related complication. FFR was measured in 203 lesions in left anterior descending artery (LAD), 91 lesions in left circumflex artery (LCX) and 90 lesions in right coronary artery (RCA). PCI was avoided in 109 (54%) lesions in LAD, 73 (80%) lesions in LCX and 66 (67%) lesions in RCA. After follow-up of 1125±459 days, ten (3.3%) patients subsequently received PCI in the vessel with FFR deferred lesion. There was no death related to FFR deferred lesion.

CONCLUSION Measuring FFR is practically convenient, cost-effective and safe by avoiding unnecessary coronary stenting. The percentage of FFR deferred lesions requiring subsequent PCI is low.

TCTAP A-108
Determination of the Behavior of Coronary Physiology Under Resting Conditions: The Implications for Stenosis Assessment
Sukhinder Nijjer,1 Guus De Waard,1 Tim Van De Hoef,1 Sayan Sen,3 Ricardo Petraco,2 Mauro Echavarria-Pinto,2 Martijn Van Lavieren,1 Paul Knaapen,2 Ibrahim Danad,2 Niels Van Royen,2 Javier Escaned,4 Justin E. Davies1
1Guus De Waard,2 Tim Van De Hoef,3 Sayan Sen,3 Ricardo Petraco,2 Mauro Echavarria-Pinto,2 Martijn Van Lavieren,1 Paul Knaapen,2 Ibrahim Danad,2 Niels Van Royen,2 Javier Escaned,4 Justin E. Davies1
1Kishiwada Tokushukai Hospital, Japan; 2Amsterdam Medical Center, Netherlands; 3Amsterdam Medical Center, Netherlands; 4Hospital Clinico San Carlos, Spain

BACKGROUND We sought to use combined intracoronary pressure and flow velocity measurements to elucidate of the behavior of the human coronary circulation in response to a stenosis.

METHODS 567 simultaneous intracoronary pressure and flow velocity assessments were analyzed for coronary flow velocity, transtenotic gradient (TG) and microvascular resistance (MVR). Measurements were made during rest, over the whole cardiac cycle resting and the diastolic wave-free period, and during adenosine-mediated hyperemia. Linear regression analysis estimated trends and P-values, according to stenosis severity as determined objectively by fractional flow reserve (FFR).

RESULTS As stenosis severity increases, from unobstructed angiographically normal vessels to those with FFR<0.50, resting flow velocity was (18±8.2 cm/s; P<0.01); hyperemic flow falls from 45 to 19 cm/s at hyperemia (P<0.01). TG increases from 1.5 to 46 mmHg at rest, and from 3.5 to 55 mmHg at hyperemia (P<0.01 for both). MVR declines from 6.2 to 4.2 atrest (P<0.01), but remained unchanged at hyperemia (2.3±1.1; P>0.10). Phasic analysis during the wave-free period, yielded similar trends as whole cycle analysis.