Paris Vascular Insights Course

Atherectomy with drug-eluting balloon for common femoral artery occlusive disease: 3-year experience

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Statement of financial interest

I currently have, or have had over the last two years, an affiliation or financial interests or interests of any order with a company or I receive compensation or fees or research grants with a commercial company :

- Consultant

  Boston Scientific, BD, Artivion

- Grant support

  Medicor, iVascular, Medtronic, Biotronik, DMB Medical

Aim

- Despite 17% of local and 15% of systemic complications[1], gold standard treatment for occlusive lesions of the common femoral artery used to be endarterectomy.

- In recent years, interest for endovascular treatment of the common femoral artery has been increasing.[2]

- Stenting of the common femoral artery is possible[2,3] but we believe it is better to avoid it. Calcified arterial lesions are not well treated with drug-coated balloons (DCB) alone.[4]

[1] Chaney M, Joshi G, Serrato JC, et al. Morbidity and mortality of common femoral artery endarterectomy. J Vasc Surg 2024;80(1):199-203.

[2] Deloose K, Martins I, Neves C, et al. Endovascular treatment for the common femoral artery: is there a challenger to open surgery? J Cardiovasc Surg 2019;60:8-13.

[3] Gouëffic Y, Della Schiava N, Thaveau F, et al. Stenting or Surgery for De Novo Common Femoral Artery Stenosis. JACC Cardiovasc Interv 2017;10:1344-1354.

[4] Fanelli F, Cannavale A, Gazzetti M, et al. Calcium burden assessment and impact on drug-eluting balloons in peripheral arterial disease. Cardiovasc Intervent Radiol 2014;37:898-907.

Aim

- Atherectomy followed by DCB angioplasty do better than atherectomy followed by plain old balloon angioplasty[5].

- Our aim was to evaluate vessel preparation with rotational atherectomy followed by DCB angioplasty to treat common femoral artery calcified occlusive disease.

[5] Shammas NW, Shammas GA, Jones-Miller S, Shammas WJ, Bou-Dargham B, Shammas AN, Banerjee S, Rachwan RJ, Daher GE. Long-term outcomes with Jetstream atherectomy with or without drug coated balloons in treating femoropopliteal arteries: A single center experience (JET-SCE). Cardiovasc Revasc Med 2018;19(7 Pt A):771-777.

Methods

- Registry
- In one Belgian center: University Hospital of Liège
- Start in June 2021
- Inclusion of all **heavy calcified** common femoral artery stenosis and chronic total occlusions
- Percutaneous treatment: rotational atherectomy followed by DCB angioplasty
- Exclusion: embolic occlusive disease, hybrid procedure (endovascular and open surgery), critical acute ischemia
- Primary end point: freedom from target lesion revascularization (TLR)

Results

Between June 2021 and August 2024, 71 patients including 15 with bilateral lesions were treated

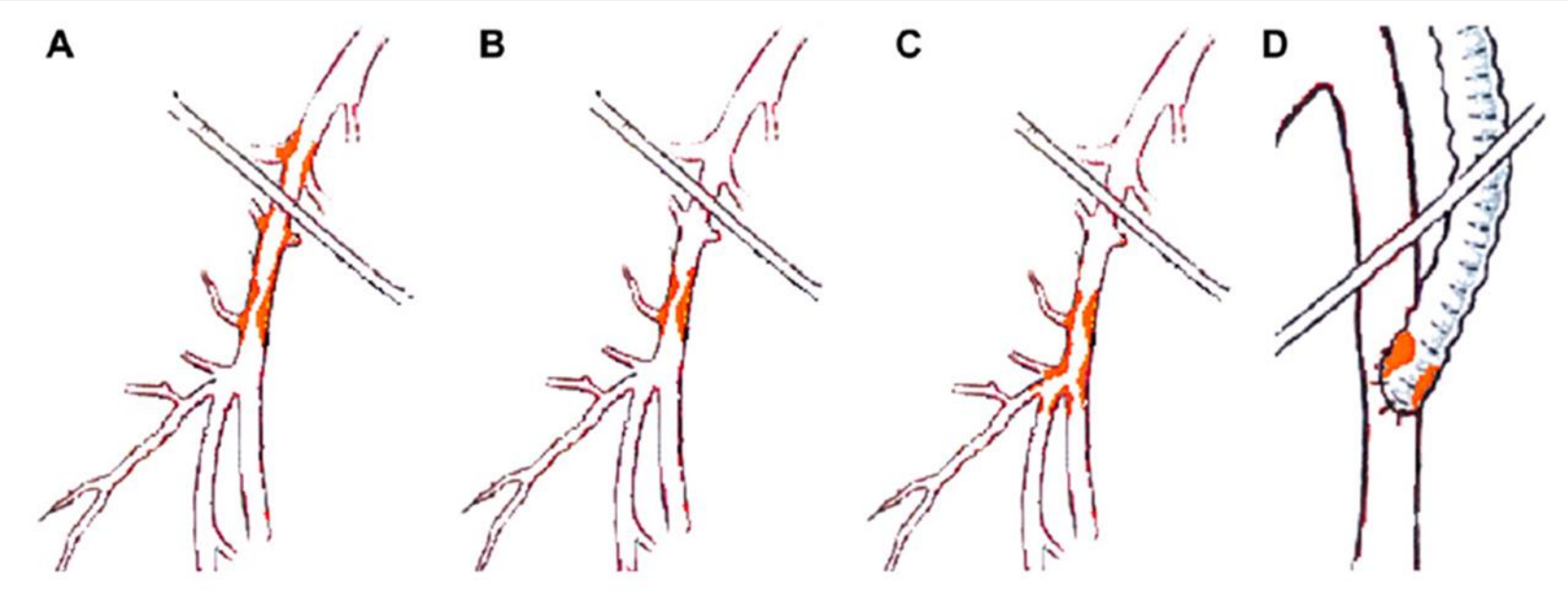
procedures	86
men	51
women	20
mean age	73 years old (52-93)
arterial hypertension	84,5 % (60/71)
smoking or stopped < 3 years	56,3 % (40/71)
diabetes (all types)	40,8 % (29/71)
dyslipidemia (all types)	87,3 % (62/71)
chronic kidney disease	40,8 % (29/71 with 3 dialysis)
Rutherford stage 1-2-3	83,7 % (72/86)
Rutherford stage 4-5-6	16,3 % (14/86)
mean ankle-brachial index	0,73 (0,2-1,4)
chronic total occlusion	7 % (6/86)
mean lesion length	4,0 cm (1,5-8)
simultaneous angioplasties	66,3 % (57/86)

Results

- All procedures were performed under local anesthesia, except 2 under general anesthesia
- 61 (71 %) were anterograde with 54 controlateral femoral and 7 upper limb punctures, and 25 (29 %) were retrograde with ipsilateral superficial femoral puncture
- No filter was used
- Technical success rate was 100% with 3 deep femoral retrograde punctures
- No arterial perforation was observed
- No bail-out stent was needed
- One asymptomatic embolization in a deep femoral artery side branch

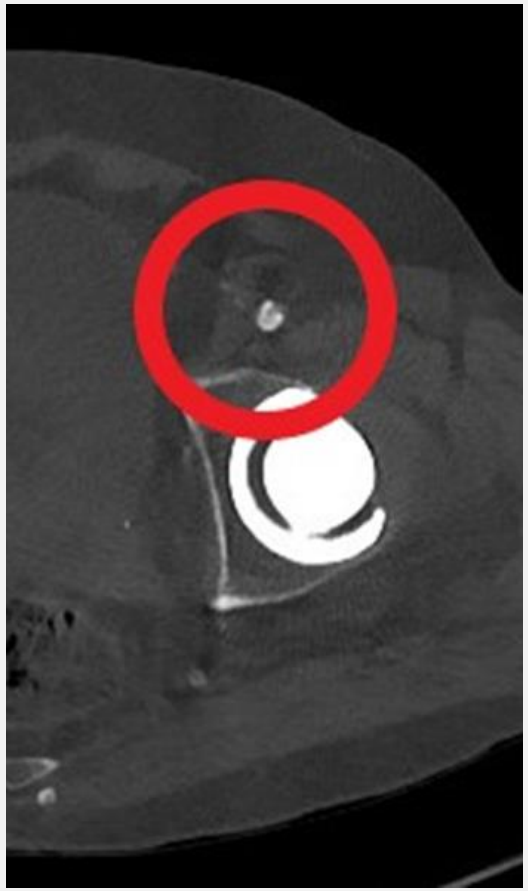
Results

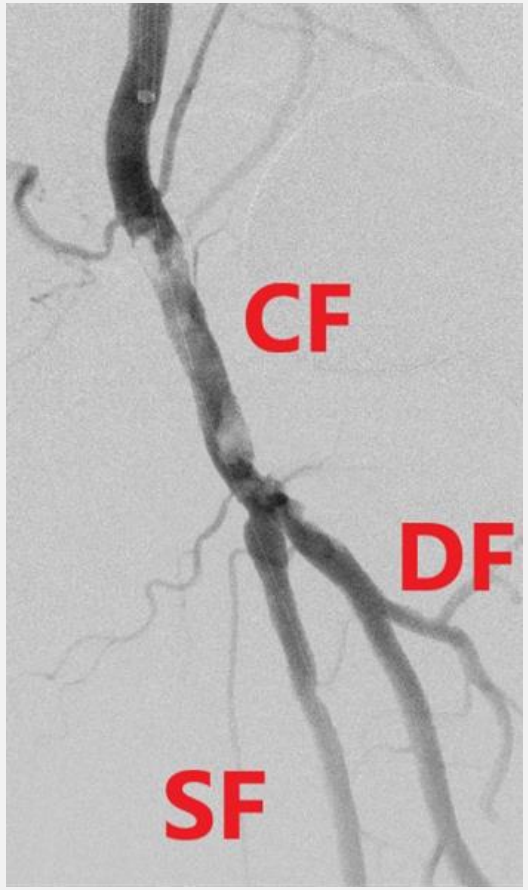
- All types of the Azéma classification[6] for common femoral artery occlusive disease could be treated

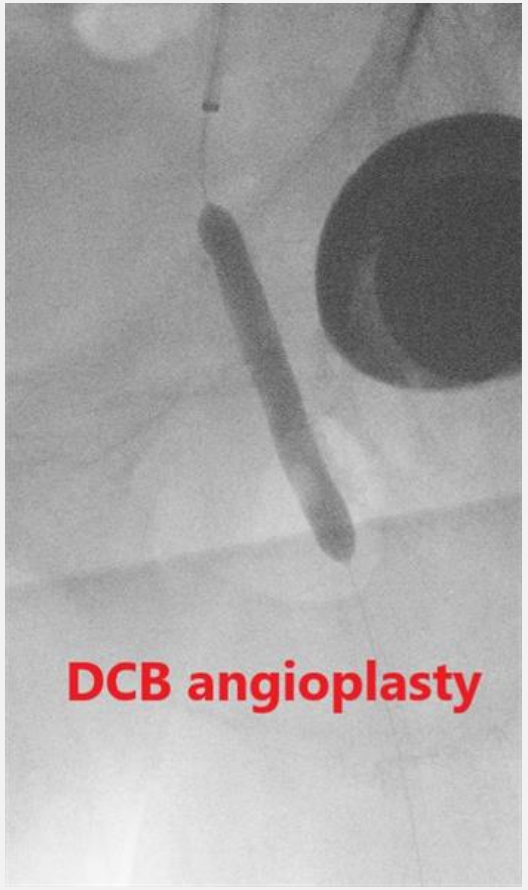


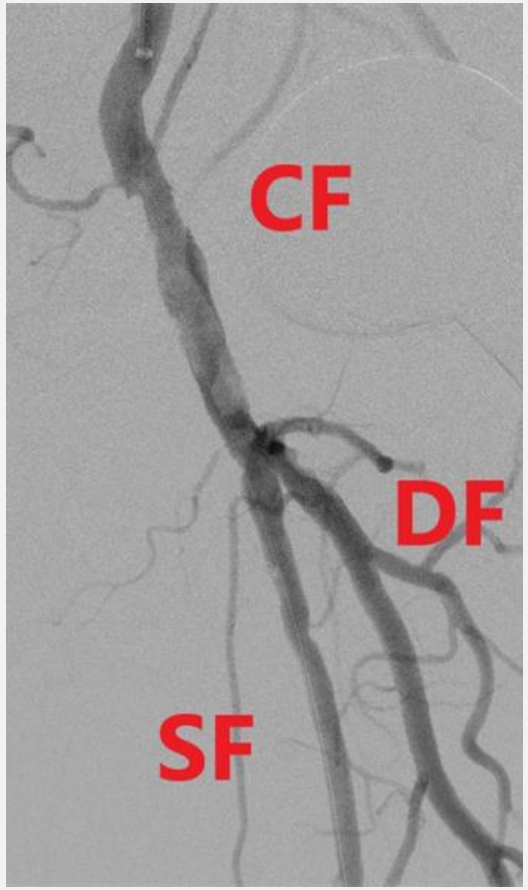
[6] Azéma L, Davaine JM, Guyomarch B, Chaillou P, Costargent A, Patra P, Gouëffic Y. Endovascular repair of common femoral artery and concomitant arterial lesions. Eur J Vasc Endovasc Surg 2011;41(6):787-93.

Results



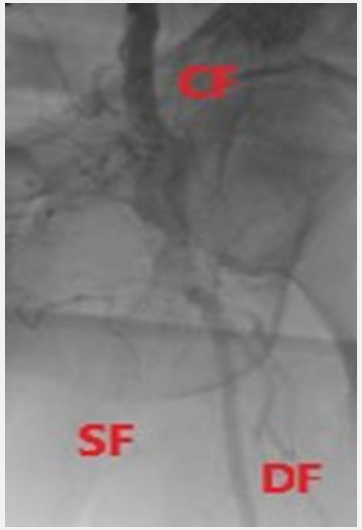


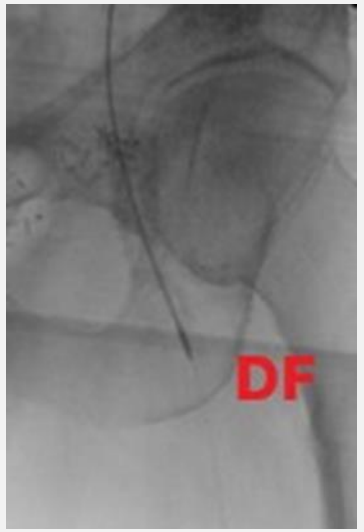


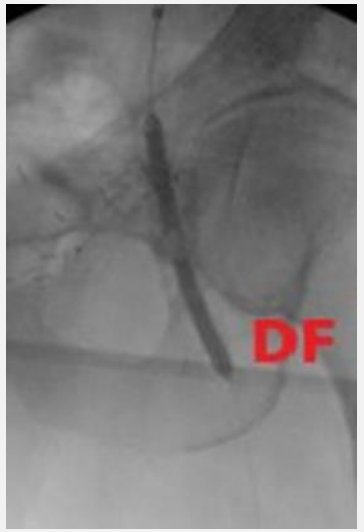


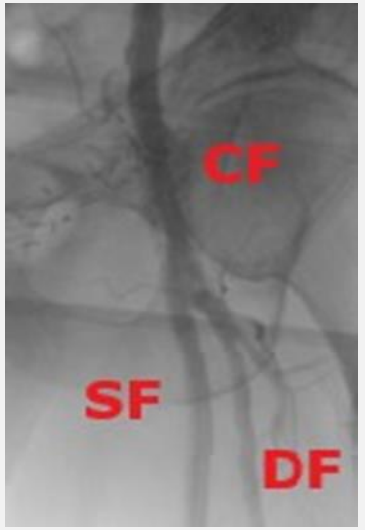
Results

Superficial and deep femoral arteries rotational atherectomy



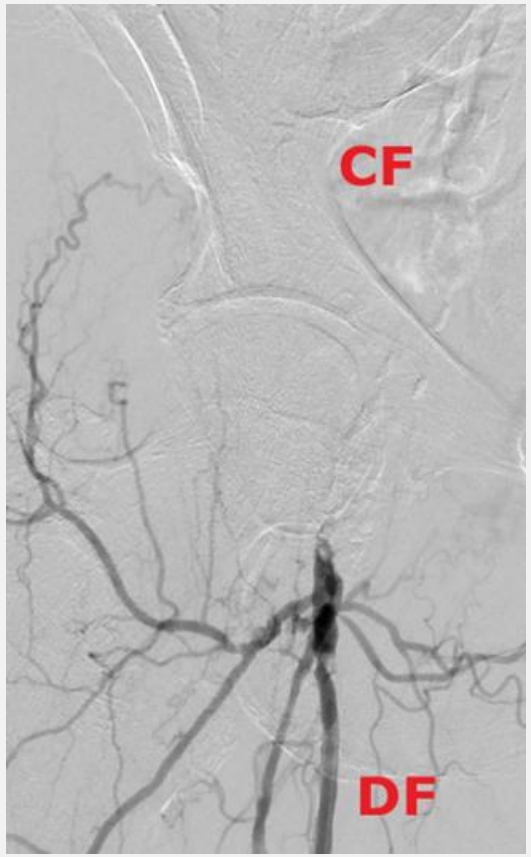


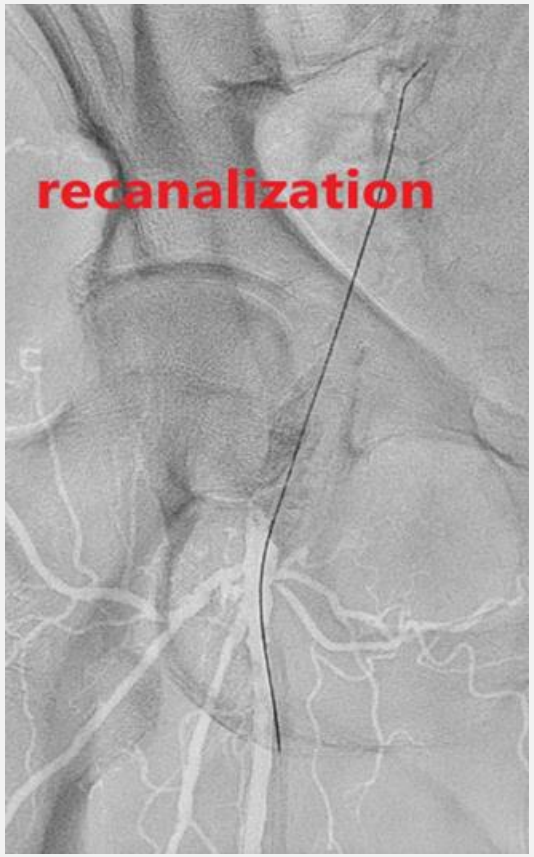


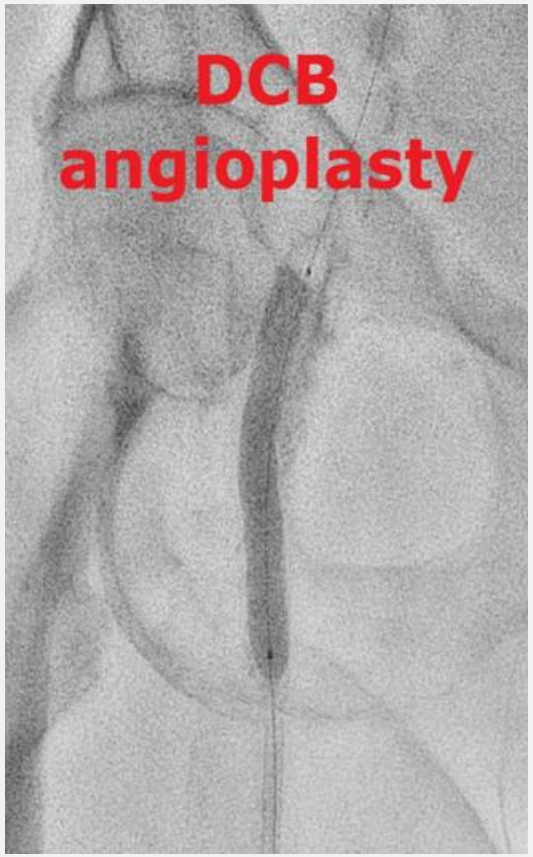


Results

Deep femoral artery retrograde puncture

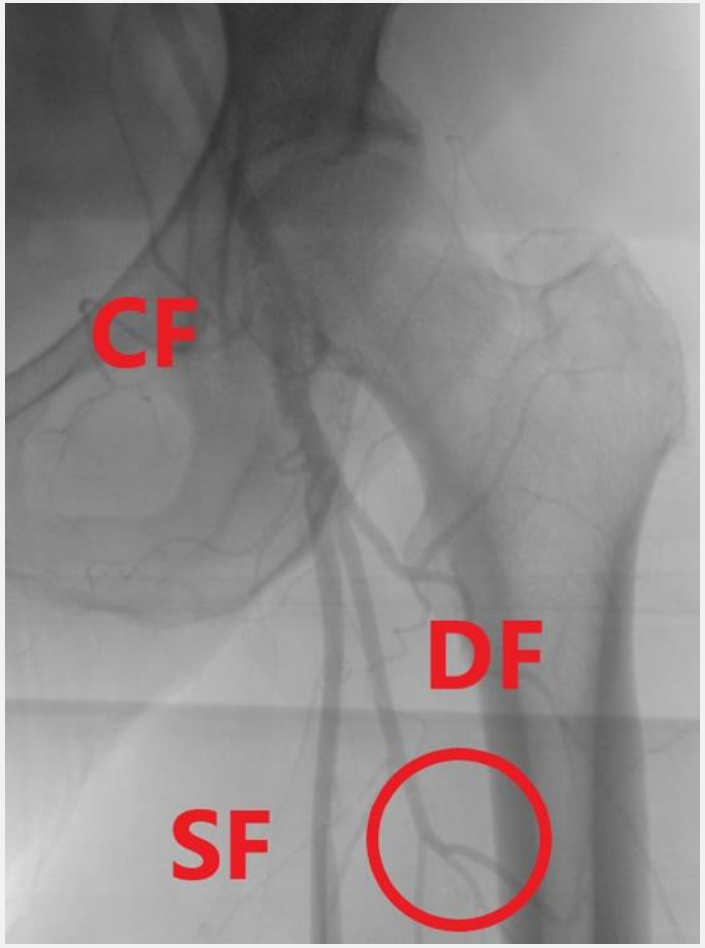


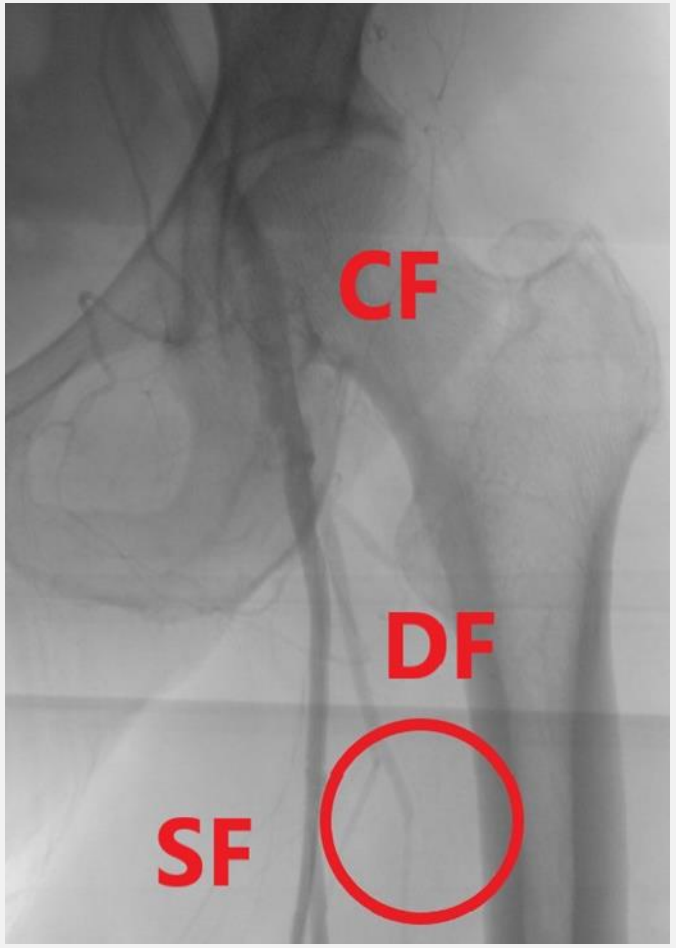




Results

Deep femoral artery side branch embolization





Results

Mean follow-up was 16,6 months

complications	n
mortality at 30 days	4/71 (2 MI at D1 and D3, AMI D5 and CF D30)
NSTEMI at 30 days	2/86 (at D1 and D30)
acute kidney injury	3/86 (5 %)
major amputation	2 (Rutherford stage 6)
minor amputation	2 (Rutherford stage 3 and 4)
false aneurysm at the access site	5/86 (3 thrombin and 2 surgery)
thrombosis at the access site	2/86 (1 endovascular and 1 surgery)
primary patency (≤ 50% residual stenosis at duplex scan)	94% (81/86)
freedom from TLR	90,7 % (78/86)

Results

- All procedures except 8 had improved Rutherford stage
- 5/8 had recurrent lesion (4 restenosis and 1 reocclusion)
- 3/8 without recurrent lesion needed secondary endarterectomy:

  - One for persistent Rutherford stage 3. After the open surgery, the patient had still claudication probably due to underestimated run off vessels disease.
  - One with Rutherford stage 6. The patient had secondary ipsilateral femoro-popliteal venous bypass with common femoral endarterectomy. He had later below the knee amputation.
  - One with Rutherford stage 3. 14 months later, he developed Rutherford stage 5. He had femoro-popliteal venous bypass with common femoral endarterectomy, BTK angioplasty and 3 toes amputation.

Conclusions

- Rotational atherectomy followed by DCB angioplasty for common femoral artery calcified occlusive disease is **feasible** and **safe**.

- The advantages are
  - to treat **all types** of the Azéma classification
  - to **avoid** the potential **complications** of the surgical treatment
  - to **leave nothing** behind (no stent)

- Freedom from TLR at 16 months: **90,7%**.