The Alphenix 4D CT – More Treatments in a More Accurate Manner

Dr. Olle Haller

Gävle Central Hospital, Sweden, cares for all interventional radiology in the city of Gävle and surroundings with a population of 160,000 people. It is also the main hospital in the Region of Gävleborg and cares for more advanced interventional radiology in an area with a total population of 290,000 people.

Until 2018, interventional radiology and vascular surgery shared an angiography system in the radiology department but when an angiography system was installed in OR the vascular surgeons and their procedures moved there. This opened up the possibility to improve logistics for the increasing number of CT guided interventions that we struggled to schedule in the CT department.

Canon Medical's Angio CT system the Alphenix 4D CT was installed in the department of interventional radiology in December 2018, being the first combined angiography and CT system in Sweden.

In 2019 around 600 interventional procedures were performed on the Alphenix 4D CT. Of these, 150 were angiographies (embolization of hemorrhage, UFE, venous procedures, dialysis fistulas), 150 fluoroscopic procedures (biliary intervention, complex urogenital intervention) and 300 CT guided interventions (biopsies, drainages, gastrostomies, nerve root blocks).

Another 150 CT guided procedures (mainly biopsies) were performed in the CT department and most nephrostomies and catheter exchanges were performed in the fluoroscopy department.

Thanks to the Alphenix 4D CT the average waiting time for CT guided procedures is decreased significantly. The average waiting time for CT guided abscess drainages changed from a medium of 27 hours to 15 hours and the average waiting time for CT guided abdominal biopsies from 12 days to 8.5 days.

Though, the main reason for investing in Alphenix 4D CT, was improved logistics for CT guided procedures both CT and angio/fluoro was used in 15% of the procedures.

"With Canon's new Angio CT system, we have become more efficient and have been able to shorten the waiting times significantly for several interventions."

Dr. Olle Haller, Head of Interventional Radiology, Gävle Central Hospital, Sweden.

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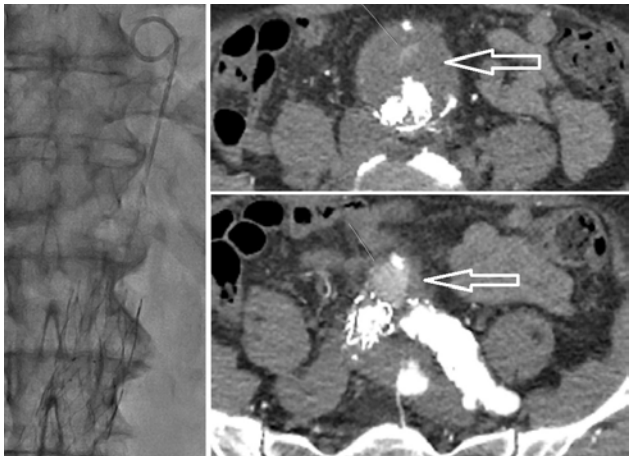
"We found the combination of both systems valuable in complex drainages and nephrostomies, gastrostomies, Onyx embolization of endoleaks with direct puncture and for troubleshooting."

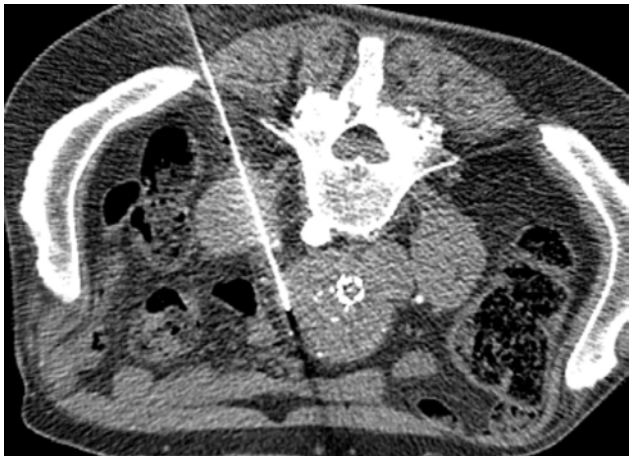
"The Alphenix 4D CT has also allowed us to initiate new treatments like CT guided nerve blocks in the lumbar and cervical spine, in 2019, 77 nerve blocks were performed with the new equipment."

Case 1

Diagnosis and treatment of typ 2 endoleak (Velinov/Haller). Growth of aneurysm sac after EVAR and due to somewhat impaired renal function imaging has failed to describe the type of endoleak.

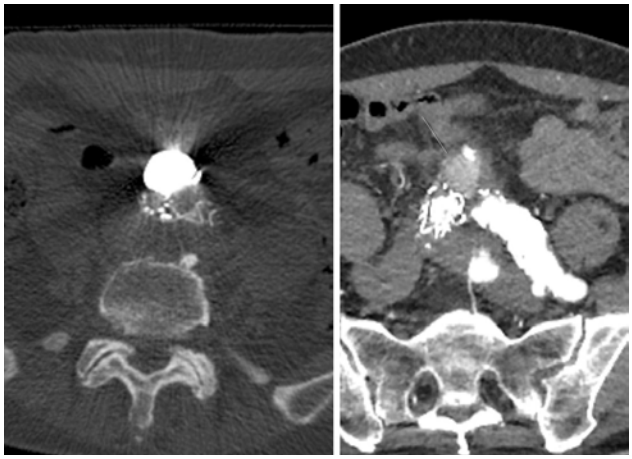


Puncture of the right femoral artery and with fluoroscopic guidance a pigtail catheter is inserted in the suprarenal aorta. CT with injection of 40 ml contrast in the aorta reveals a type 2 endoleak.



In a second session the aneurysm sac is punctured using CT guidance and the needle tip placed at the site of the endoleak. When bloodflow is obtained from the needle a microcatheter is inserted.

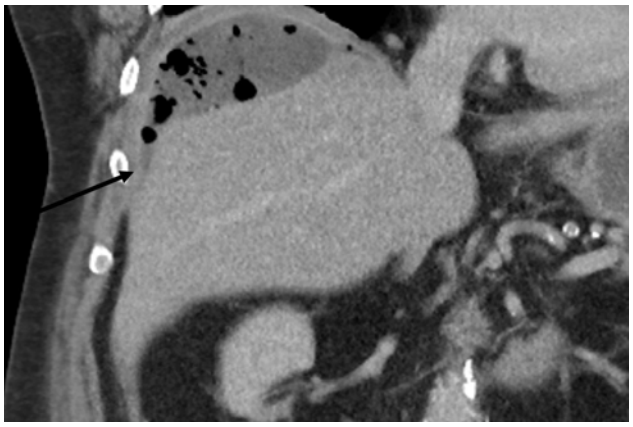
After switching to the angio equipment an angiography is performed to visualize the leak which then is embolized with Onyx.



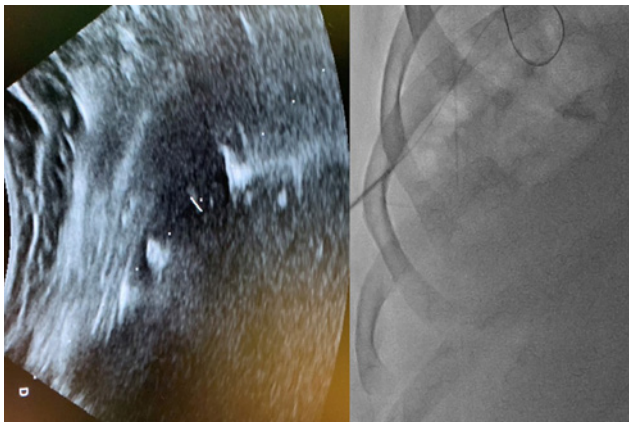
Finally, a CT is performed to ensure that the endoleak seen on CT has been fully embolized.

Case 2

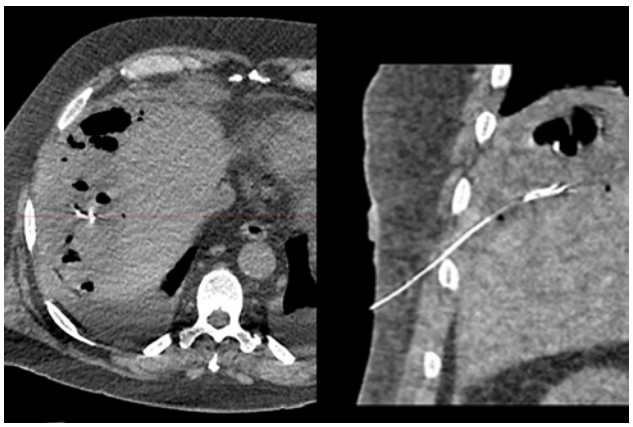
Abscess drainage (Haller).



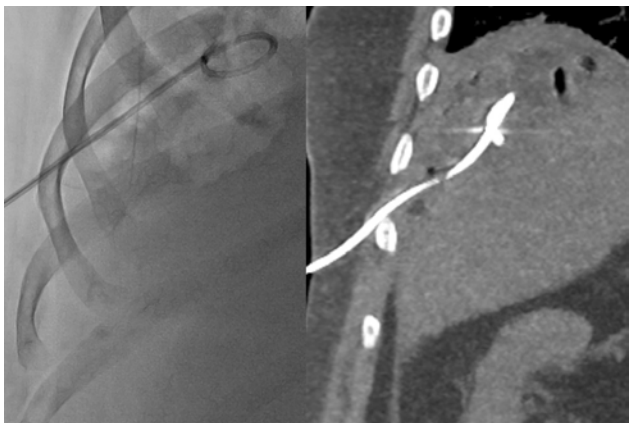
Subphrenic abscess difficult to visualize with ultrasound due to gas content. CT guided drainage is also challenging due to the risk of going through the pleural space.



With ultrasound guidance a thin rim of fluid lateral to the liver is punctured with a 0,9 mm needle and a soft tip 0,018 inch guidewider is inserted.



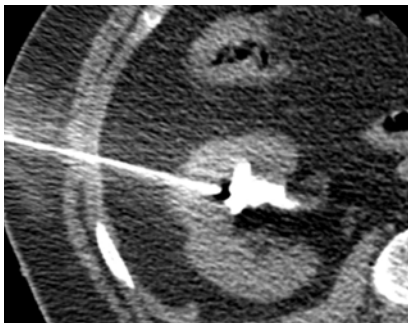
CT confirms that the guidewire is properly placed within the abscess.



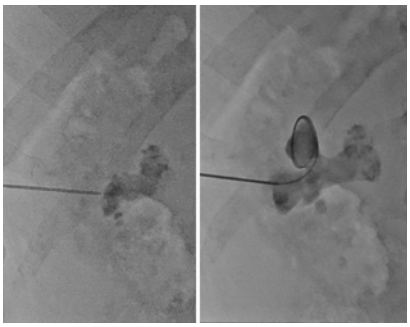
With fluoroscopic guidance the guidewire is changed through a coaxial catheter system to a 0,035-inch guidewire and a 8,5 F pigtail catheter is inserted. CT confirms that the pigtail catheter is properly placed within the abscess.

Case 3

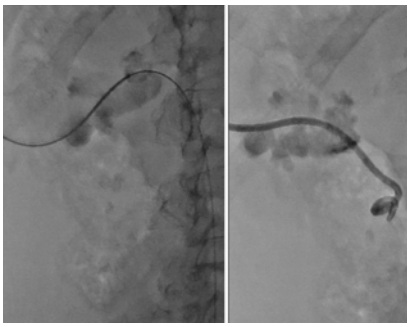
Nephrostomy prior to Percutaneous nephrolithotomy (Velinov). Patient with large kidney stone in the renal pelvis. //



CT guided puncture of the renal pelvis to obtain an access route that is optimal for the surgeon.



Quick switch to fluoroscopy.



Quite complicated catheterization past the stone to the Uretropelvic junction and insertion of a pigtail catheter.

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