

# Virtual Colonoscopy

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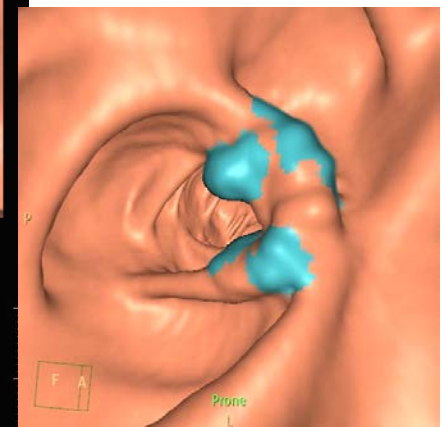
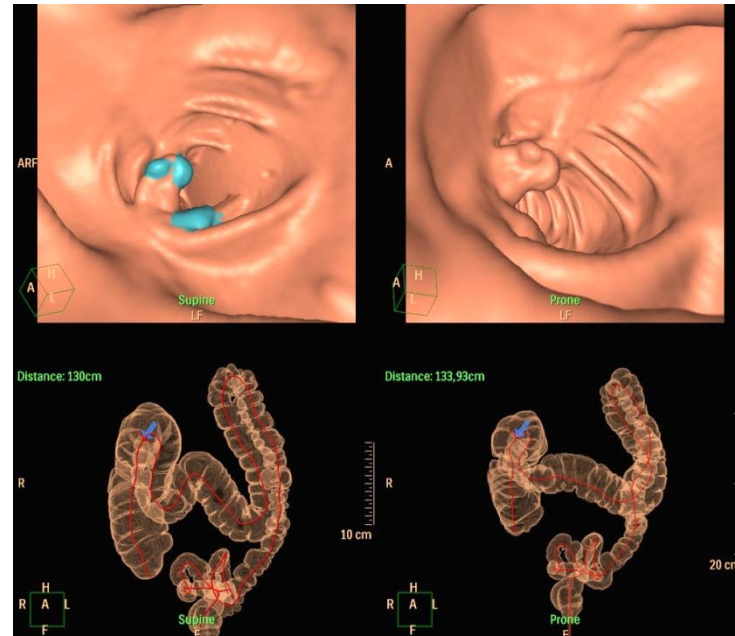


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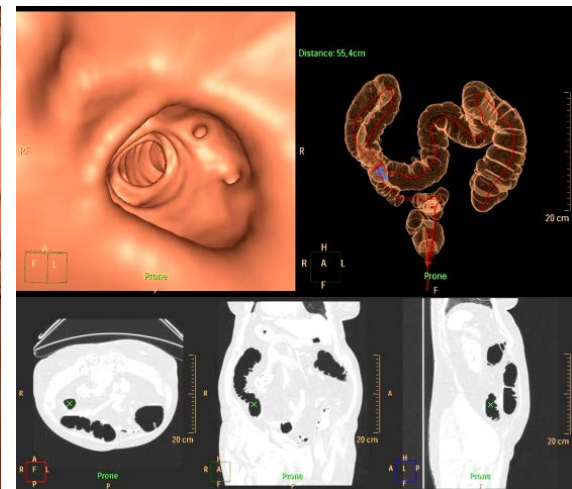
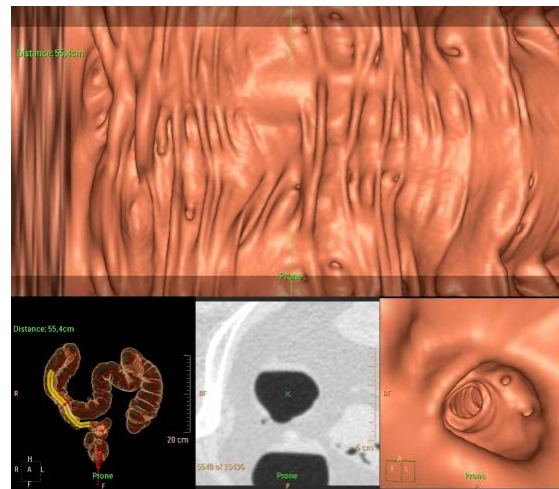
# Case

- F 62y old, anemia
- history – status after hysterectomy and ovariectomy for carcinoma of the cervix (1992), in the past polyp in the anus (carcinoma in situ), 2011 only sigmoidoscopy (adhesions)
- 2012 **VC** – polypoid lesion in the hepatic flexure
- histology – adenocarcinoma



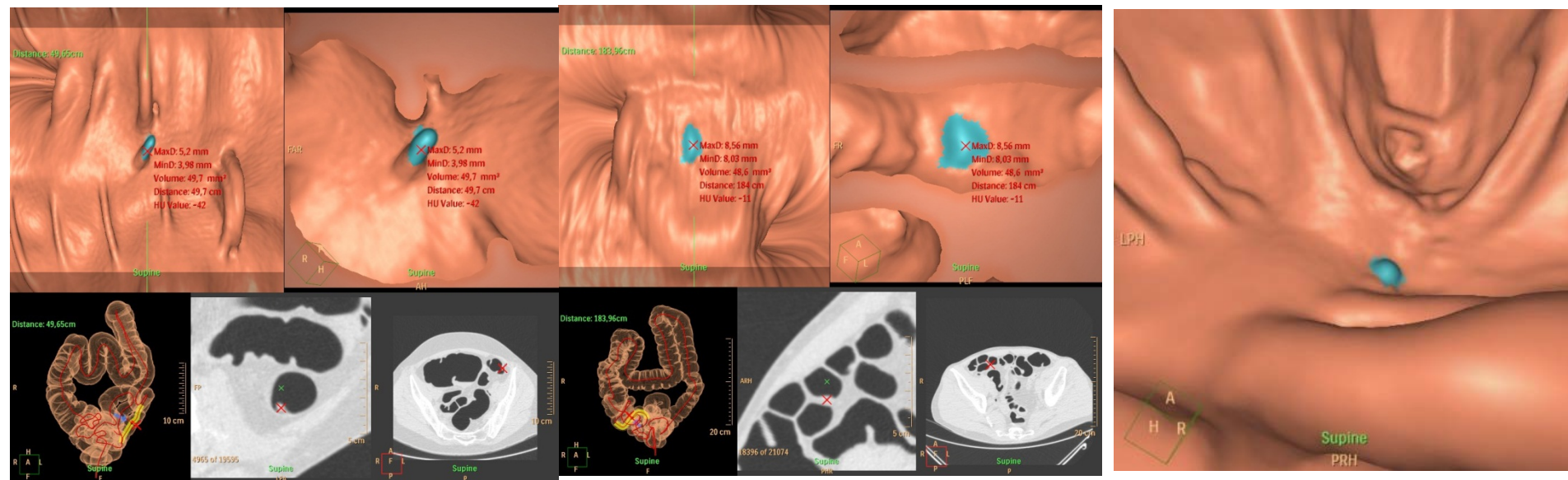
# Virtual colonoscopy (VC) = CT colonography (CTC)

- Low dose technique (effective dose about 4-6 mSv)
- Non-invasive and painless, no sedation!
- Visualization of lesions from any angle
- Ability to cross the stenosis
- Evaluation of lymph nodes and abdominal organs
- CAD
- Objectivity (archiving and traceability of findings)



# Evaluation - CAD

- **CAD** (computer-aided detection) system detects irregularities in the lining of the intestinal lumen.
- **Sensitivity/specificity** for lesions  $>6\text{mm}$  is more than **92%/90%**, for lesions  $>10\text{mm}$  about **96%/92%**.
- **FDA approved 2011**



# CAD

- there is an effort to move CADe (computer-aided detection) to CADx (computer-aided diagnoses)
- to modify the program to recognize labeled stool and submerged lesions
- to reduce the number of false positives and false negatives

## **UNITED STATES PREVENTIVE SERVICES TASK FORCE: SUMMARY OF RECOMMENDATIONS REGARDING CTC (2008)**

- Current evidence is insufficient to assess benefits and risks of CTC as a screening modality for CRC
- Potential long-term harms from CTC related radiation exposure may exist
- Potential adverse consequences related to the evaluation and treatment of incidentally discovered extracolonic findings may occur

## **CENTERS FOR MEDICARE AND MEDICAID SERVICES (2009)**

- The evidence is inadequate to conclude that CT colonography is an appropriate colorectal cancer screening test under 1861 (pp) (1) of the Social Security Act.
- CT colonography for colorectal cancer screening remains noncovered.

## BLUE CROSS/BLUE SHIELD TECHNOLOGY EVALUATION CENTER(2009)

- CTC meets the criteria for an effective CRC screening test.
- **University of Wisconsin**, two years, 3,000 subjects, two non-randomised groups, VC and optical colonoscopy. The detection rate for advanced adenomas was 3.2% for VC and 3.4% for optical colonoscopy. Seven perforations in the colonoscopy group.
- **Western Australia**, 2,000 people were invited, 28.4% agreed to undergo VC for screening, with 62% of them preferring VC to optical colonoscopy.62

# CTC: conclusion

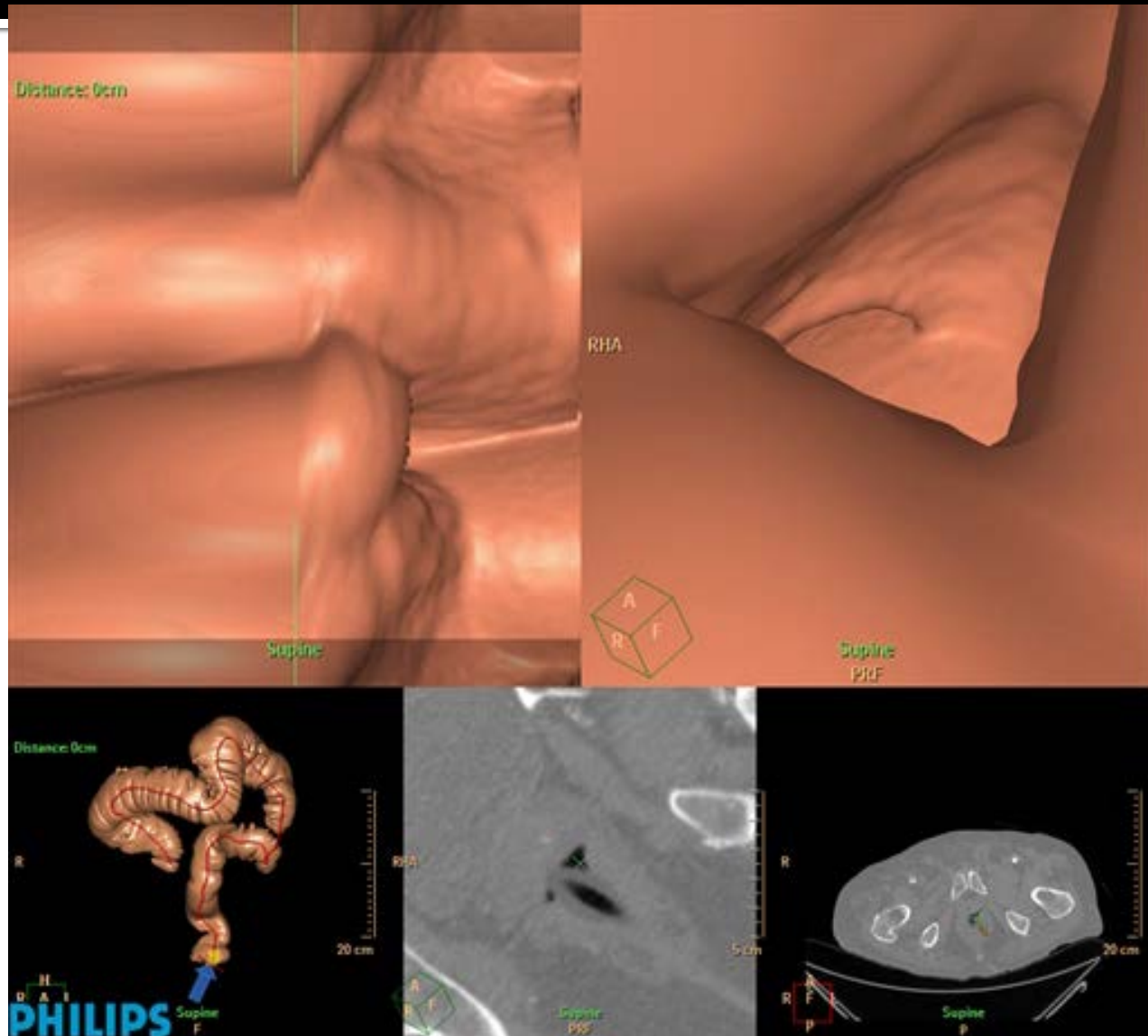
- CRC rare in 5-year follow-up after negative CTC; equivalent to follow up after OC despite not reporting of <6mm polyps (Kimetal2012)
- It has been calculated that VC would lead to a decrease in the incidence of CRC of around 36.5%, with a 76% reduction in the number of colonoscopy examinations, compared with a strategy using colonoscopy as the primary screening method, and with the further advantage of a significant decrease in colonoscopy-related complications



# CTC: conclusion

- In Dutch randomized study, 55% increase in patient participation for CTC over OC (Stoopetal 2012)
- When cost of extracolonic workup (negative) is balanced against AAA screening (positive):
  - CTC dominates optical colonoscopy (&OC-US)
    - *Hassan et al. Arch Intern Med 2007*
  - Also highly cost effective (and more clinically effective) in the Medicare population
    - *Pickhardt et al. AJR 2009*
  - **Actual benefit may be even higher**

# CTC: conclusion



**Thank you for your attention**

