CORONARY ARTERY DISEASE IN SOUTH ASIANS

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CORONARY ARTERY DISEASE IN ASIANS

The prevalence of heart disease is very high in South Asians

- US (Non-Asian) – 2.5% CAD risk
- South Asians – 7.5% CAD risk

Enas EA, Garg A, Davidson MA, et al. Coronary heart disease and its risk factors in first-generation immigrant Asian Indians to the United States of America. *Indian Heart J* 1996;48:343-53.

CORONARY ARTERY DISEASE IN ASIANS

Three-fold increased risk of CAD in South Asians in India and in Indians abroad

- Non-diabetics – 11% CAD risk
- Diabetics – 21% CAD risk

Note: Non-diabetic risk is 11% in India because many of those have prediabetes (hyperinsulinemia)

Ardeshna, D. R., Bob-Manuel, T., Nanda, A., Sharma, A., Skelton, W. P., 4th, Skelton, M., & Khouzam, R. N. (2018). Asian-Indians: a review of coronary artery disease in this understudied cohort in the United States. Annals of translational medicine, 6(1), 12. https://doi.org/10.21037/atm.2017.10.18

PREVALENCE

Indians in the US have the same rate of CAD as Indians in India! [U.K., Singapore, Mauritius, South Africa, Fiji, Trinidad]

In the USA, South Asians compared to whites have:

- 4x more hospitalizations for CAD
- 2-4x more complications
- 5-10x more disease in those under 40 years of age

Enas EA, Mehta J. Malignant coronary artery disease in young Asian Indians: thoughts on pathogenesis, prevention, and therapy. Coronary artery disease in Asian Indians (CADI) Study. *Clin Cardiol* 1995;18:131-5. 10.1002/clc.4960180305

Enas EA, Senthilkumar A. Coronary artery disease in Asian Indians: an update and review. Internet J Cardiol 2001;1.

Klatsky AL, Tekawa I, Armstrong MA, et al. The risk of hospitalization for ischemic heart disease among Asian Americans in northern California. *Am J Public Health* 1994;84:1672-5. 10.2105/AJPH.84.10.1672

CAD IS MORE MALIGNANT IN SOUTH ASIANS!

Urban Indians have same rates of CAD as overseas. Rural Indians in India have 50% less CAD. 50% of deaths occur in those <50 years of age, and 25% of MI occur in those <40 years.

Gupta R, Prakash H, Majumdar S, et al. Prevalence of coronary heart disease and coronary risk factors in an urban population of Rajasthan. *Indian Heart J* 1995;47:331-8.

Reddy KS. Cardiovascular diseases in India. *World Health Stat Q* 1993;46:101-7.

RISK FACTORS FOR CAD

- Metabolic syndrome
- Hypertension
- Smoking
- Diabetes
- Hyperlipidemia
- Connective tissue disease
- Obesity
- Increased abdomen-hip ratio >0.85 (visceral fat)

BUT… Asians have fewer traditional risk factors too. The threshold for basic factors are lower for South Asians, e.g. BP 130/85, BMI of 23

RISK FACTORS

URBAN

BMI 24-25

Abdominal Obesity ↑

Hip waist ratio (HWR) 0.99

Sedentary

RURAL

BMI 20

Abdominal Obesity ↓

Hip waist ratio 0.95

Non-sedentary

CLUES: Abdominal obesity and HWR are related to metabolic syndrome (prediabetes/hyperinsulinemia) as well as DIABETES

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RISK FACTORS

Prevalence of DIABETES in populations:

U.S. 5.3%

India 12-14%

DIABETES AND PREDIABETES STAND OUT AS MAJOR RISK FACTORS FOR CAD!

Diabetes + prediabetes/hyperinsulinemia/metabolic syndrome also include:

- HTN
- ↑ TRIG
- ↓ HDL
- Normal or high normal LDL

So, insulin disorders drive many risk factors!

Enas EA, Senthilkumar A. Coronary artery disease in Asian Indians: an update and review. Internet J Cardiol 2001;1.

Jha P, Enas E, Yusuf S. Coronary Artery Disease in Asian Indians: Prevalence and Risk Factors. *Asian Am Pac Isl J Health* 1993;1:163-75.

Mohanty SA, Woolhandler S, Himmelstein DU, et al. Diabetes and cardiovascular disease among Asian Indians in the United States. *J Gen Intern Med* 2005;20:474-8. 10.1111/j.1525-1497.2005.40294.x

RISK FACTORS

50% of South Asians are vegetarians, and in some subpopulations, it is >50%.

SAME rate of CAD as non-vegetarians!

Blame placed on increased saturated fats in vegetarians in S. India via coconut oil, but not entirely correct ….. Oil types have changed ….. Virgin vs. refined ….. Centrifuged or not ….. Reusing oil creates transfats ….. More vegetable seed oil use, increased refined oils

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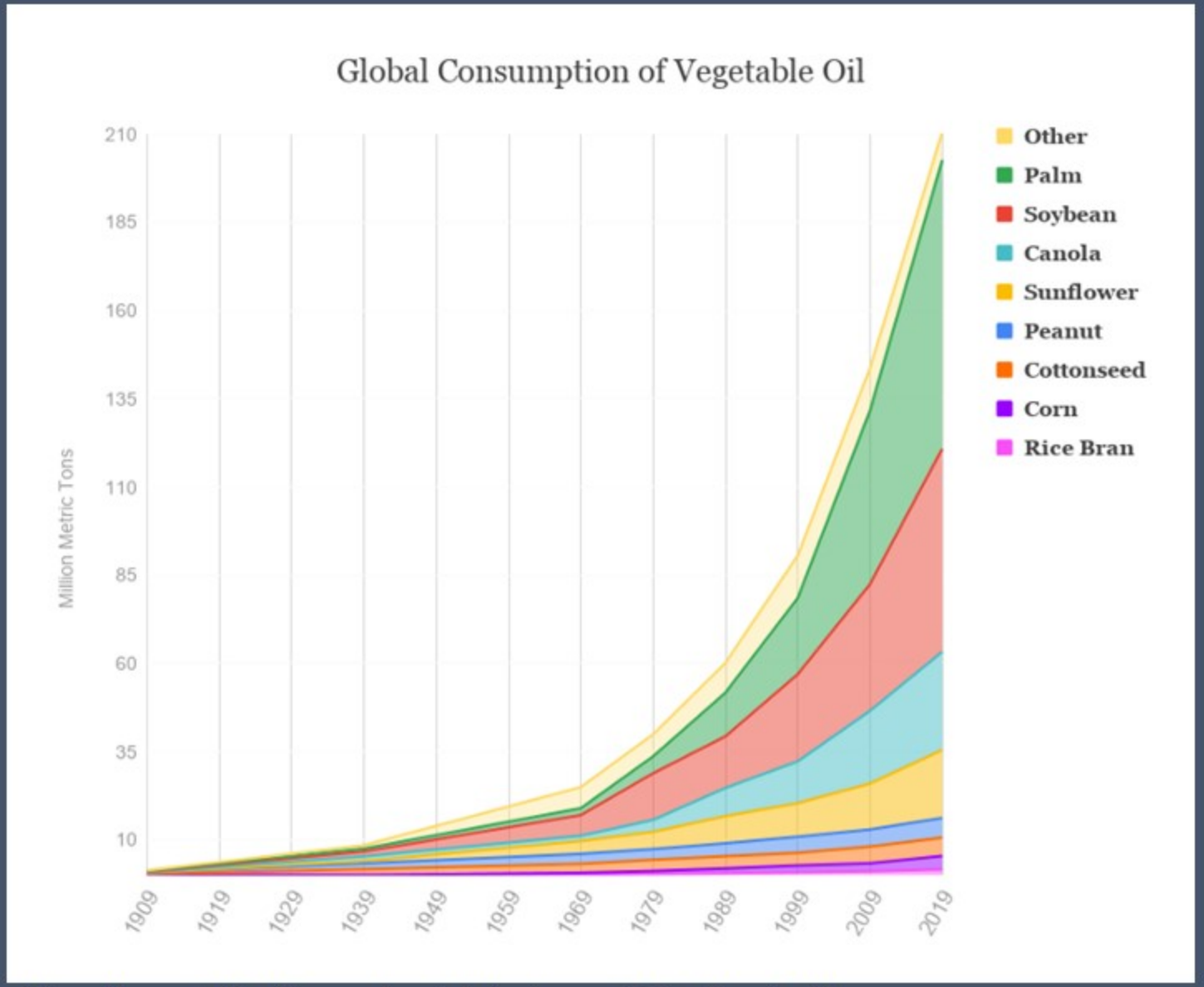
VEGETABLE SEED OILS

Dalda (vegetable ghee), palm, soybean, canola, sunflower, peanut, cottonseed, corn oil consumption has increased in recent years.



https://www.jeffnobbs.com/posts/why-is-vegetable-oil-unhealthy

RISK FACTORS

Carbohydrates and sugars are HIGH in both populations (vegetarian and non vegetarian) – the common denominator

Processed foods in both groups:

- Wheat flour
- Chick-pea flour
- Vegetable seed oils
- Sugars and sweets
- Refined products

Asians in the U.S. also eat U.S. foods and exercise – so there is an added DOSE effect.

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REDUCING CAD RISK IN ASIANS

*Detection, treatment, and reversal of metabolic syndrome

*Early detection of CAD

- Using CT coronary calcium score

*Early blood tests

- KRAFT TEST for insulin level and glucose
- CRP level [<1.0]
- Homocysteine level [<10 mcmol/L]
- HgA1c level [<5.7%]
- TRIG/HDL Ratio [<2.0]

REDUCING CAD RISK IN ASIANS

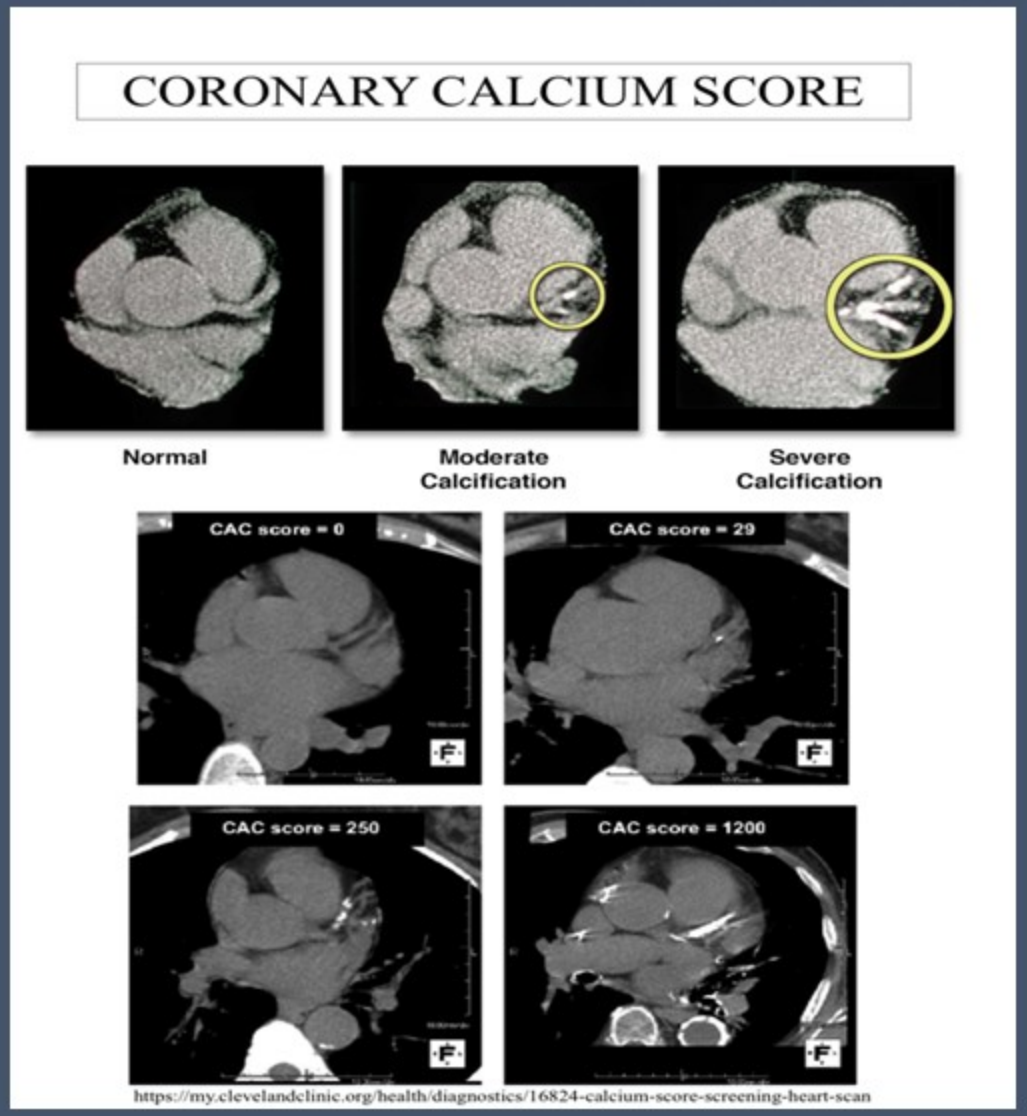
*Liver ultrasound study

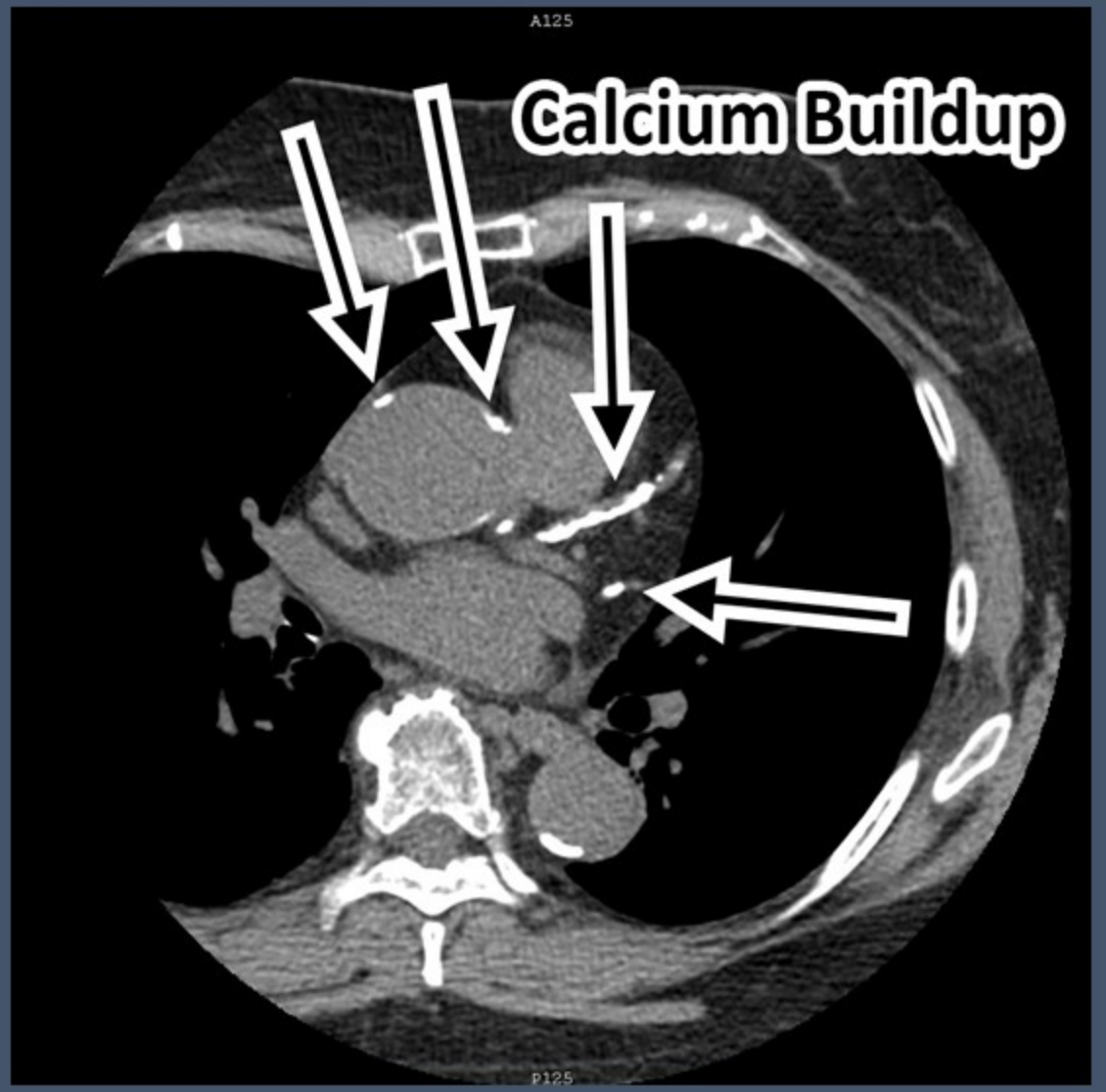
- to detect fatty liver

*Emerging blood tests

- Low insulin like growth-factor binding protein
- Increased leptin levels
- Decreased adiponectin
- Increased CETP levels
- Increased lipoprotein (a)
- Increased PAI-1 level

REDUCING CAD RISK IN ASIANS





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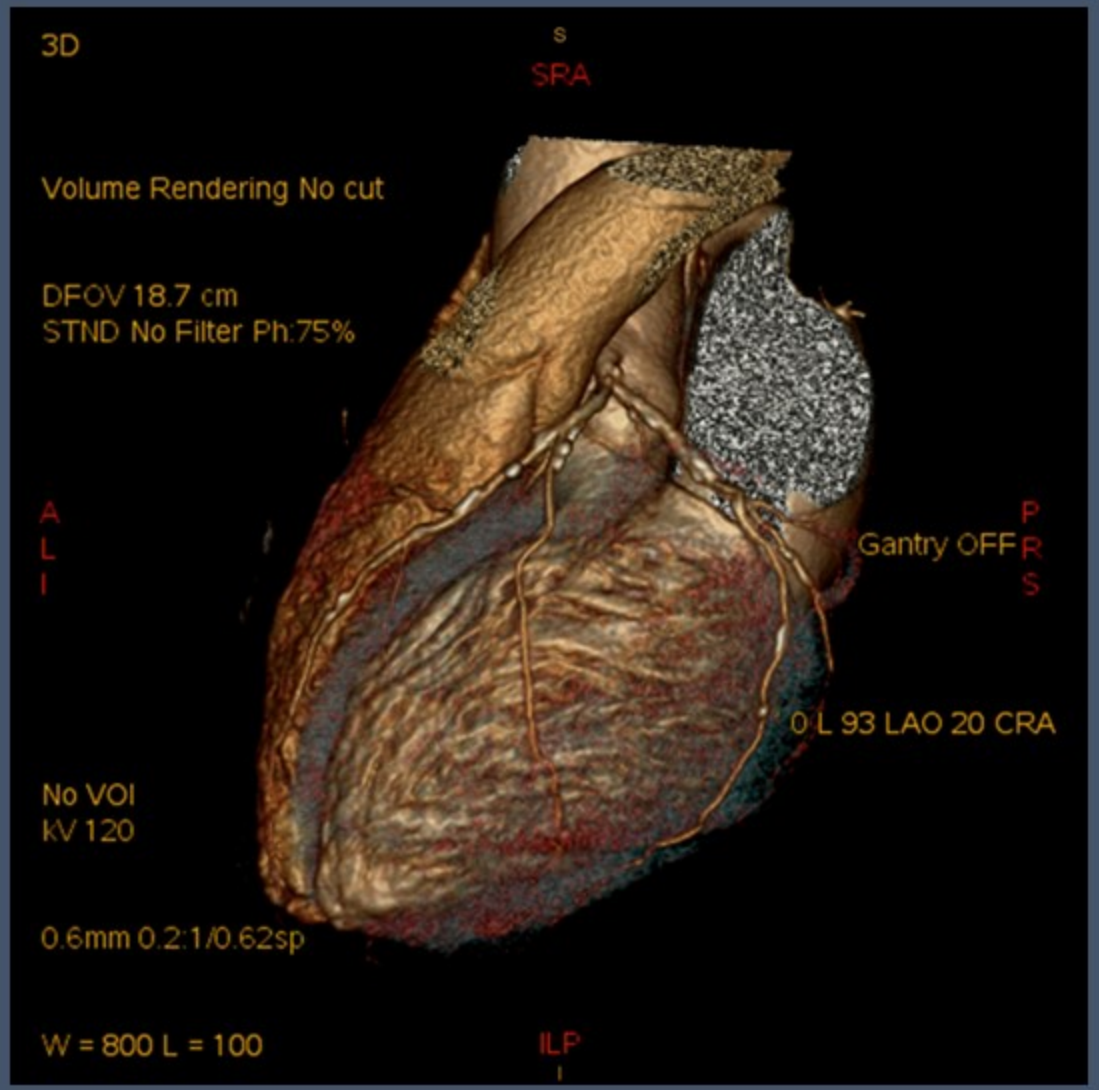

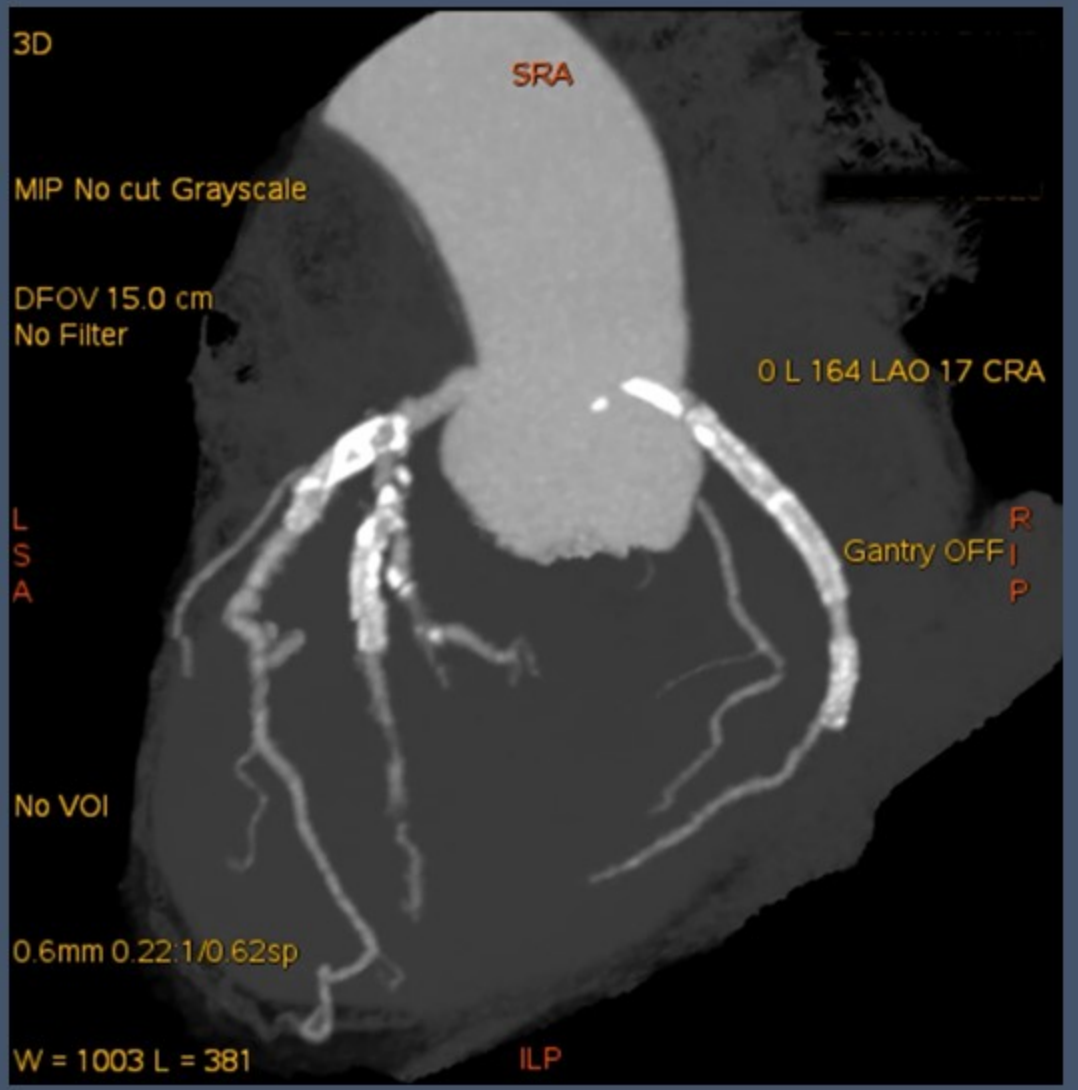

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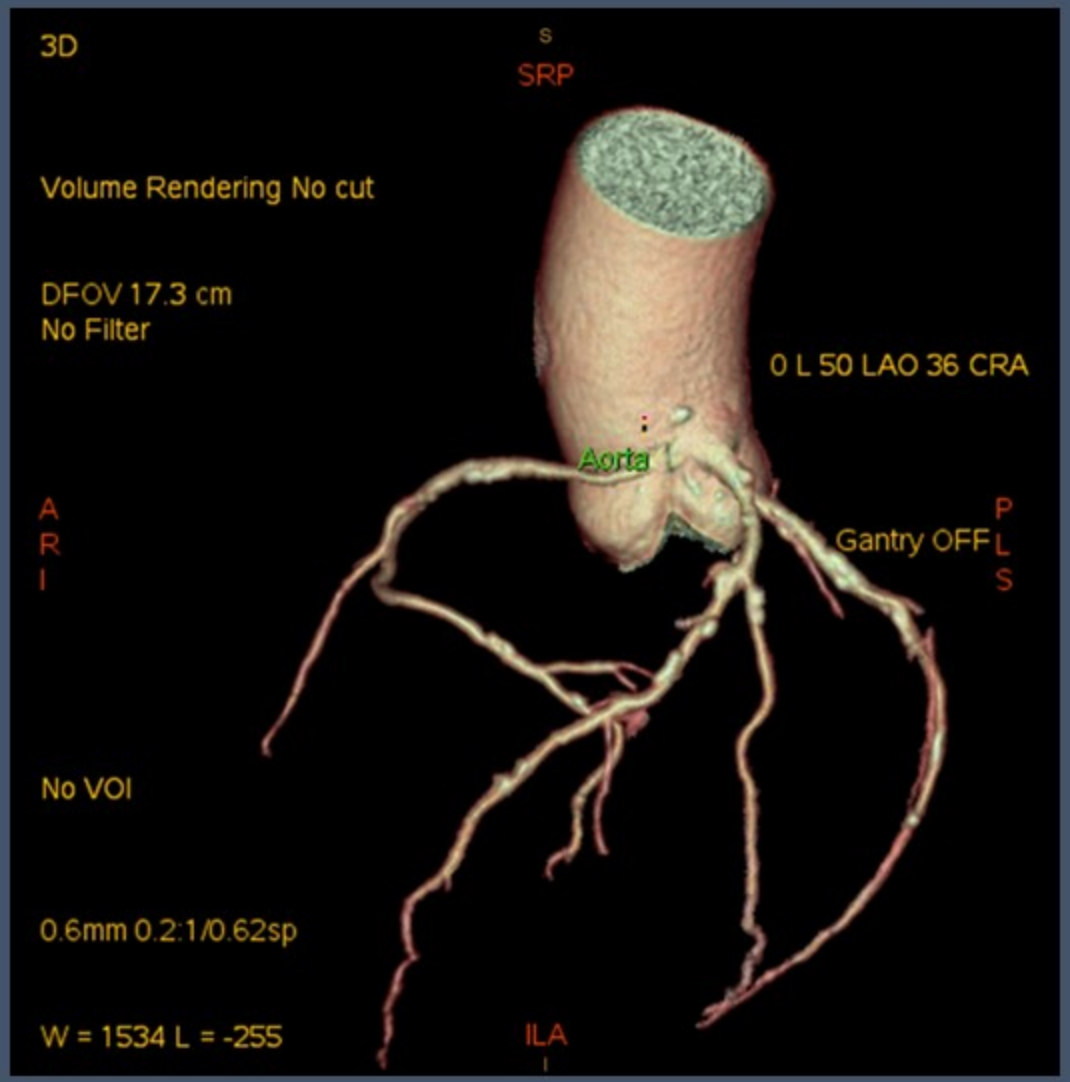
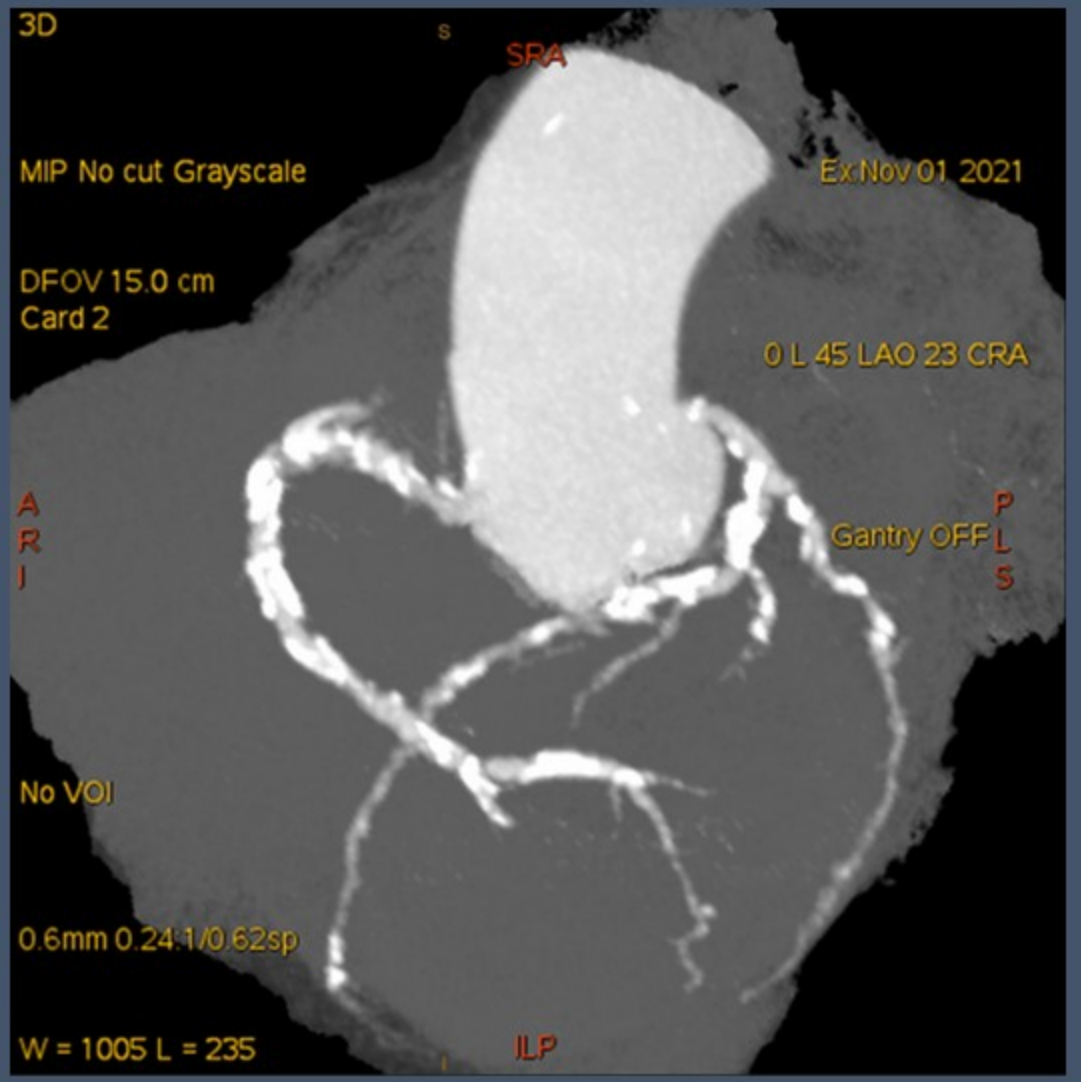
REDUCING CAD RISK IN ASIANS





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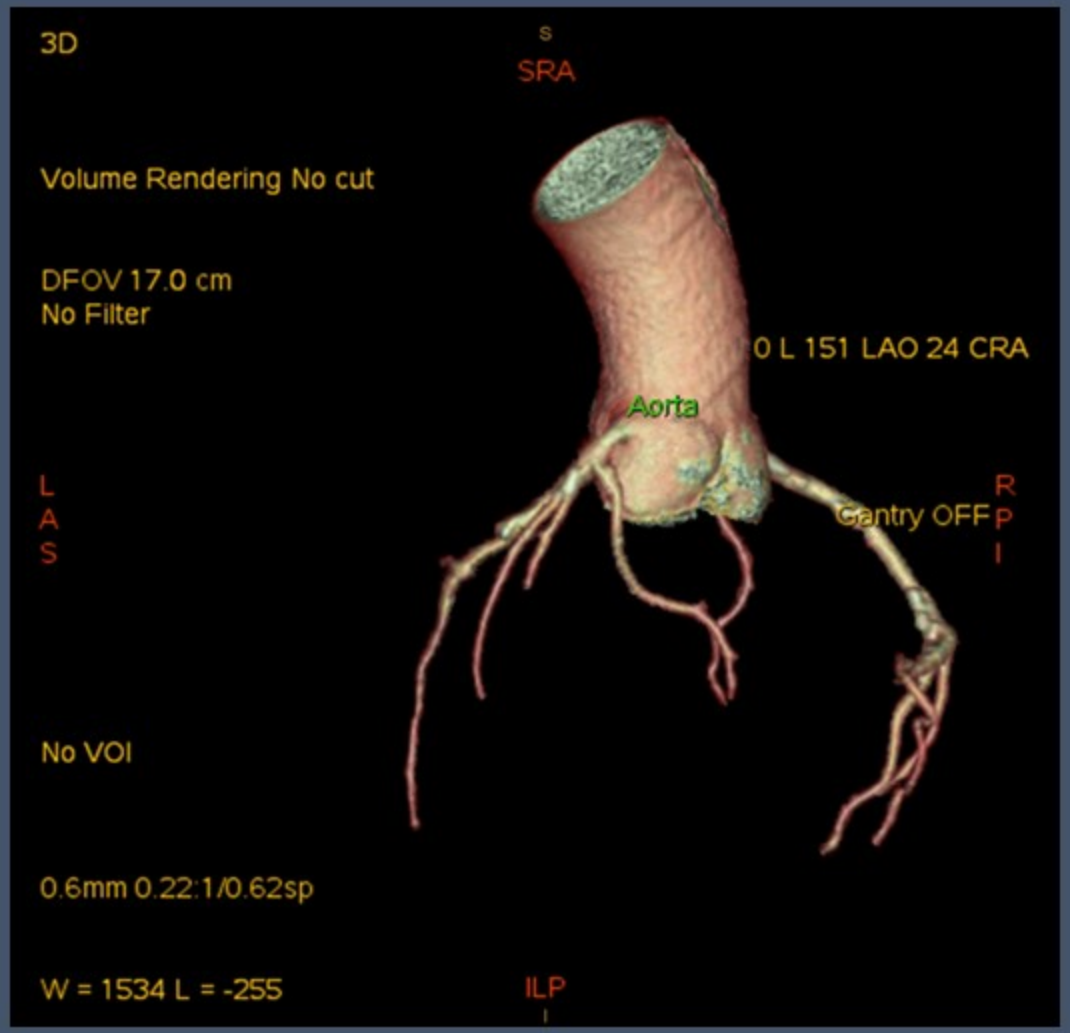

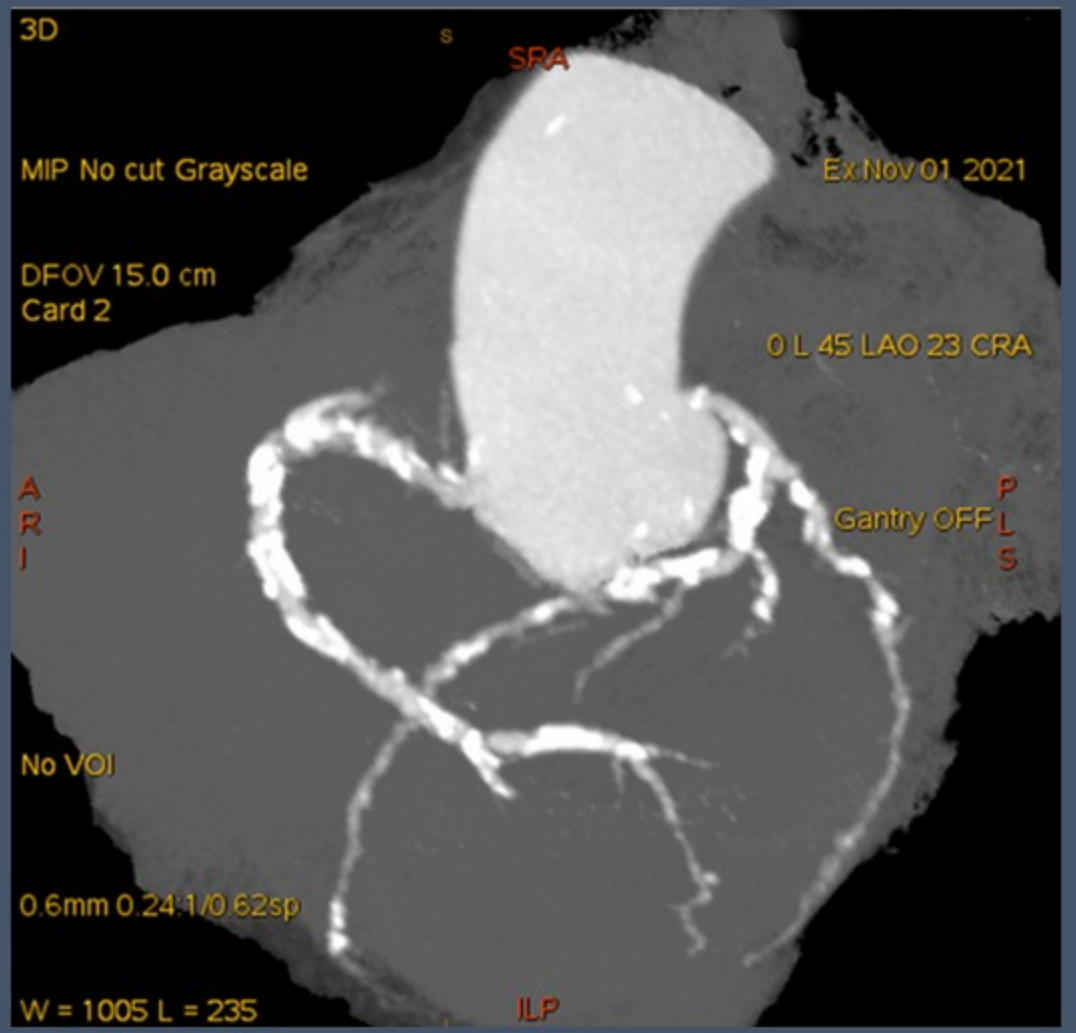

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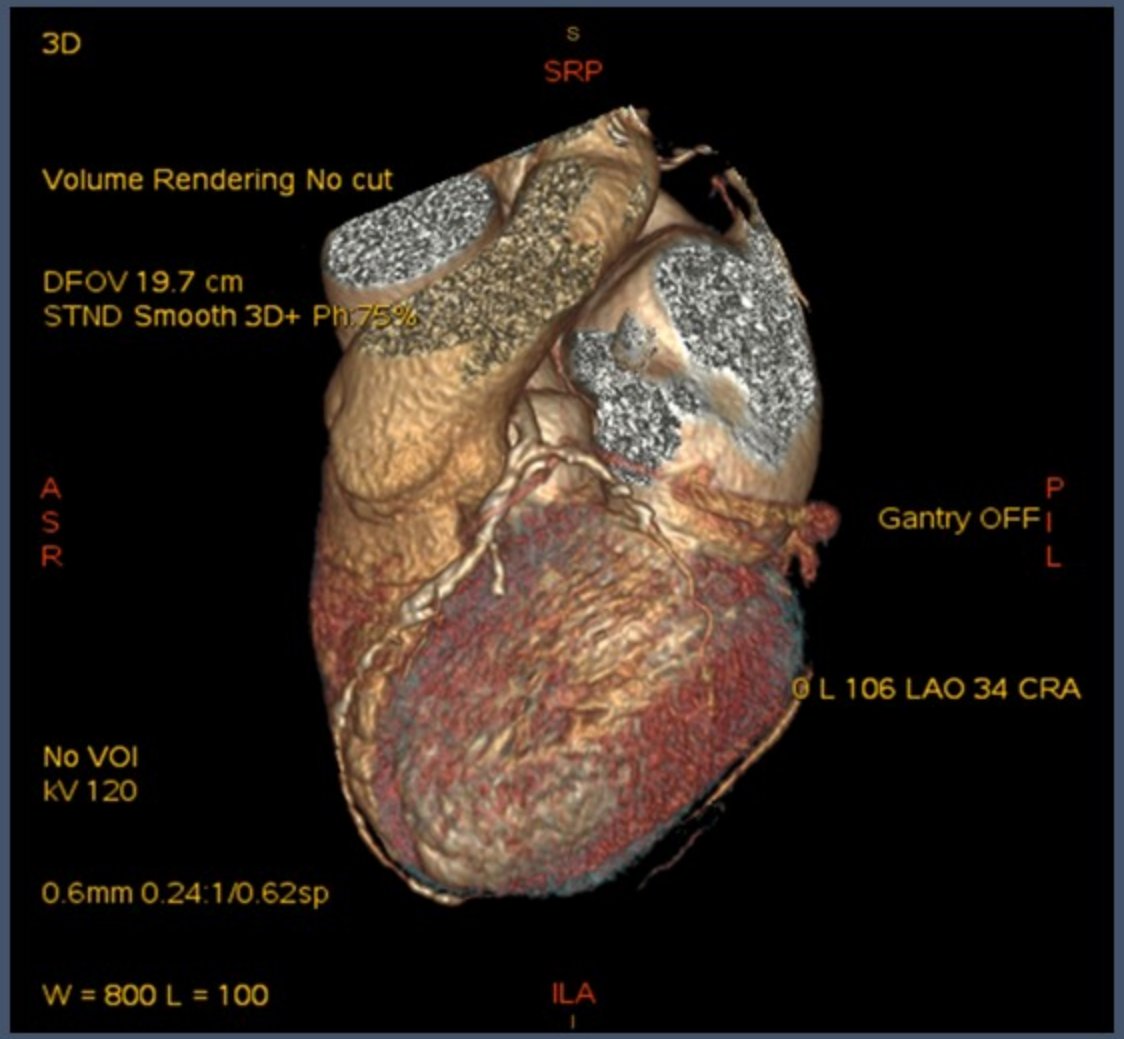

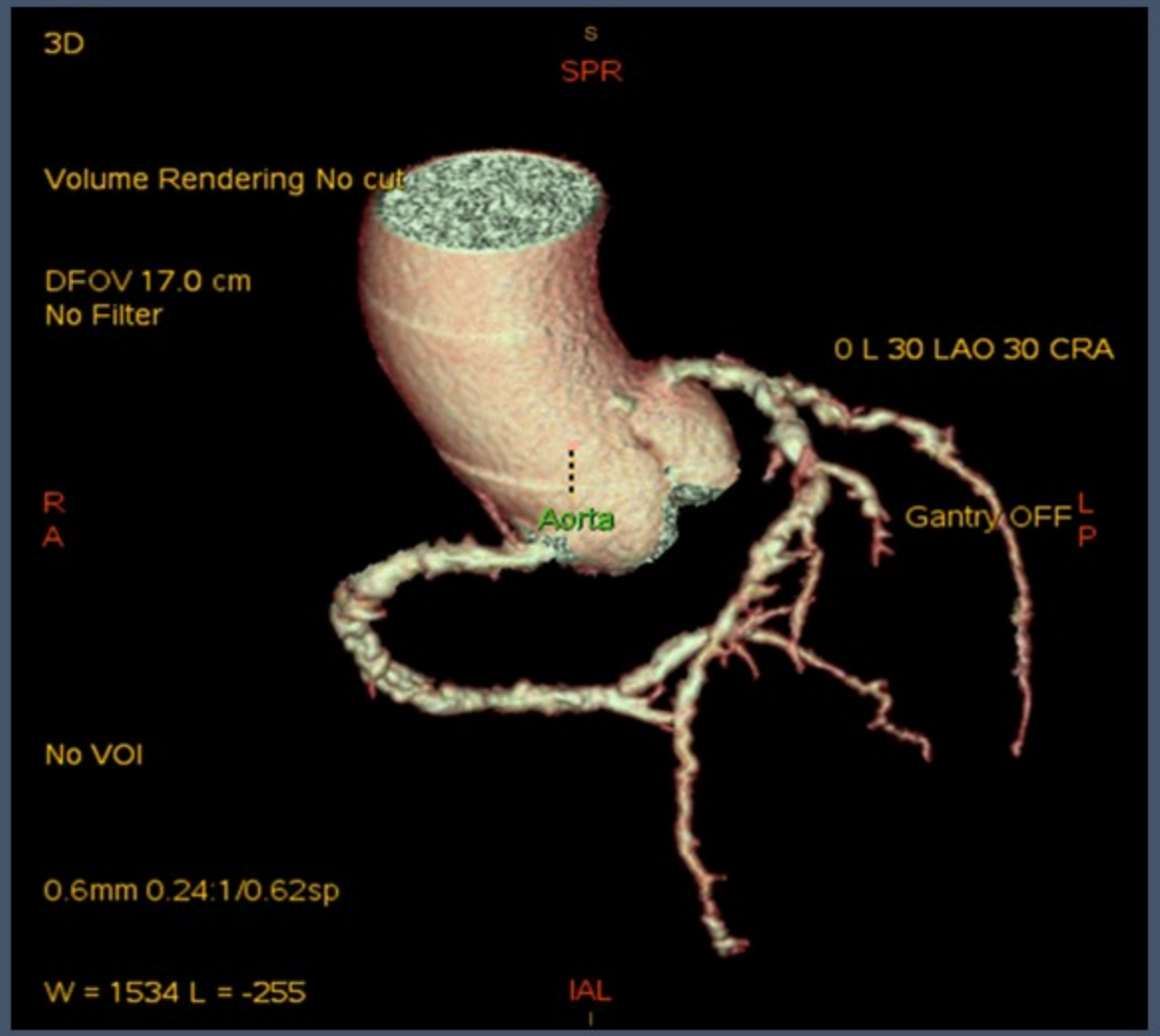

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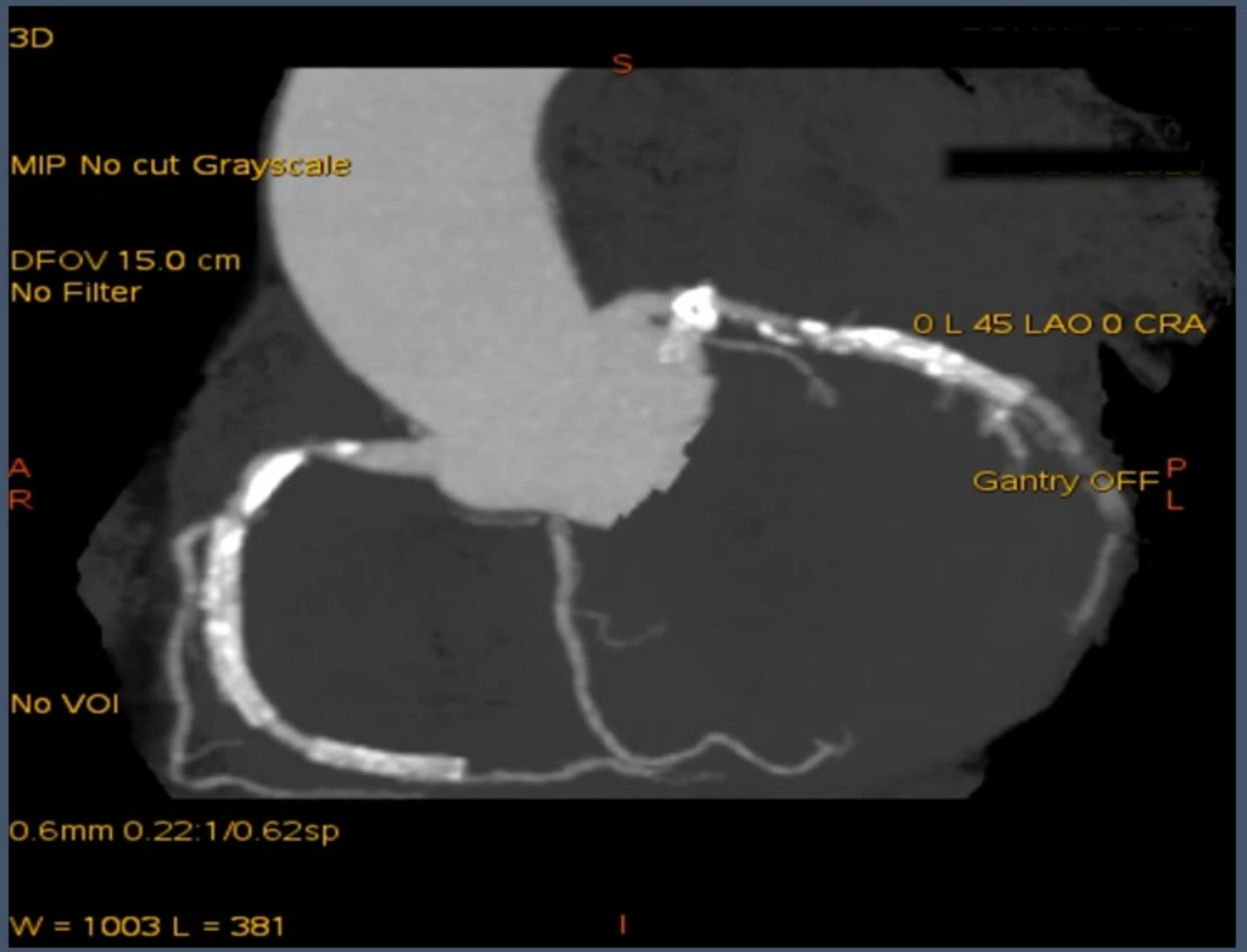

REDUCING CAD RISK IN ASIANS

*DIET:

- WHOLE FOODS ONLY
- Non-processed foods
- High fiber intake via a variety of plants
- Fermented food intake

  e.g. yogurt, kefir, sauerkraut, kimchi
- Improve the diversity of microbiome

*Measure BP, <130/85

REDUCING CAD RISK IN ASIANS

*Weight loss
- BMI 23

*Intermittent fasting
- to restore insulin sensitivity
- improve microbiota
- improve leaky gut syndrome

*Time-restricted feeding
- 18/6

*OMAD
- one meal a day

REDUCING CAD RISK IN ASIANS

- Evaluation for processed food addiction

  - e.g. sugar, sweets, wheat, sweeteners, caffeine, dairy products, snacks

* Daily exercise

  - Prefer resistance exercises

* Aspirin if CCS elevated

  - additional aspirin sensitivity testing

REDUCING CAD RISK IN ASIANS

* Vitamin supplements
    - if CCS positive: vitamin K2
    - omega 3
    - vitamin D3
    - herb berberine
* Drug therapy
    - Consider metformin for insulin resistance and positive CCS
    - ARB [angiotensin receptor blocker] for HTN

REDUCING CAD RISK IN ASIANS

*For diabetes mellitus

- Consider metformin
- Consider GLP-1 receptor agonist
  - Liraglutide (Saxenda, Victoza)
  - Dulaglutide (Trulicity)
  - Exenatide (Byetta)
  - Albiglutide
  - Lixisenatide (Lixisenatide)
  - Semaglutide

These agents reduce CV events by 12% and reduce all-cause mortality by 12%.

REDUCING CAD RISK IN ASIANS

*For diabetes mellitus
- Consider SGLT2 inhibitors
  - Canagliflozin (Invokana)
  - Dapaglifozin (Farxiga)
  - Empagliflozin (Jardiance)
- Relative risk reduction of…
  - CV death: 38%
  - Hospitalization: 35%
  - Death: 32%

SUMMARY

1. Lose weight (aim for BMI 23), e.g. 5'8" = ideal weight of <150lbs
2. Avoid all sugar, high fructose corn syrup, simple starch, meetai (sweet dishes and desserts), snack foods, all juices, processed foods, refined products, products made from flour especially wheat
3. Avoid all vegetable seed oils. Prefer ghee, extra virgin coconut oil, omega 3, and butter.
4. Frequent fasting and time restricted feeding (18/6) and one meal a day (OMAD)
5. Avoid antibiotics as much as possible, consume fermented foods such as yogurts (non-sweetened, no added sugar), kefir, sauerkraut
6. Eat a variety of fiber from a variety of plants. Limited fruit.

SUMMARY

7. Consume organic meat (grass finished), organic chicken, eggs, and wild caught salmon
8. Seven hours of sleep a day (sleep hygiene: stop caffeine at 2 p.m., no blue light devices after 8 p.m.)
9. Resistance exercises and high intensity interval training (HIIT)
10. Stress management, spirituality and faith: find at least one pleasurable activity daily
11. No more than one alcoholic drink a day
12. 10 minutes of direct sunshine daily
13. Behavioral therapy: avoid cue enablers, avoid addictive foods

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REFERENCES

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