Truth
of
Residual Fragments

Who cares about the truth?

- Academic endourologists
  - Accurate comparison of cohorts and exposures
  - Accurate assessment of outcomes
  - Accurately interpret the literature
  - Accurately contribute to the literature

- Patients
  - Fair assessment of:
    - What they have to deal with
    - How to treat it best
    - How well it worked

The truth is out there!

Uncovering the real outcomes of active renal stone treatment by utilizing non-contrast computer tomography: a systematic review of the current literature

Theodoros Tokas[1] · Martin Habicher[1] · Daniel Junker[2] · Thomas Herrmann[3] · Jan Peter Jessen[4] · Thomas Knoll[4] · Udo Nagele[1] · Training Research in Urological Surgery Technology (T.R.U.S.T.)-Group

T.R.U.S.T.

reported. Currently, many studies substantiate the superiority of NCCT over kidney–ureter–bladder (KUB) X-ray, intravenous pyelography, or ultrasonography in detection and evaluation of residual stones after active treatment, as well as prediction of residual stone-related events and detection of complications of treatment [8–12, 14]. Furthermore, in many occasions, trying to detect residual fragments with plain KUB is like throwing a coin. Park et al.

[11] showed that 45.5% of patients who were stone free with KUB had actually residual stones larger than 4 mm in diameter (mean size: 7.4 mm) detected by CT. In that way,

CT provides treatment plan clarity

diameter (mean size: 7.4 mm) detected by CT. In that way, NCCT secures a better treatment plan and the avoidance of unnecessary ancillary treatment. There is also evidence that CT-magnified bone windows are the most accurate method

What do we gain?

- Pearle et al assessed post-PCNL CT cost-effectiveness
  - CT to determine 2nd look procedures saved an average $1,100/pt

Pearle et al, JU 1999

What about all that **radiation**?

- Marie Curie
  - 1st woman to receive Nobel prize (1903)
  - 1st person to win 2 Nobel prizes (1911)
  - Only person to win Nobel prizes in 2 different sciences
  - …died in 1934 of aplastic anemia attributed to radiation exposure
  - Death predated radiation safety measures

Radiation Effects

- Deterministic – “cause & effect”
  - Have threshold below which no effect anticipated
  - Examples: fetal loss, teratogenic effects, intrauterine growth retardation, mental retardation
  - Do not occur with routine diagnostic medical imaging
- Stochastic
  - No threshold
  - Examples: genetic mutations, cancer

Radiation Effects

- Level 1 evidence of diagnostic-imaging induced malignancy:

Radiation Effects

- Retrospective observational studies
  - Atomic bomb survivors:
    - RR increased 0.00035/mGy
  - Nuclear power plant workers:
    - RR increased 0.0009/mGy

Radiation Effects

- 10-20mGy intrapartum estimated to increase childhood leukemia from 1/3000 to 1/2000
  - **absolute increase 0.16/1000**
  - PCNL Mortality
    - **0.3/1000**

De la Rosette et al. CROES PCNL Global Study; J Endo 2011

CT Radiation

- Conventional CT: 11 mSv
- Low dose CT: 1.4-2 mSv
  - White et al LDCT in pregnancy as low as 2mSv
  - (2007)
- Ultra-low dose CT: < 1mSv
  - Equivalent to dose from KUB

Instead of fearing stray mSv…

Get to – and Celebrate “Stone-free”