

**MICHIGAN SPEECH –
LANGUAGE AND HEARING
ASSOCIATION. MSHA**

GRAND RAPIDS, MI

APRIL, 2016

**VIDEOFLUOROSCOPY: INCREASING
COMPLIANCE AND DECREASING RISKS
WHILE PROVIDING USEFUL INFORMATION**

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DISCLOSURE

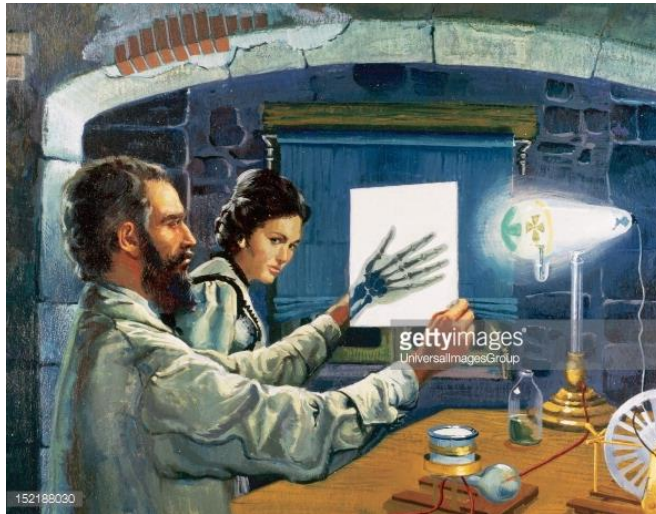
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No financial disclosures

TEAM EFFORT



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**Wilhelm Roentgen
1895
15 min exposure !!
(his wife)**

**Wilhelm's wife on viewing her skeleton:
"I have seen my own death"**

**DR. FRANCIS WILLIAMS
“THE ROENTGEN RAYS IN MEDICINE
AND SURGERY: AS AN AID IN
DIAGNOSIS AND AS A THERAPEUTIC
AGENT” (1901)**



**THE SAME PERIOD SAW THE INTRODUCTION
OF ANOTHER INVISIBLE PHENOMENON “GREATLY
FEARED AS A DEADLY THREAT TO HEALTH” :
ELECTRICITY**

**WHY NOT EQUIVALENT SOCIAL
ACCEPTANCE OF RADIATION ??**

TIMOTHY JORGENSEN (“STRANGE GLOW: THE STORY OF RADIATION”, PRINCETON U PRESS, 2016)

“PRESENT THE FACTS ABOUT RADIATION AS OBJECTIVELY AND EVENHANDEDLY AS POSSIBLE, LEAVING YOU TO DECIDE WHICH ASPECTS TO FEAR”

**RADIATION RISK AN EVER CHANGING METRIC
IS MUCH HARDER TO QUANTIFY THAN ELECTRICAL
RISK.**

**MEASURE RADIATION EFFECT ON BIOLOGICAL TISSUE:
ORIGINAL MEASURE = RAD (RADIATION ABSORBED DOSE)
UPDATED TO REM (RAD EQUIVALENCE IN MAN)**

TODAY PREFERRED UNIT IS: millisievert (mSv)

ANATOMICAL AND PHYSIOLOGICAL ASSESSMENT OF V P S

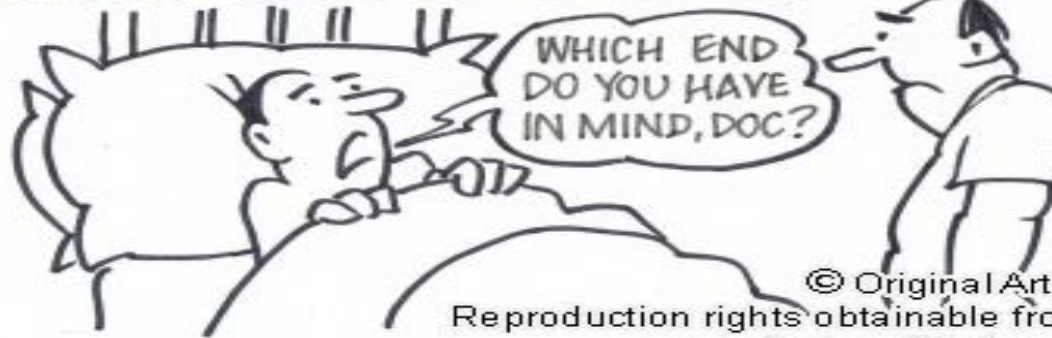
- **VIDEONASOPHARYNGOSCOPY**
- **VIDEOFLUOROSCOPY : MULTIPLANAR
VIDEOFLUOROSCOPY**

V N P

- **DIRECT VISUALIZATION OF THE ENTIRE VOCAL TRACT THROUGH THE NOSE**
- **FLEXIBLE ENDOSCOPE**
- **< 3 MM DIAMETER**
- **RECORDING DEVICE WITH SOUND**
- **TOLERANCE - DISCOMFORT = 2 - 3 OF 0 - 3.**
- ***NOT VERY GOOD)**
-

WORDPLAY by *Kon Nixon*

ENDOSCOPE



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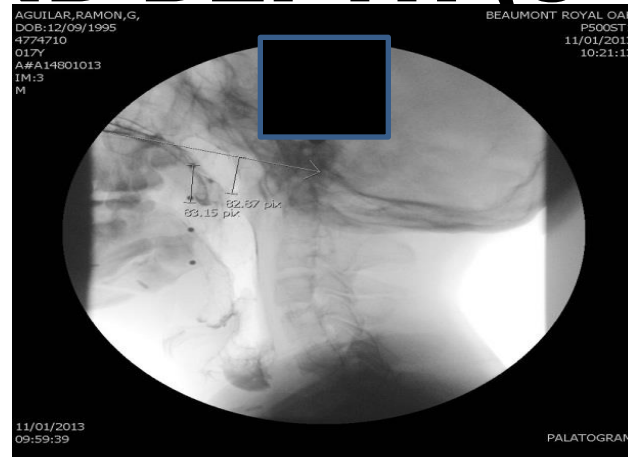
- **M P V F**
- **DYNAMIC ASSESSMENT (VIDEO)**
- **ANALYSIS ON VIDEO**
- **(CORONAL, SAGITTAL, AXIAL**
- ***TOLERANCE – DISC**
- **0 – 1 OF 0 – 3.**
- **(**VERY GOOD)**



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M P V F (CONT.)

- **EXAM IS NEEDED. NO OTHER STUDY PROVIDES SAME INFO WITHOUT IONIZING RADIATION (ACTUAL SIZE MEASUREMENT, LPW MOTION AND DEPTH (3 – D CONCEPT)).**
- **MULTIPLANAR**



M P V F (CONT.)

- **PULSED V F VS CONTINUOUS.**
- **AVOID MAGNIFICATION**
- **TOWER CLOSE TO**

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"I can assure you our x-ray procedures follow very strict health and safety guidelines."

M P V F (CONT.)

- **LIMIT FLUOROSCOPY TIME (40 SEC) = ENHANCE COMPLIANCE ***
- **AVOID PLANES (AXIAL WHEN SCOPE AVAILABLE)**
- **CONING TO AVOID RADIOSENSITIVE STRUCTURES SUCH AS LENS AND TH**



a trip to the

Hospital

To take my pictures

**ENHANCE
COMPLIANCE,
REDUCE ANXIETY:
STORY BOOK**





**ENHANCE
COMPLIANCE,
REDUCE
ANXIETY:
STORY BOOK**

You will seat on mommy or daddy's lap
The doctor will squirt a little "white water" into
your nose with a tiny plastic tube. You will
feel a funny tickle in your nose

M P V F (CONT.)

- **KEEP TRACK OF RADIATION DOSE**
- **EFFECTIVE RADIATION DOSE < 50 mSv OR mC**



VIDEOFLUOROSCOPY

- Medical sources of radiation to the population are increasing. This is of particular concern in children whose tissues are more radiosensitive, whose organs receive a larger effective dose for a given level of radiation, and who have increased time to develop cancers as a result of radiation exposure

VIDEOFLUOROSCOPY

- It is difficult to demonstrate that radiation doses from medical imaging lead directly to cancer or to state with certainty the exact risk of cancer related to medical radiation

VIDEOFLUOROSCOPY

- Committee on the Biological Effects of Ionizing Radiation (BEIR) VII states “... the risk of cancer proceeds in a linear fashion at lower doses without a threshold and ... the smallest dose has the potential to cause a small increase in risk to humans.”

VIDEOFLUOROSCOPY

- Data from other sources of exposure show that there is an increased incidence of cancers in people exposed to levels now encountered through medical sources. Estimates of additional risk from radiation exposure vary. A child undergoing a single CT (abdomen) may increase risk by 1 in 1,000. While for any one individual the potentially increased risk is very small, the risk to the population as a whole is larger

VIDEOFLUOROSCOPY

- We do know that the risk is cumulative with repeated radiation exposure

VIDEOFLUOROSCOPY

- Therefore all studies that expose a child to ionizing radiation should be carefully evaluated as to the potential risk versus the likely benefit.

VIDEOFLUOROSCOPY

- The amount of radiation resulting from fluoroscopic procedures is highly variable, dependent upon fluoroscopic parameters which in turn depend upon several factors, including patient size and desired image detail. The type of procedure performed has a great impact upon patient dose

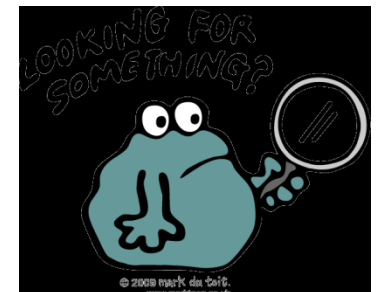
VIDEOFLUOROSCOPY

- The American Association of Physicists in Medicine (AAPM) statement relates that RISKS of medical imaging and patient dosages below < 50 mSv for single procedures or 100 mSv for multiple procedures over time periods are **TOO LOW TO BE DETECTABLE AND MAY BE NON EXISTANT.**

M P V F

- **REFS. RADIATION RISKS**

- Frush, DP. Radiation risk from medical imaging: A special need to focus on children. In: Medina, L, Blackmore, C, Applegate, K (Eds), Evidence - Based Imaging. New York: Springer, 2011.
- Frush, DP. Radiation risks to children from medical imaging. Rev Med Clin Condes (2013) 24:15-20.
- <http://imagegently.org/>



VIDEOFLUOROSCOPY

- MilliSieverts
- Multiplanar Videofluoroscopy (Coronal, Sagittal, axial (optional) and obliques (optional))
- **n = 98 PATIENTS**
- **X = 2.88 mSv**
- SD = **1.575 mSv**
- RANGE = **0.40 mSv – 8.75 mSv**

To: Dr Yshizd
OLT/9



- ▶ **PREOP VIDEOFLUOROSCOPY**
- ▶ **INTRAOPERATIVE ENDOSCOPY**

TAILOR MADE PHARYNGEAL FLAPS W INTRAOP V N P



*"Nurse, get on the internet, go to SURGERY.COM,
scroll down and click on the 'Are you totally lost?'
icon."*

RESULTS

INTRAOPERATIVE V N P

- 2011 - 2015
- **95 PATIENTS. 54 PRE AND POST**
- **NO DISCOMFORT AT ALL = 80 %**
- **MINOR DISCOMFORT (?) = 20%**
- **TAILOR MADE FLAPS ACCORDING TO M P V F AND INTRAOP V N P:
SUCCESS RATE OF **92%** FOR
CORRECTING V P I (POST MN &
MPVF)**

RESULTS

INTRAOPERATIVE V N P

- **M P V F (SAME PATIENTS AS IN PREVIOUS SLIDE)**
NO DIS. = 82% MINOR = 18%
- **$p > 0.90$**
- **PREVIOUS RESULTS**
- **V N P (70 PATIENTS - 2010): NO DISC. = 0****
- **MINOR = 10%; MOD = 70%**
- **EXTREMELY UNCOMFORTABLE = 20%****
- **2011-2014 V N P (25 PATIENTS): NO DISC. = 0**
- **MINOR = 47%; MOD = 50%**
- **EXTREMELY UNCOMFORTABLE = 3%.**
- ****ALL V N P & M P V F PERFORMED BY SAME EXAMINER (YOURS TRULY !)**

INTRAOPERATIVE V N P

- **WHY NOT ONLY M P V F ?**
- **WHY IS V N P NECESSARY
??**

**8 YO. SMCP. POST FURLOW.
RESIDUAL HYPERNASALITY
AND NASAL EMISSION**



**LEFT I C A
MEDIALY
DISP.**



I C A DIAM = 8.4 mm
I C A = 1 mm BELOW
MUCOSA



DIGEORGE/VCFS (S.O.)/ ARSA (S.G.)

**ONE SIGNAL MISSING
(RED)**



CMA

CTG-13-2057M.cyhd.cychp: Copy Number State (segments)

CTG-13-2057M.cyhd.cychp: Weighted Log2 Ratio

-1.5

0

-1.5

CTG-13-2057M.cyhd.cychp: Allele Peaks

-2

-1

0

-1

-2

CTG-13-2057M.cyhd.cychp: Copy Number State

-4

-2

0

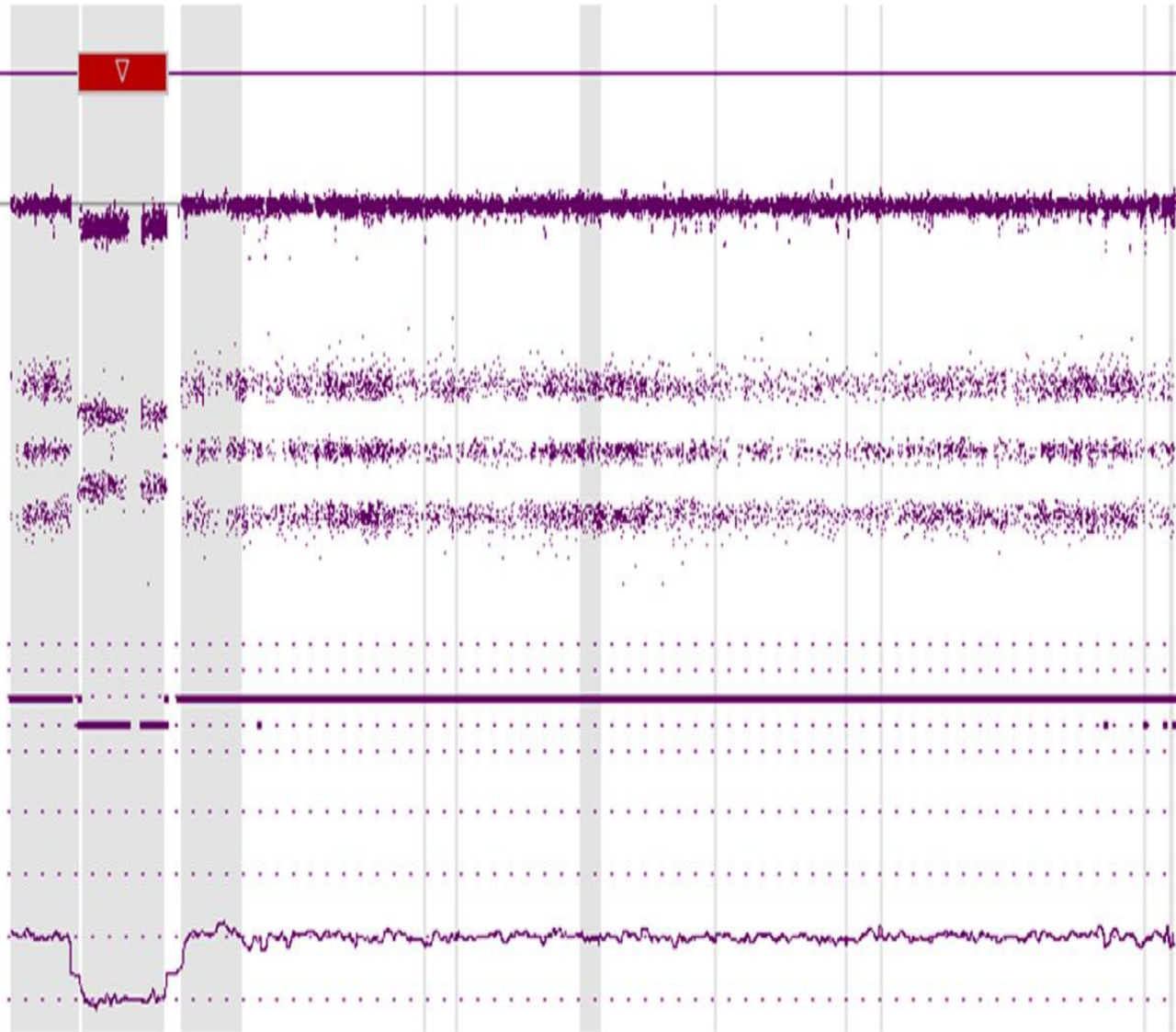
CTG-13-2057M.cyhd.cychp: SmoothSignal

-4

-3

-2

-1



***IF FISH (-) THEN SNP ARRAY**

POST T & A. 4 MO LATER TAILOR MADE PHARYNGEAL FLAP

**POST
FLAP**

**POST T & A IN PREP FOR TAILOR MADE PHARYNGEAL FLAP. PREOP
NE IN THE OR. ADENOID REMNANT AT SUPERIOR POLE**

BCBSMF

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- ADDITIONAL INFORMATION
- REFERENCES
- COMMENTS
- DONATIONS
- GIFTS

