# Bone Densitometry

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Interpretation of DEXA

# Osteoporosis

- Osteoporosis is the most common metabolic bone disorder. It has been defined by the National Institutes of Health as an age-related disorder characterized by decreased bone mass and increased susceptibility to fractures in the absence of other recognizable causes of bone loss.

# Osteoporosis

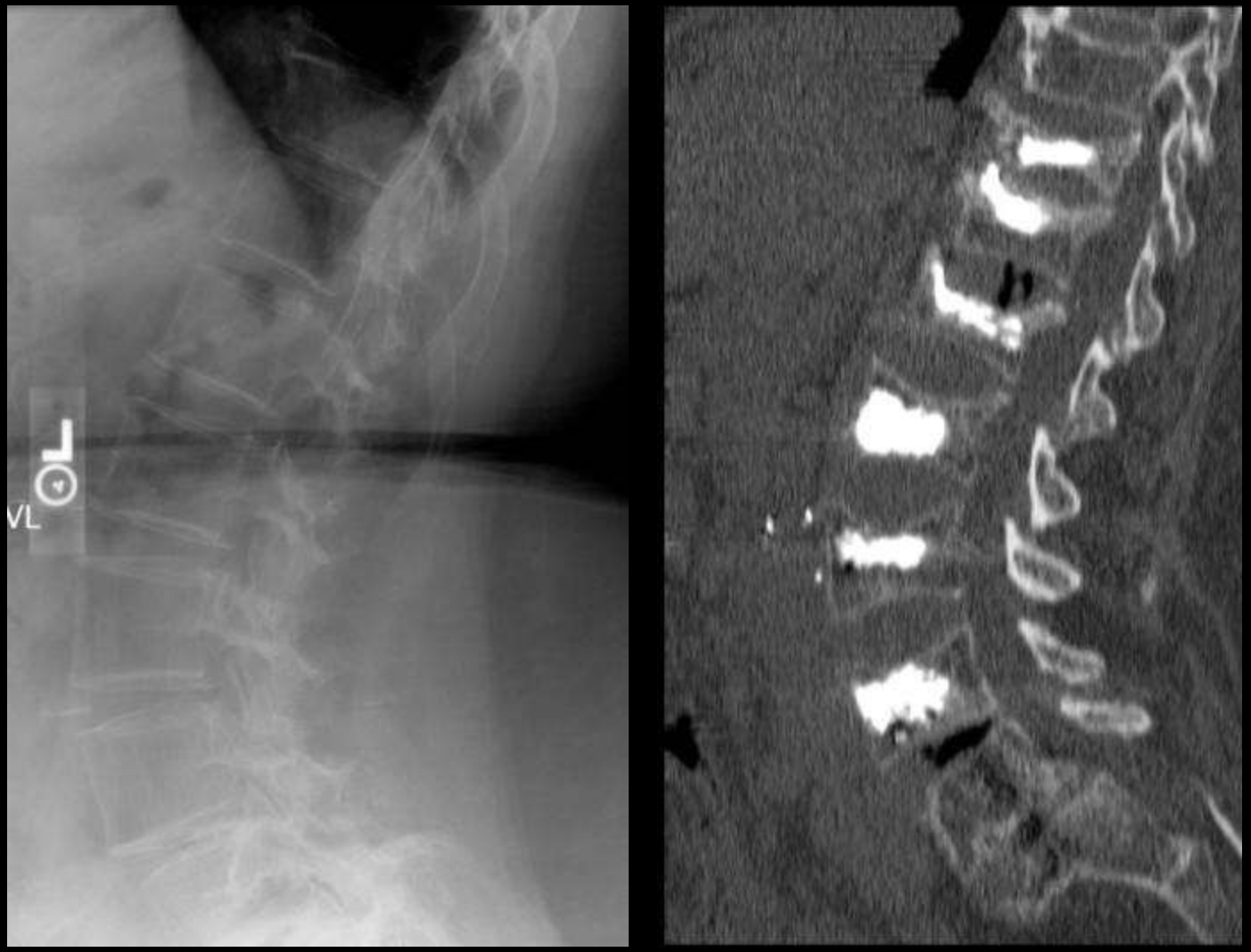
- Risk factors
  - may be superimposed upon either involutional or secondary osteoporosis, including :

- Smoking
- Alcohol
- Poor diet
- Lack of exercise
- An early menopause
- Strong family history
- Small frame

# Osteoporosis

- The normal rate of bone loss is 2% per year, hence 20-40% of the female bone mass is already lost by the age of 65 years of age, beginning before the menopause and accelerating afterwards

# Osteoporosis



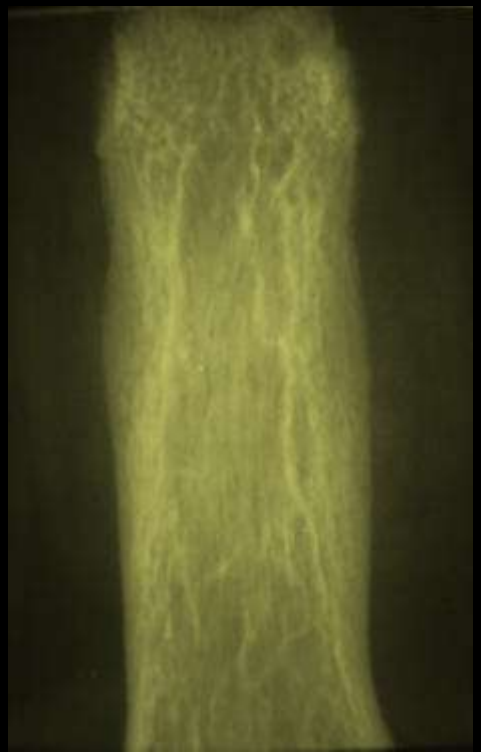

Osteoporosis progression over 2Y UC Steroids 59F

# Osteoporosis

- Bone mass is the major determinant of bone strength that can be measured by non-invasive techniques, and accounts for 75-85% of this parameter

# Osteoporosis Measurement

- Plain film,
  - Subjective, Radiogrammetry, Osteogram
- SPA
- DPA
- DEXA
- QCT
- US
- MRI



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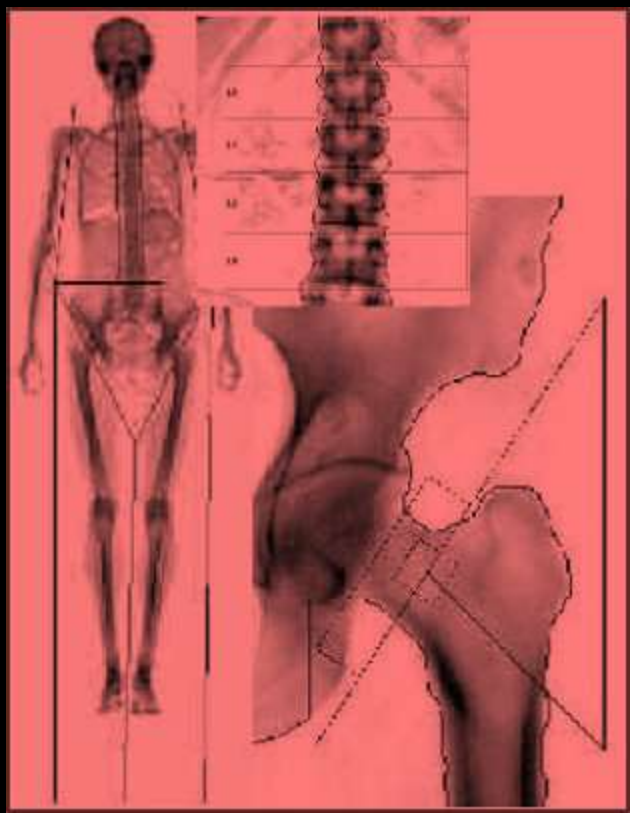

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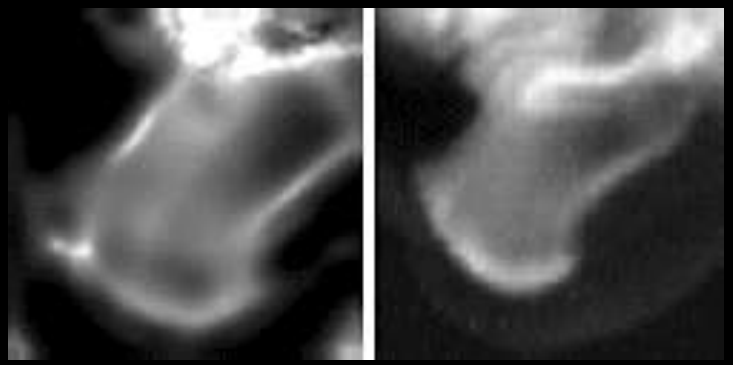

# Osteoporosis Measurement

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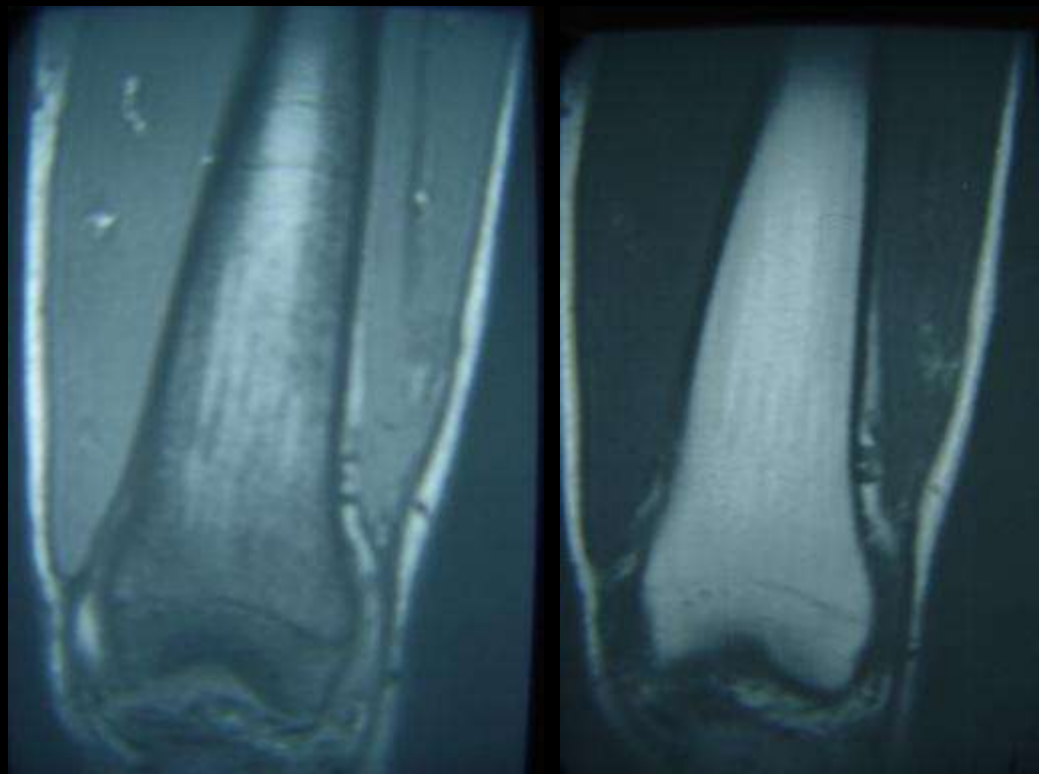


# DEXA

DEXA has very high

accuracy

(the difference in the measurement from a known standard)

and

precision

(observed deviation of serial measurements with time)

both short and long term

to within 1% at the hip and spine

# DEXA

- DEXA is at present the most precise measurement of BMD
- QCT is more sensitive to change

# DEXA Interpretation

Find out as much relevant information as possible


**Bone Density Clinical Information Sheet**

***Circle Correct Responses***

Name(Label) Sex: M or F

(Premenopausal)

F (Perimenopausal)

(Postmenopausal)

| | | | | |
|---|---|---|---|---|
| On Hormone Replacement Therapy? | | N | Y | |
| On other treatment for osteoporosis? | | N | Y | See over |
| Previous Surgery: | Spine? | N | Y | right |
| | Hips? | N | Y | which? |
| | Uterus/Ovaries? | N | Y | left |
| Known Osteoarthritis? | | N | Y | |

Previous Scans When? Where?

**Risk Factors**

| | | | | |
|---|---|---|---|---|
| Previous Fractures | | N | Y | Where? |
| Family History Osteoporosis | | N | Y | |
| Medication | Steroids | N | Y | |
| | For Epilepsy | N | Y | Which drug? |
| | For Thyroid | N | Y | Which drug? |
| Dietary Calcium | | High | Low | |
| Cigarette Smoking | | N | Y | |
| Known Bowel Disease(diarrhoea) | | N | Y | Diagnosis? |
| Other Medical Condition | | N | Y | List |

Find out as much relevant information as possible

Bone densitometry drug sheet

Drugs that may cause osteoporosis

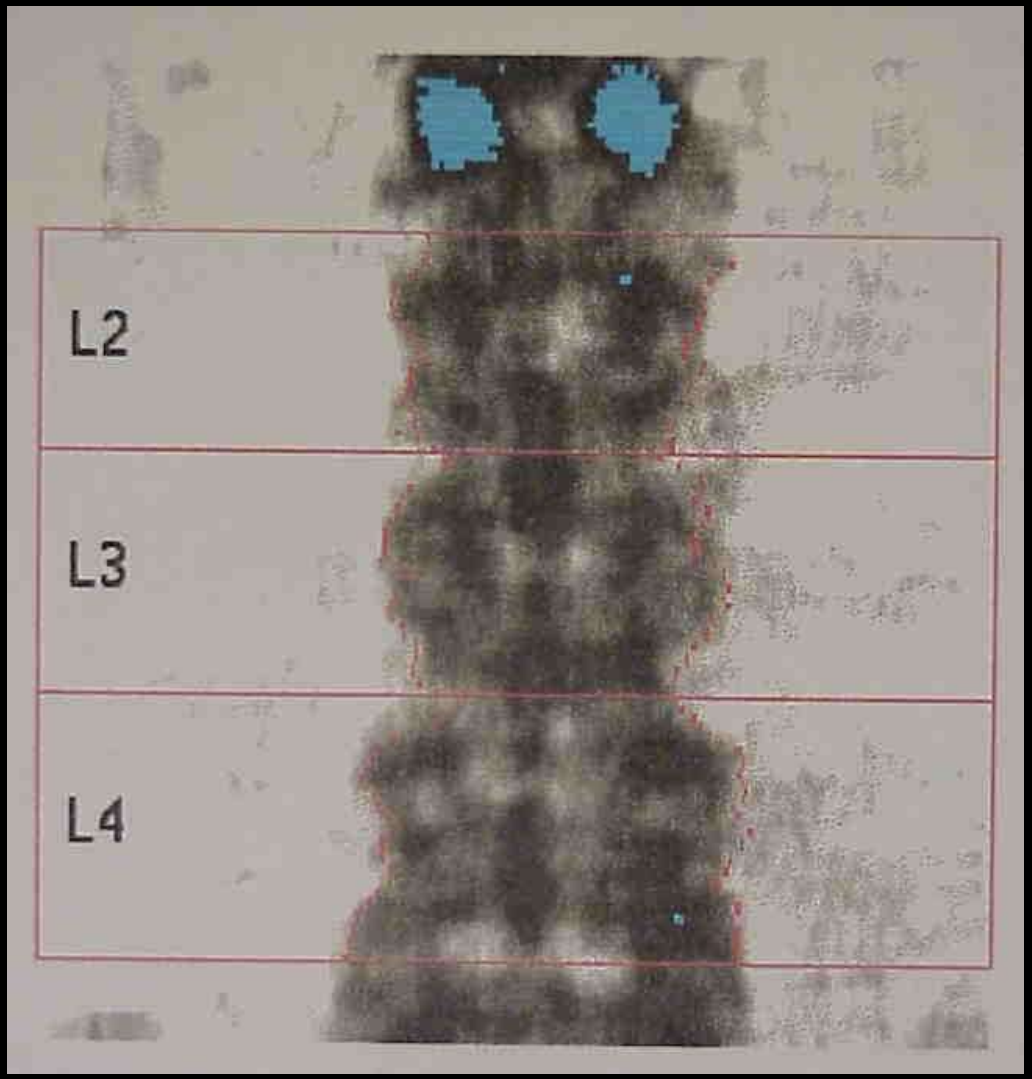
Corticosteroids
Dilantin
Diuretics
Methotrexate
Thyroxine
Heparin
Depomedroxyprogesterone acetate
Gonadotrophin releasing hormone agonists
Cyclosporin

Drugs to treat osteoporosis

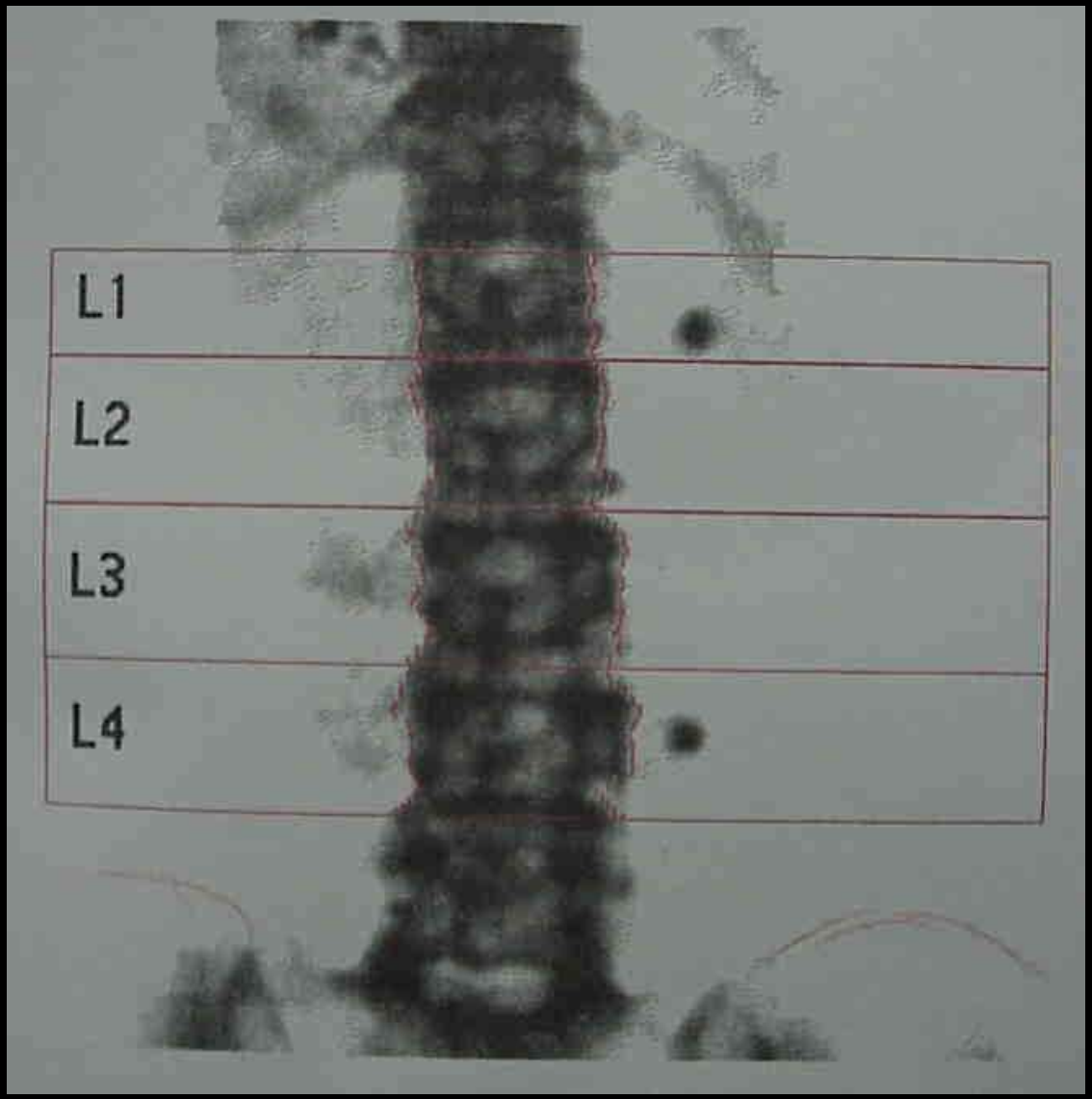
| | |
|---|---|
| HRT: | Estrogen |
| (SERMS): | Raloxifene (Evista) |
| Calcitonin: | (Nasal spray) (Miacalcin) |
| Bisphosphonates: | Alendronate (Fosamax)<br>Etidronate (Didronel)<br>Risedronate (Actonel)<br>Ibandronate<br>Pamidronate (Aredia) |
| Others: | Combinations, Thiazides, Fluoride, PTH, Growth Hormone, Bicarbonate, Active Vitamin D |

# Bone Densitometry
# DEXA spine check list

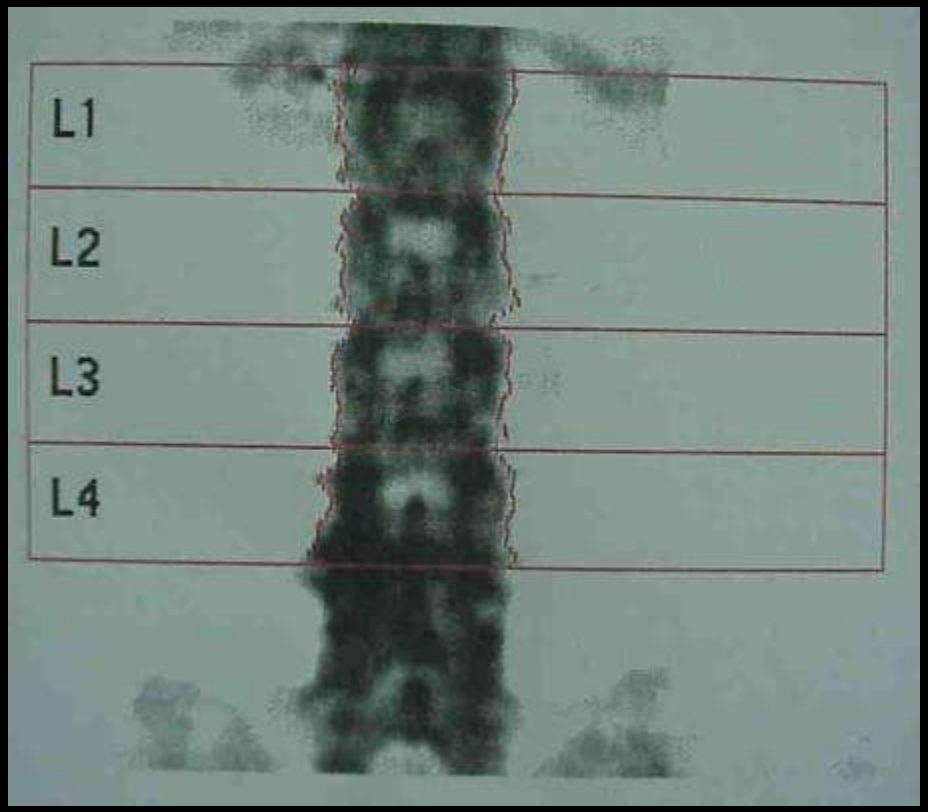
- Note the age, sex, ethnicity and weight
- Does this match the reference ranges?
- Is the bottom of L4 roughly at the level of the iliac crests
- Are there any ribs on L1
- Scoliosis
- Are the vertebrae correctly divided
- Anything in the soft tissue

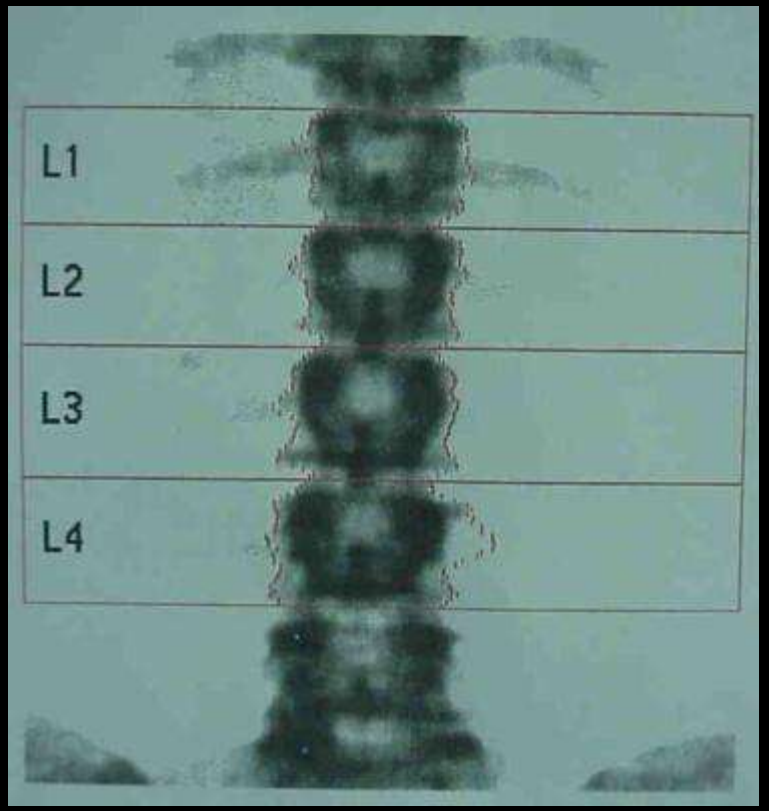



Vertebroplasty




Calcium Tablets




Transitional vertebrae

Wrong levels

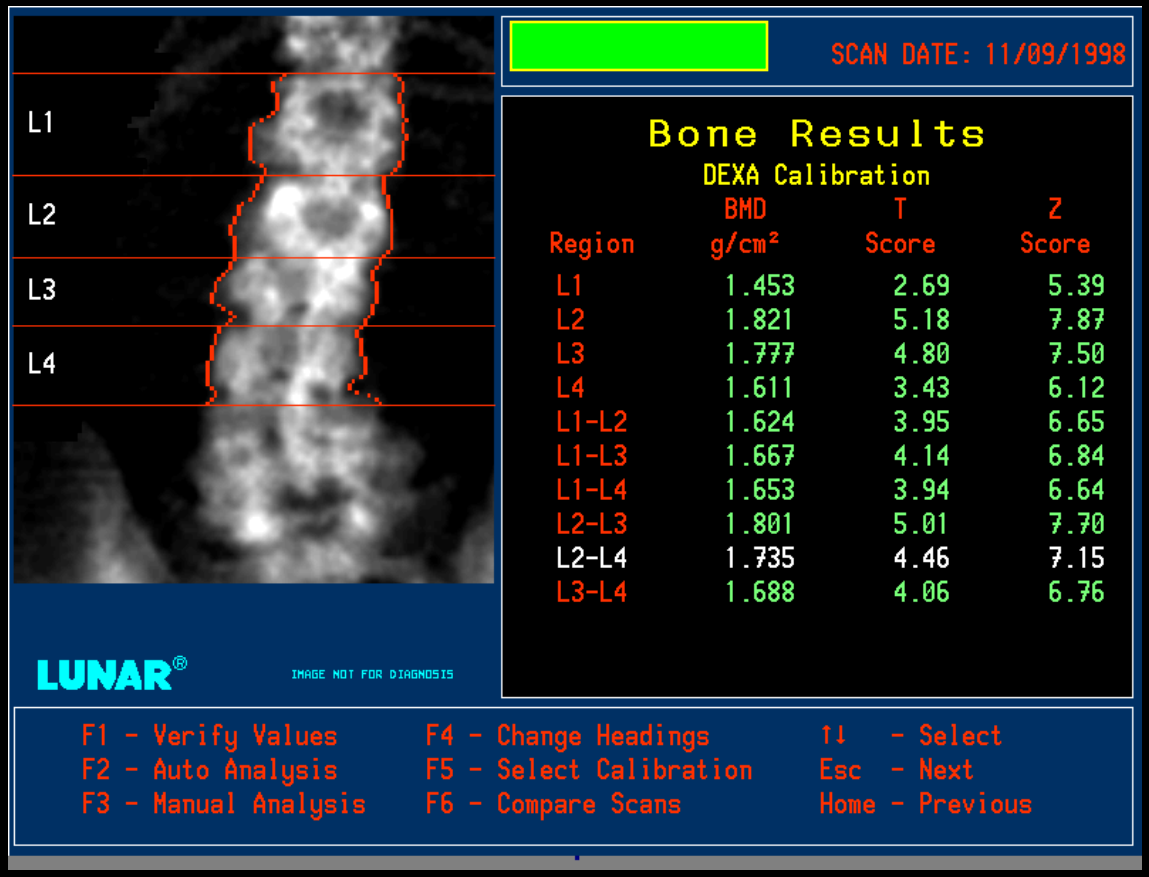
# Bone Densitometry
# DEXA spine check list

- Look for significant level to level variations
- 15-20% difference between adjacent levels

# Bone Densitometry

- In preventing Fxs it is the worst scenario that matters.
- Generally a slight increase in density as descend the L spine.
- Approx 6% increase between L1 and L4.

# What's wrong with this scan?




Divisions don't account for scoliosis

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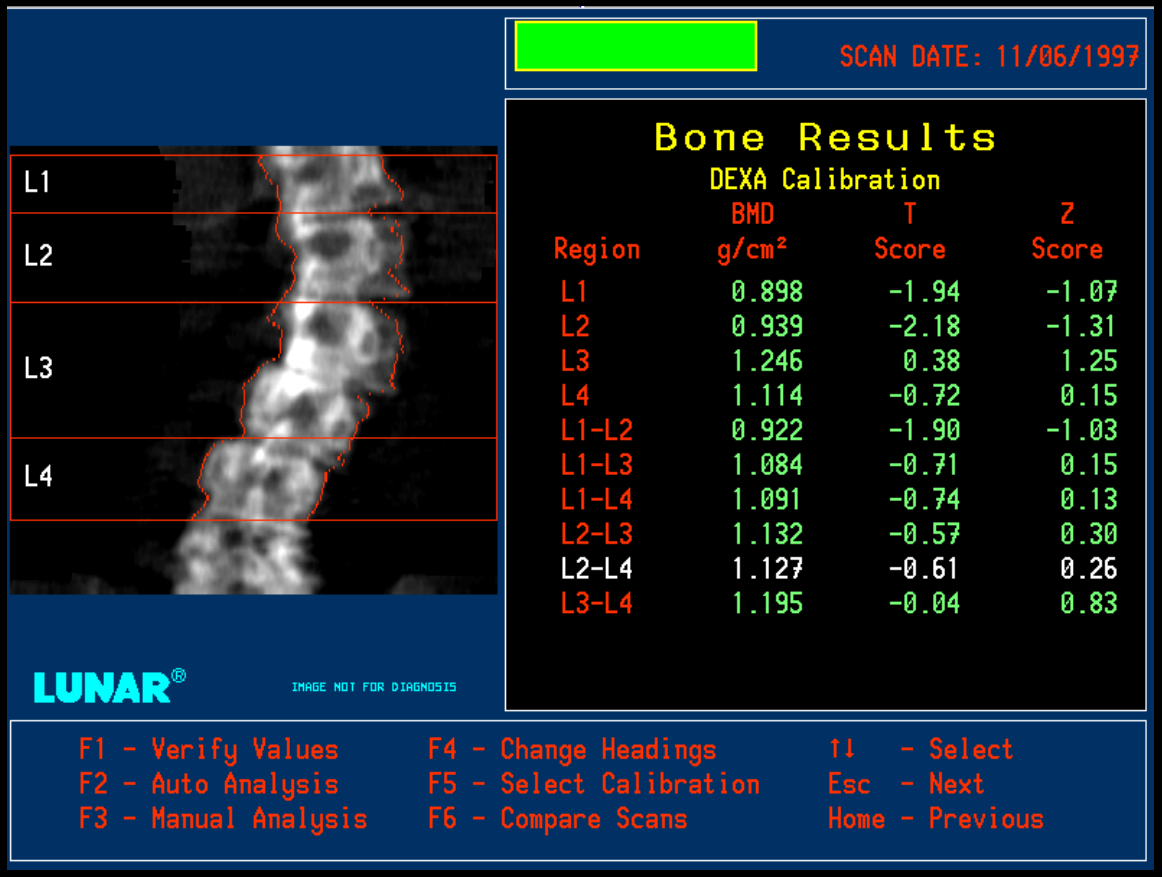



Everything

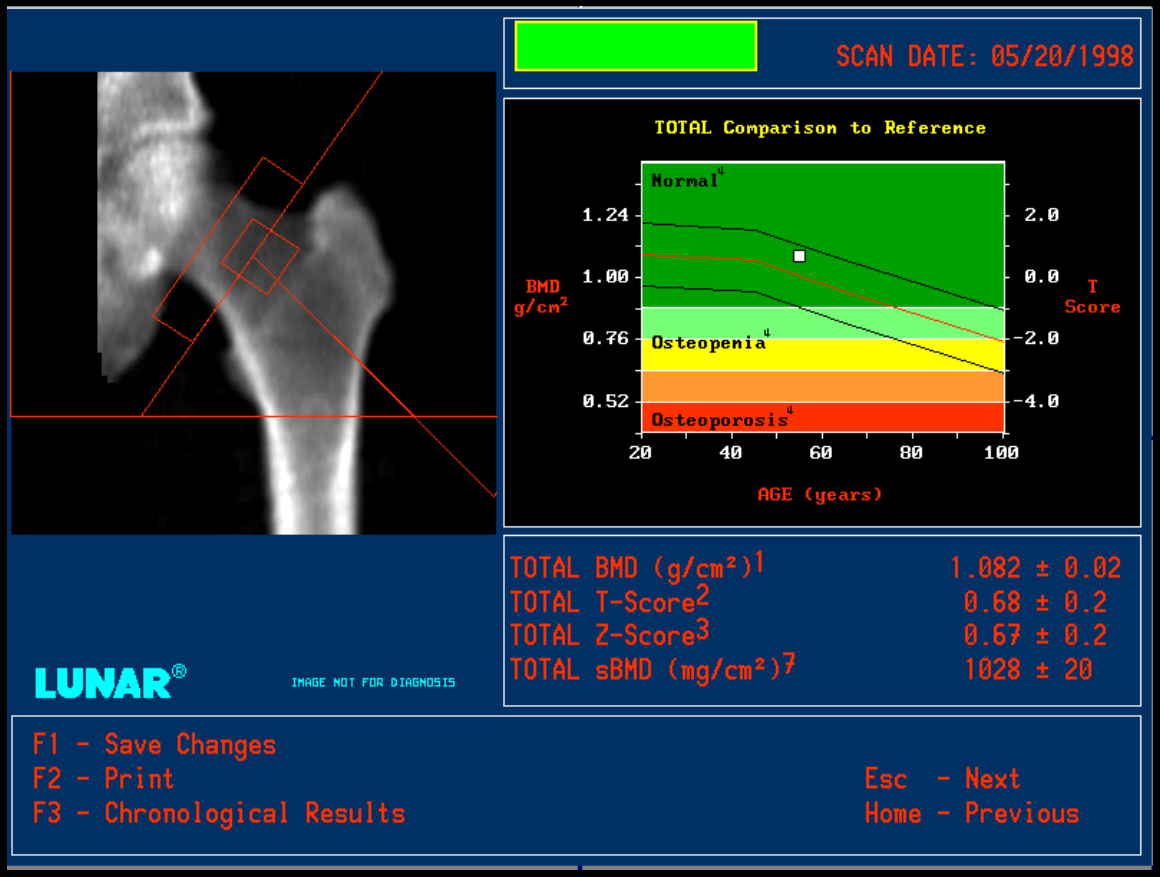
# DEXA Femur check list
# Hints for a good scan.

- Patient should be straight on table.
- Pack patient with rice bags.
- Shaft of femur should be straight.
- Rotate leg inward, this will hide the lesser trochanter.

# DEXA Femur check list
# Hints for a good scan.

- The Wards area is roughly half the neck area
- Trochanteric area 8-14cm$^2$ in women, 10-16cm$^2$ in men
- Check left and right and state side being used in report.

# Typical Femur Scan



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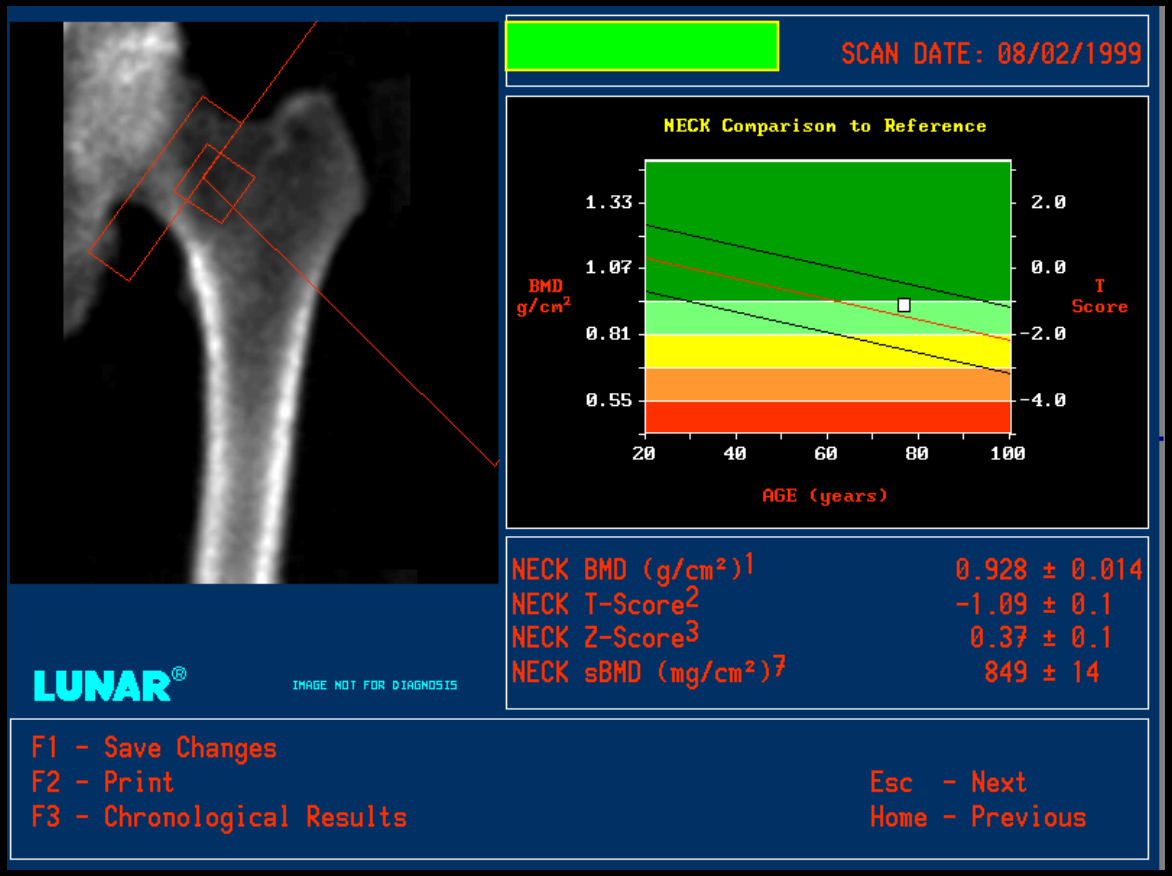
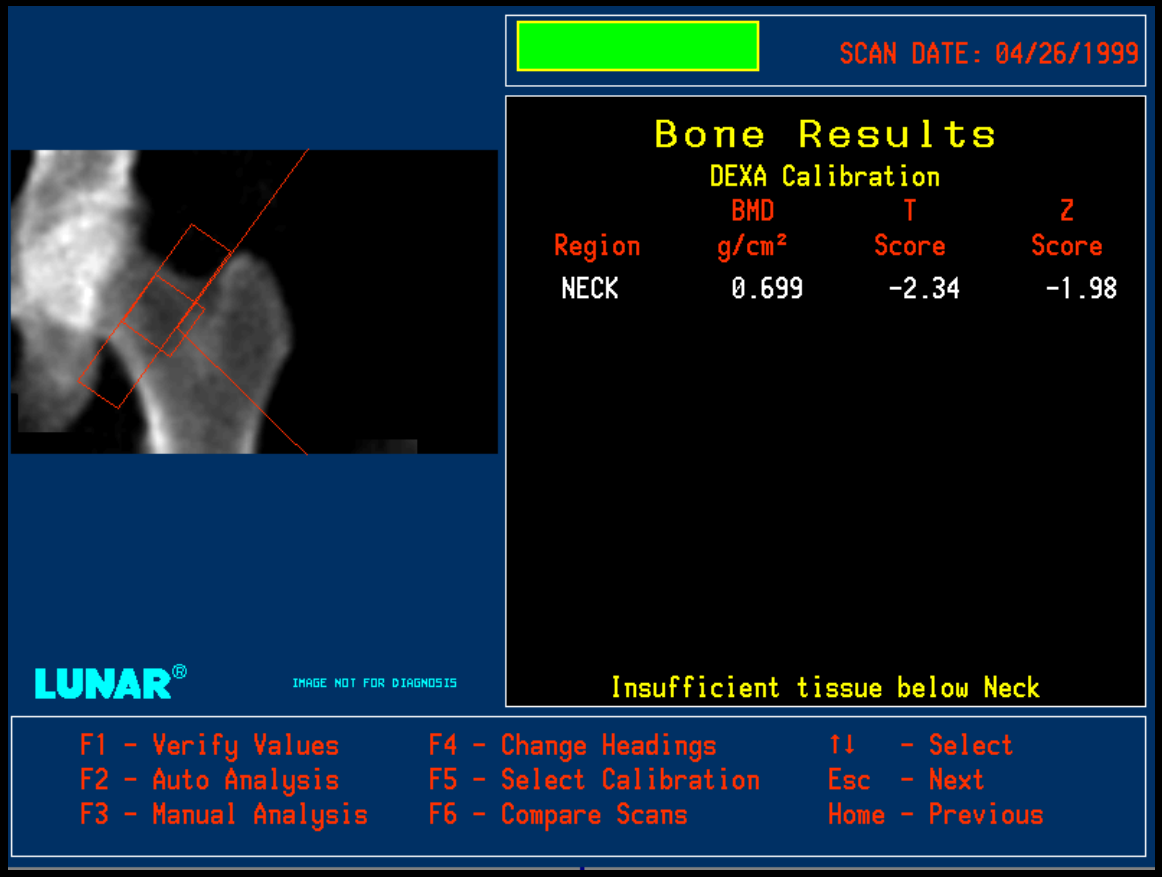


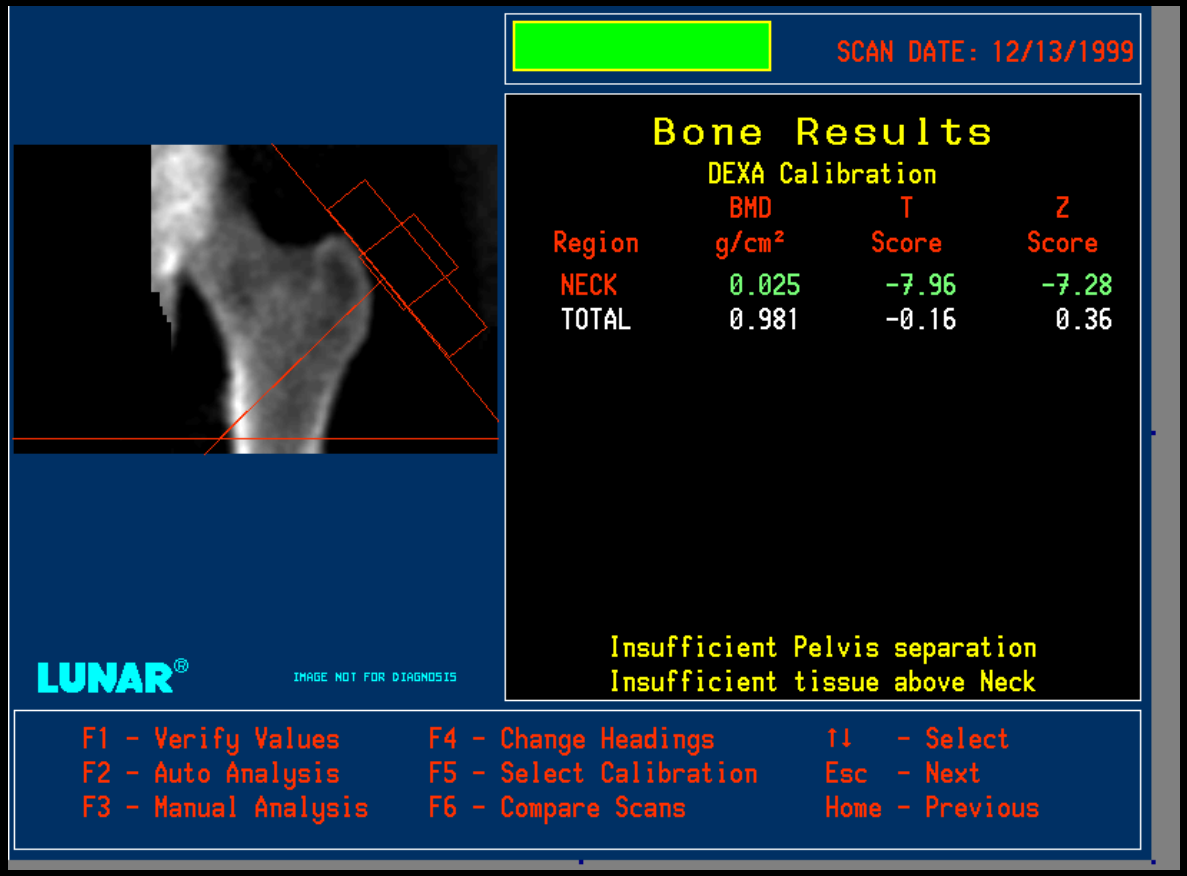

Too much shaft

# What's wrong with this scan?



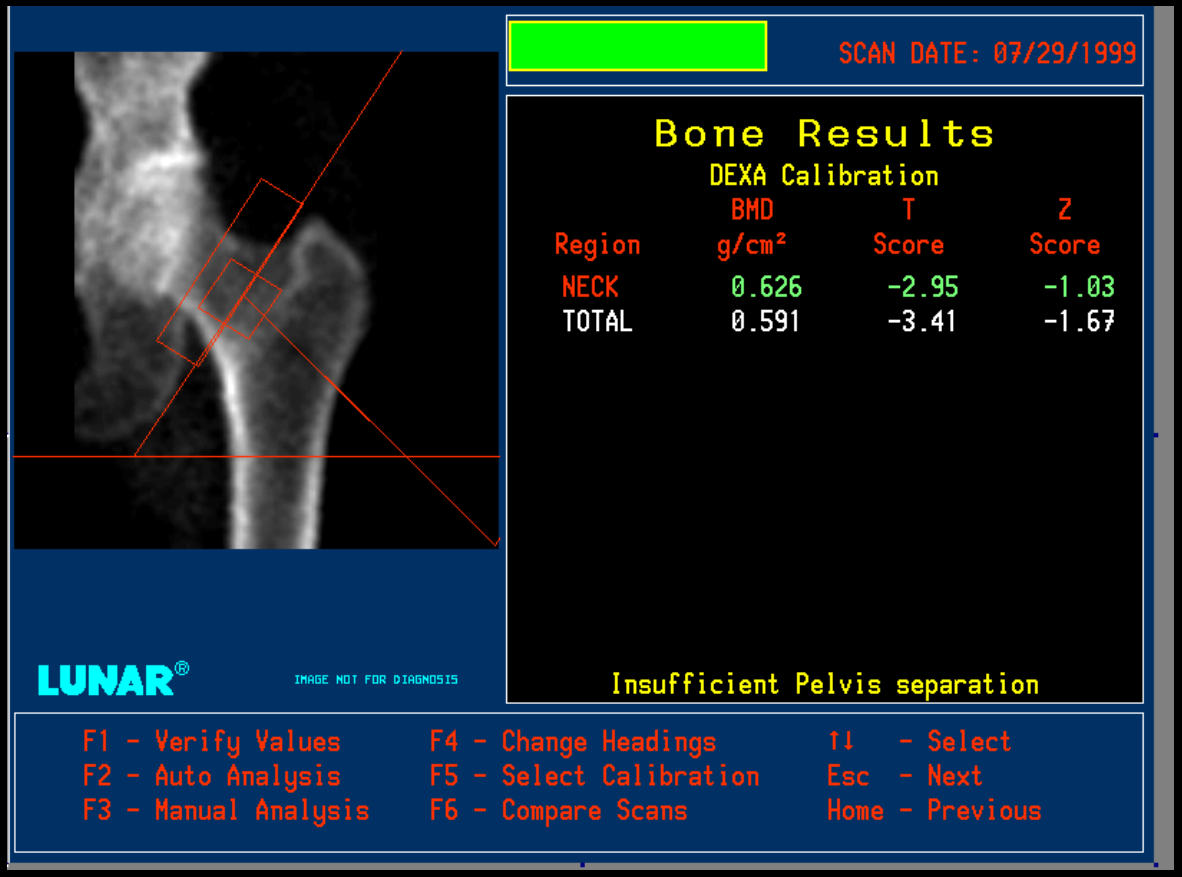

Insufficient tissue below neck

# What's wrong with this scan?




Set up for wrong leg

# What's wrong with this scan?




Includes ischium

# Bone Densitometry
# WHO uses T scores

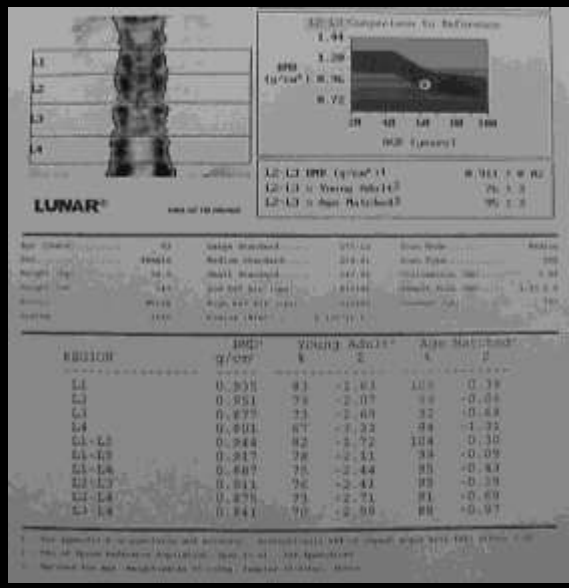
- Normal
  - > -1 SD below young adult
- Osteopenia
  - -1 -2.5 SD
- Osteoporosis
  - <-2.5 SD
- Established (Manifest) Osteoporosis
  - + Fxs, usually spine, hip, proximal humerus, wrist, rib

# 007179 - Macro DEXA

CLINICAL HISTORY:

REFERENCE FILMS:

FINDINGS:
FEMUR:
The bone mineral density is _____ gm/cm aq.
Percentage of young normal mean is _____%.
T-Score is _____.
Percentage age-matched mean is _____%
Z-Score is _____.




World Health Organization and National Osteoperosis Foundation Classification

COMMENTS:

LUMBAR SPINE:
The bone mineral density is _____gm/cm aq.
Percentage of young normal mean is _____%.
T-Score is _____%.
Percentage of age-matched mean is _____%.
Z-Score is _____.

World Health Organization and National Osteoperosis Foundation Classification is

COMMENTS:

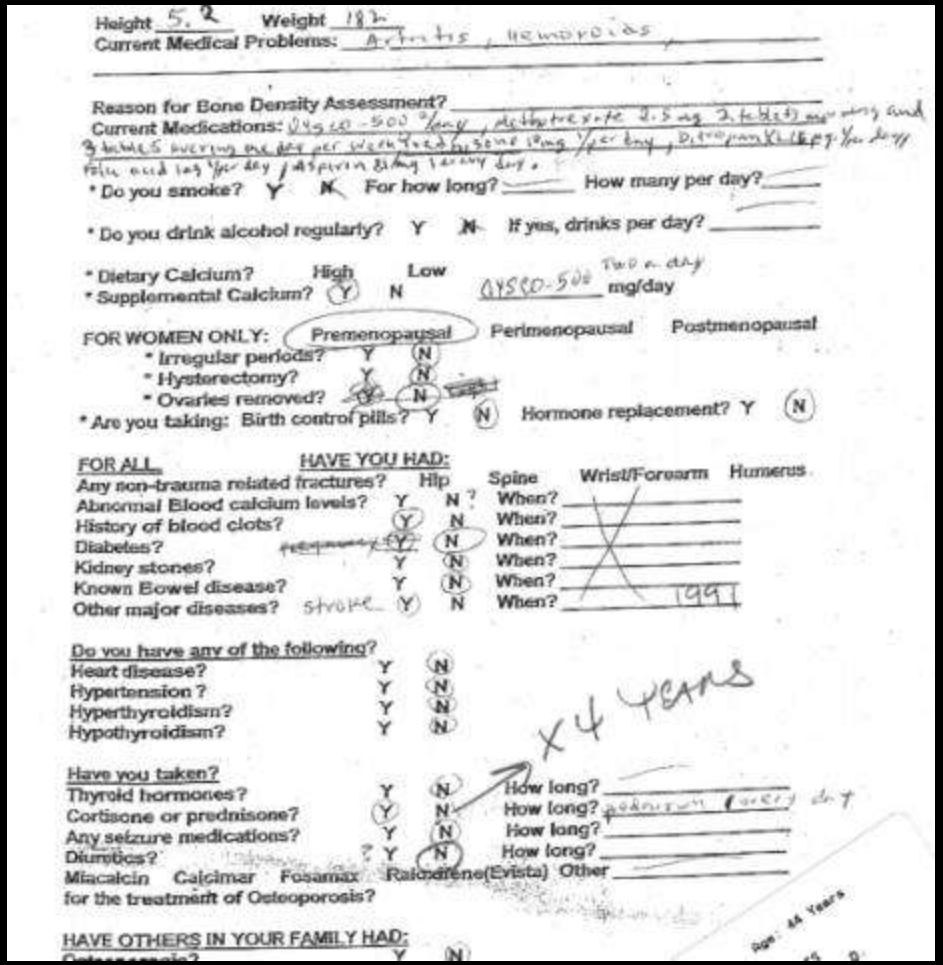
IMPRESSION:

Template

# Bone Densitometry

- Never round up figures
  - -1 is osteopenia, -0.99 is normal
  - -2.5 is osteoporosis, -2.49 is osteopenia

# Bone Densitometry



Height 5.2 Weight 182
Current Medical Problems: Arthritis, Hemorroids

Reason for Bone Density Assessment?
Current Medications: Oyster-500 1 daily, Methotrexate 2.5 mg 2 tablets once a week and 3 tablets every other week, Fosamax 70 mg 1 per day, Diovan HCT 160 mg 1 per day, Folic acid 1 mg 1 per day, Aspirin 81 mg 1 every day.

* Do you smoke? Y (N) For how long? ____ How many per day? ____
* Do you drink alcohol regularly? Y (N) If yes, drinks per day? ____
* Dietary Calcium? High (Y) Low N
* Supplemental Calcium? (Y) N Oyster-500 Two a day ____ mg/day

FOR WOMEN ONLY: (Premenopausal) Perimenopausal Postmenopausal
* Irregular periods? Y (N)
* Hysterectomy? Y (N)
* Ovaries removed? Y (N)
* Are you taking: Birth control pills? Y (N) Hormone replacement? Y (N)

| FOR ALL | HAVE YOU HAD: | Hip | Spine | Wrist/Forearm | Humerus |
|---|---|---|---|---|---|
| Any non-trauma related fractures? | | Y (N) | When? | | |
| Abnormal Blood calcium levels? | | Y (N) | When? | | |
| History of blood clots? | | (Y) N | When? | | |
| Diabetes? | | Y (N) | When? | | |
| Kidney stones? | | Y (N) | When? | | |
| Known Bowel disease? | | Y (N) | When? | | |
| Other major diseases? | Stroke | (Y) N | When? | | 1991 |

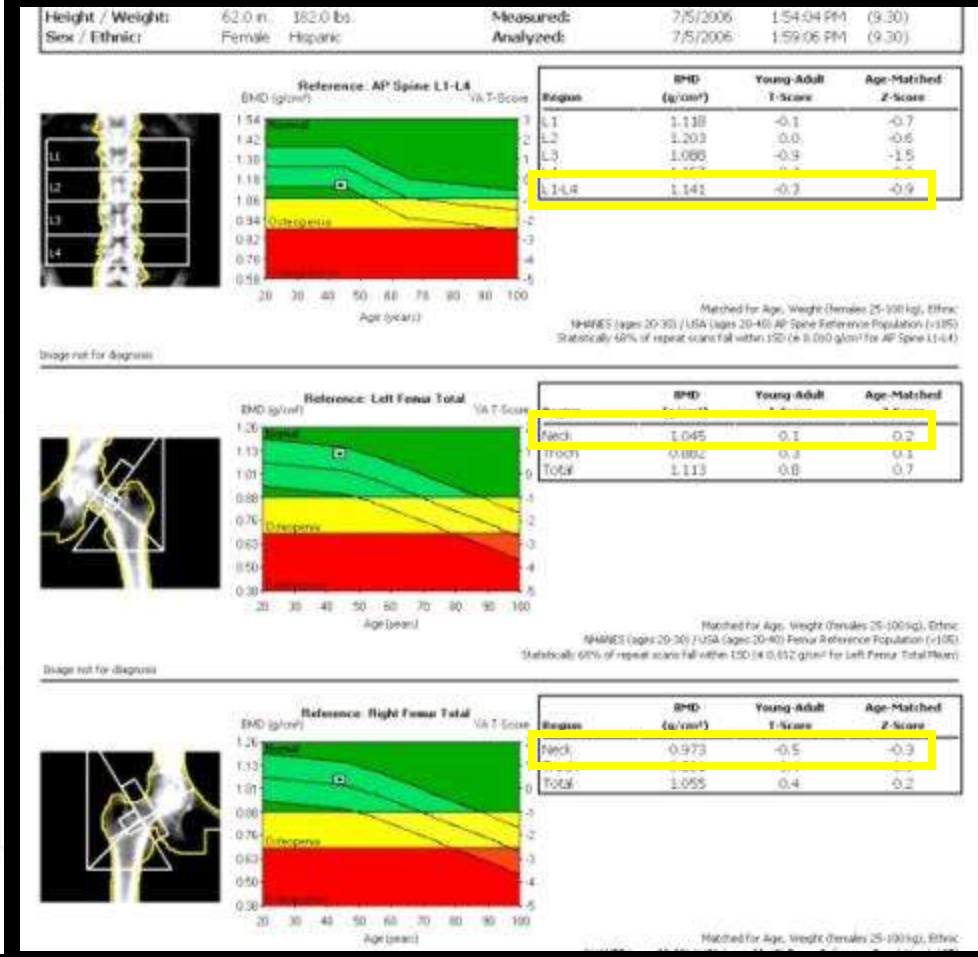
Do you have any of the following?
Heart disease? Y (N)
Hypertension? Y (N)
Hyperthyroidism? Y (N)
Hypothyroidism? Y (N)

x 4 years

Have you taken?
Thyroid hormones? Y (N) How long? ____
Cortisone or prednisone? (Y) N How long? Prednisone (very) short
Any seizure medications? Y (N) How long? ____
Diuretics? Y (N) How long? ____
Miacalcin Calcimar Fosamax Raloxifene(Evista) Other ____
for the treatment of Osteoporosis?

HAVE OTHERS IN YOUR FAMILY HAD:
Osteoporosis? Y (N)

Age: 44 Years



Height / Weight: 62.0 in. 182.0 lbs. Measured: 7/5/2006 1:54:04 PM (9.30)
Sex / Ethnic: Female Hispanic Analyzed: 7/5/2006 1:59:06 PM (9.30)

Reference: AP Spine L1-L4

| Region | BMD (g/cm²) | Young-Adult T-Score | Age-Matched Z-Score |
|---|---|---|---|
| L1 | 1.118 | -0.1 | -0.7 |
| L2 | 1.203 | 0.0 | -0.6 |
| L3 | 1.086 | -0.9 | -1.5 |
| L1-L4 | 1.141 | -0.3 | -0.9 |

Image not for diagnosis

Reference: Left Femur Total

| | BMD | Young-Adult | Age-Matched |
|---|---|---|---|
| Neck | 1.045 | -0.1 | 0.2 |
| Troch | 0.882 | 0.3 | 0.1 |
| Total | 1.113 | 0.8 | 0.7 |

Image not for diagnosis

Reference: Right Femur Total

| Region | BMD (g/cm²) | Young-Adult T-Score | Age-Matched Z-Score |
|---|---|---|---|
| Neck | 0.973 | -0.5 | -0.3 |
| Total | 1.055 | 0.4 | 0.2 |

# Bone Densitometry

| | | | | | |
|---|---|---|---|---|---|
| Height / Weight: | 62.0 in. | 182.0 lbs. | Measured: | 7/5/2006 | 1:54:04 PM (9.30) |
| Sex / Ethnic: | Female | Hispanic | Analyzed: | 7/5/2006 | 1:59:06 PM (9.30) |

## ANCILLARY RESULTS [AP Spine]

| Region | BMD [1] (g/cm²) | Young-Adult [2] (%) | Young-Adult [2] T-Score | Age-Matched [3] (%) | Age-Matched [3] Z-Score | BMC (g) | Area (cm²) | Width (cm) | Height (cm) |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 1.118 | 99 | -0.1 | 93 | -0.7 | 12.24 | 10.94 | 3.7 | 2.97 |
| L2 | 1.203 | 100 | 0.0 | 95 | -0.6 | 14.42 | 11.99 | 3.7 | 3.26 |
| L3 | 1.088 | 91 | -0.9 | 86 | -1.5 | 14.02 | 12.88 | 3.7 | 3.44 |
| L4 | 1.157 | 96 | -0.4 | 91 | -0.9 | 14.55 | 12.57 | 4.1 | 3.05 |
| L1-L2 | 1.162 | 100 | 0.0 | 94 | -0.6 | 26.66 | 22.93 | 3.7 | 6.22 |
| L1-L3 | 1.136 | 97 | -0.3 | 92 | -0.9 | 40.68 | 35.82 | 3.7 | 9.66 |
| L1-L4 | 1.141 | 97 | -0.3 | 91 | -0.9 | 55.23 | 48.39 | 3.8 | 12.71 |
| L2-L3 | 1.144 | 95 | -0.5 | 90 | -1.1 | 28.44 | 24.87 | 3.7 | 6.69 |
| L2-L4 | 1.148 | 96 | -0.4 | 90 | -1.0 | 42.99 | 37.45 | 3.9 | 9.74 |
| L3-L4 | 1.122 | 94 | -0.6 | 88 | -1.2 | 28.57 | 25.46 | 3.9 | 6.48 |

# Bone Densitometry

| | | | | | |
|---|---|---|---|---|---|
| Height / Weight: | 62.0 in. | 182.0 lbs. | Measured: | 7/5/2006 | 1:58:07 PM (9.30) |
| Sex / Ethnic: | Female | Hispanic | Analyzed: | 7/5/2006 | 1:58:48 PM (9.30) |

## ANCILLARY RESULTS [Right Femur]

| Region | BMD [1] (g/cm²) | Young-Adult [2] (%) | Young-Adult [2] T-Score | Age-Matched [3] (%) | Age-Matched [3] Z-Score | BMC (g) | Area (cm²) |
|---|---|---|---|---|---|---|---|
| Neck | 0.973 | 94 | -0.5 | 96 | -0.3 | 5.20 | 5.34 |
| Upper Neck | 0.882 | 107 | 0.5 | 104 | 0.3 | 2.31 | 2.62 |
| Wards | 0.990 | 109 | 0.6 | 109 | 0.6 | 3.14 | 3.17 |
| Troch | 0.801 | 94 | -0.4 | 92 | -0.6 | 8.35 | 10.43 |
| Shaft | 1.284 | - | - | - | - | 17.35 | 13.51 |
| Total | 1.055 | 105 | 0.4 | 103 | 0.2 | 30.90 | 29.28 |

# Bone Densitometry

| | | | | | | |
|---|---|---|---|---|---|---|
| Height / Weight: | 62.0 in. | 182.0 lbs. | Measured: | 7/5/2006 | 1:57:23 PM | (9.30) |
| Sex / Ethnic: | Female | Hispanic | Analyzed: | 7/5/2006 | 1:58:45 PM | (9.30) |

## ANCILLARY RESULTS [Left Femur]

| Region | BMD [1] (g/cm²) | Young-Adult [2] (%) | Young-Adult [2] T-Score | Age-Matched [3] (%) | Age-Matched [3] Z-Score | BMC (g) | Area (cm²) |
|---|---|---|---|---|---|---|---|
| Neck | 1.045 | 101 | 0.1 | 103 | 0.2 | 3.96 | 3.79 |
| Upper Neck | 0.889 | 108 | 0.6 | 105 | 0.4 | 1.65 | 1.86 |
| Wards | 0.890 | 98 | -0.2 | 98 | -0.1 | 1.42 | 1.60 |
| Troch | 0.882 | 104 | 0.3 | 102 | 0.1 | 9.66 | 10.95 |
| Shaft | 1.321 | - | - | - | - | 17.67 | 13.37 |
| Total | 1.113 | 110 | 0.8 | 108 | 0.7 | 31.30 | 28.12 |

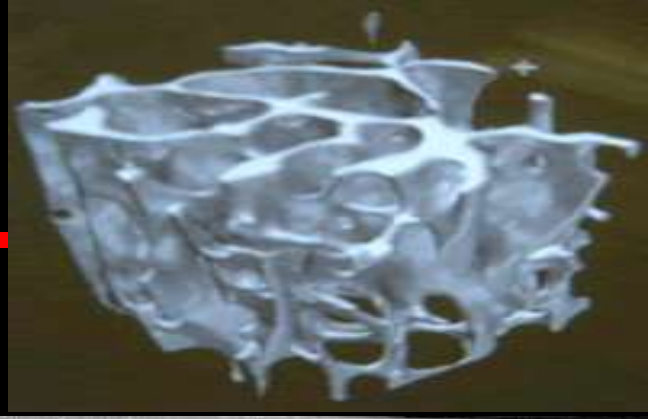
# Bone Densitometry

- T score is compared to reference population, 20-45 years, same sex, any race, any weight.

- Z score is matched for age, sex, weight and ethnicity.

| REGION | BMD[1] g/cm² | Young Adult[2] % | Young Adult[2] T | Age Matched[3] % | Age Matched[3] Z |
|---|---|---|---|---|---|
| L1 | 0.954 | 84 | -1.47 | 79 | -2.08 |
| L2 | 0.997 | 83 | -1.69 | 78 | -2.35 |
| L3 | 1.166 | 97 | -0.28 | 91 | -0.93 |
| L4 | 1.112 | 93 | -0.73 | 87 | -1.38 |
| L1-L2 | 0.977 | 85 | -1.44 | 80 | -2.07 |
| L1-L3 | 1.045 | 89 | -1.04 | 84 | -1.68 |
| L1-L4 | 1.064 | 90 | -0.96 | 85 | -1.60 |
| L2-L3 | 1.084 | 90 | -0.97 | 85 | -1.62 |
| L2-L4 | 1.094 | 91 | -0.88 | 86 | -1.54 |
| L3-L4 | 1.137 | 95 | -0.52 | 89 | -1.17 |

Two possible reasons for this lady's Z score being worse than the T score?



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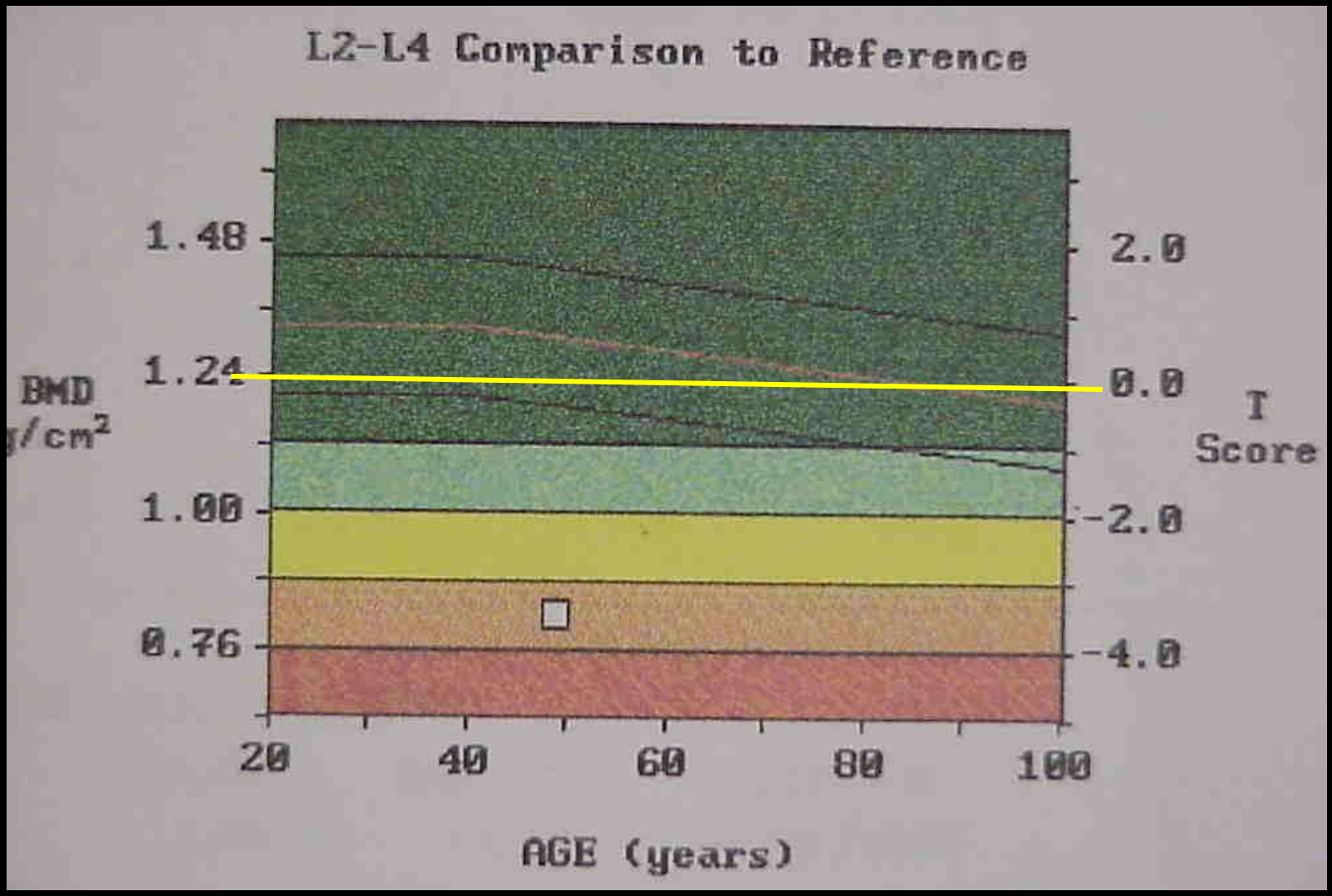
Two possible reasons for this lady's Z score being worse than the T score?

Obesity and race

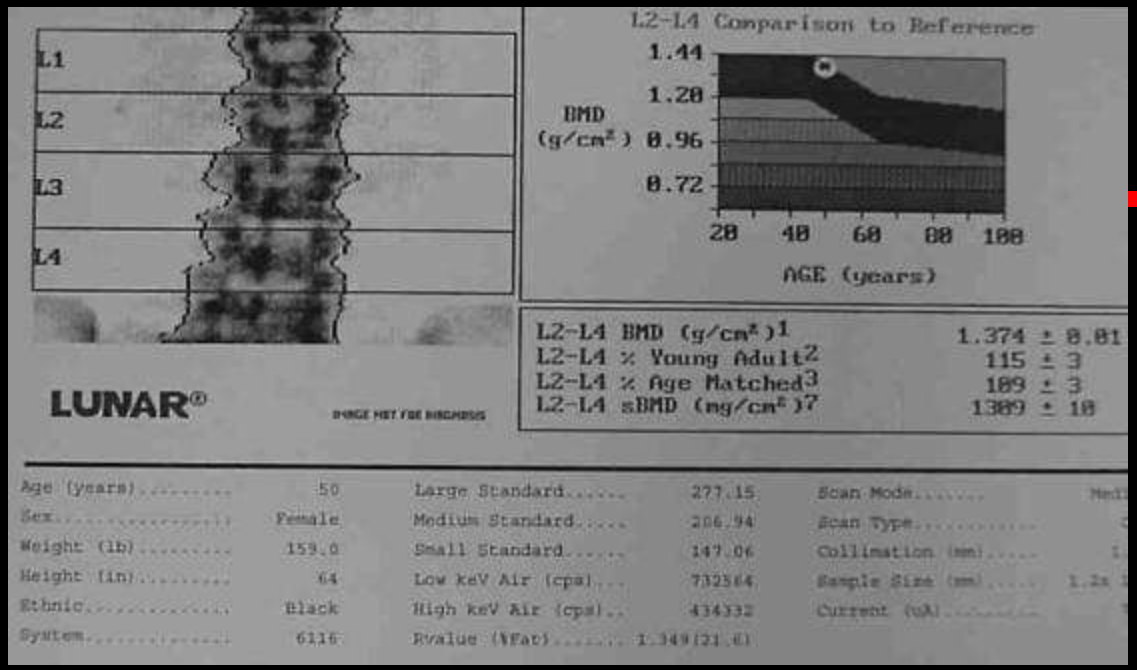
The T score is based on a white, same sex, age 20-40 population. The patient's BMD is compared to this population's BMD. A lower T score means that the patient BMD is low compared to this young, healthy normal weight population.

The Z score compares the patient to an adjusted population, it adjusts for age, weight, and ethnic background. The Z score can be lower than the T score for the patient, if the average patient in this population has a higher BMD than the average in the T score population. This can be seen in patients with higher weights, (which increases bone density), and in African American groups, (which show increased bone density).

If the patients comparison group has a generally higher bone density, then it is possible to have a poorer comparison to others of same age, than to younger comparisons in generally lower density group.



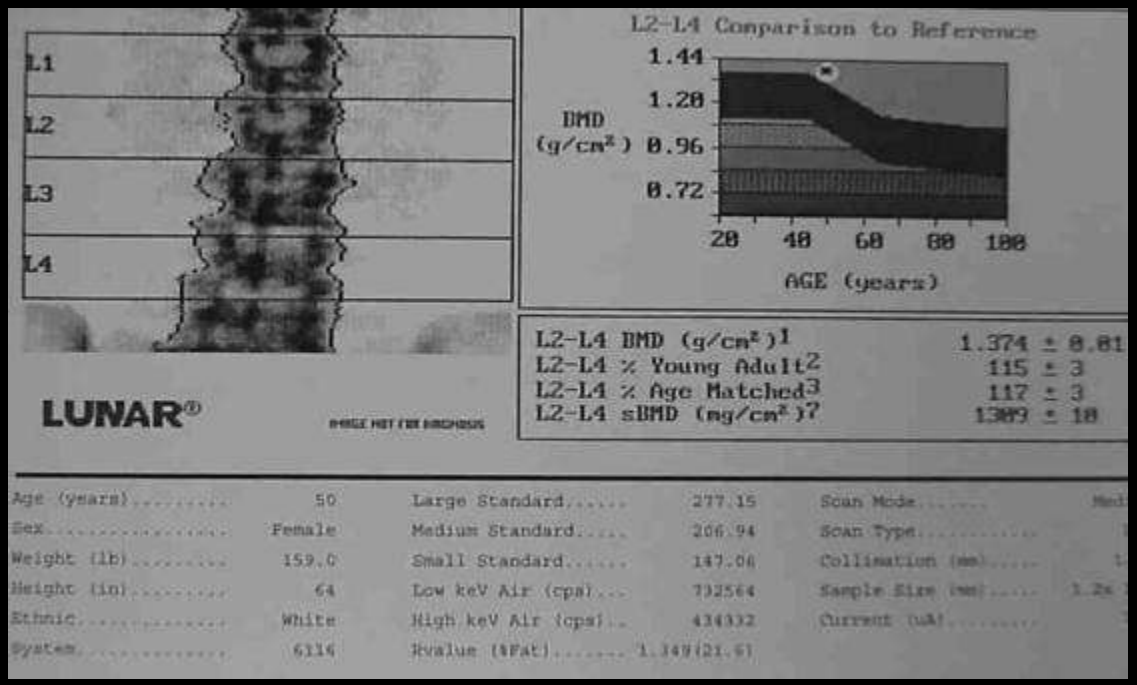

260 lb man, young Z above young T




Black

as

Black




Black

as

White

| REGION | BMD[1] g/cm² | Young Adult[2] % | Young Adult[2] T | Age Matched[3] % | Age Matched[3] Z |
|---|---|---|---|---|---|
| L1 | 1.389 | 123 | 2.16 | 117 | 1.71 |
| L2 | 1.362 | 114 | 1.35 | 108 | 0.87 |
| L3 | 1.421 | 118 | 1.85 | 113 | 1.36 |
| L4 | 1.332 | 111 | 1.10 | 106 | 0.61 |
| L1-L2 | 1.375 | 120 | 1.88 | 114 | 1.42 |
| L1-L3 | 1.395 | 119 | 1.88 | 114 | 1.41 |
| L1-L4 | 1.377 | 117 | 1.64 | 111 | 1.17 |
| L2-L3 | 1.398 | 116 | 1.65 | 111 | 1.16 |
| L2-L4 | 1.374 | 115 | 1.45 | 109 | 0.97 |
| L3-L4 | 1.379 | 115 | 1.49 | 110 | 1.01 |

Black > Black

| REGION | BMD[1] g/cm² | Young Adult[2] % | Young Adult[2] T | Age Matched[3] % | Age Matched[3] Z |
|---|---|---|---|---|---|
| L1 | 1.389 | 123 | 2.16 | 126 | 2.37 |
| L2 | 1.362 | 114 | 1.35 | 116 | 1.57 |
| L3 | 1.421 | 118 | 1.85 | 121 | 2.06 |
| L4 | 1.332 | 111 | 1.10 | 113 | 1.31 |
| L1-L2 | 1.375 | 120 | 1.88 | 122 | 2.09 |
| L1-L3 | 1.395 | 119 | 1.88 | 122 | 2.09 |
| L1-L4 | 1.377 | 117 | 1.64 | 119 | 1.86 |
| L2-L3 | 1.398 | 116 | 1.65 | 119 | 1.86 |
| L2-L4 | 1.374 | 115 | 1.45 | 117 | 1.67 |
| L3-L4 | 1.379 | 115 | 1.49 | 117 | 1.71 |

Black < White

T same

Z up

# Bone Densitometry
# Weight gain/loss and Z

- Weight gain (or loss) will not affect Z score comparison, since Z scores are weight matched,  but should cause an increase (or decrease) in absolute BMD.

- An increase in weight, pushes up the reference range, and therefore the Z score may seem reduced, and vice versa.

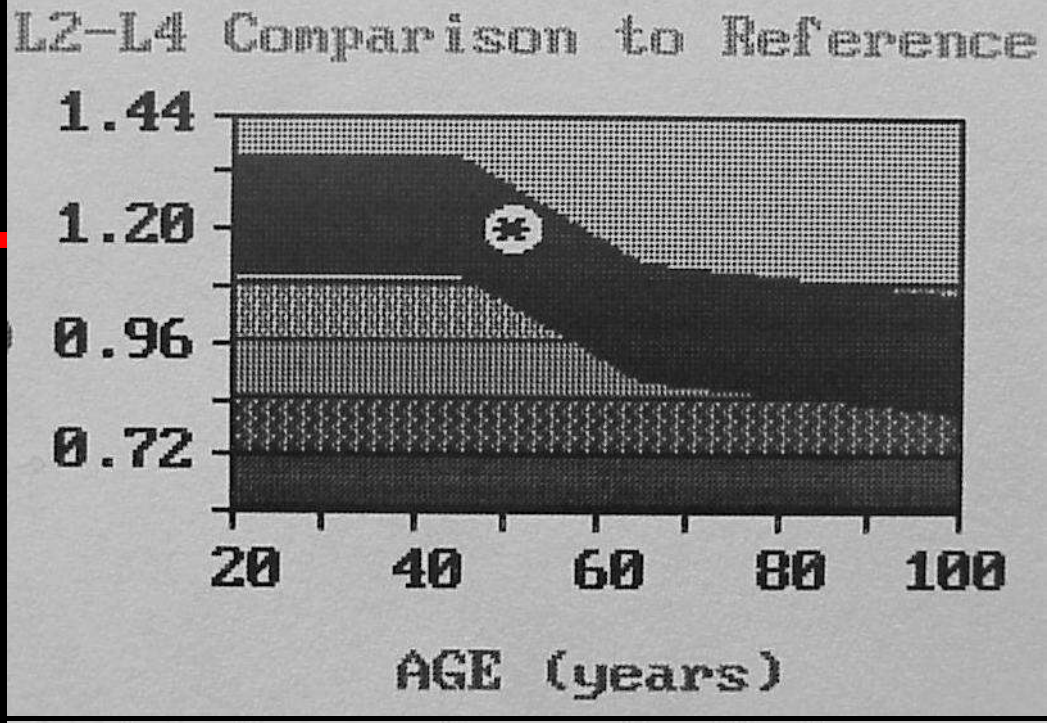
2.2lbs=1Kg

# Bone Densitometry
# Weight gain/loss and T

- Weight gain (or loss) should cause an increase (or decrease) in absolute BMD.
- Weight gain (or loss) will affect T score comparison, since reference range will not have changed.
- Hence an increase in weight with a corresponding increase in bone density, will look like a good improvement in T score, but fracture risk is unchanged.

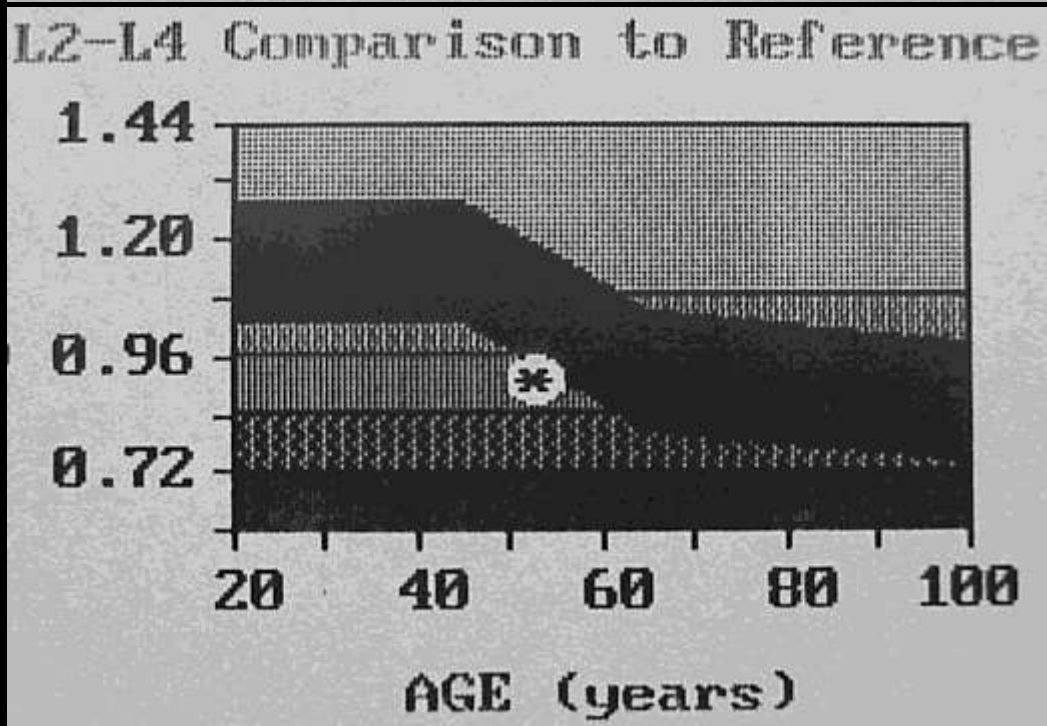
51F

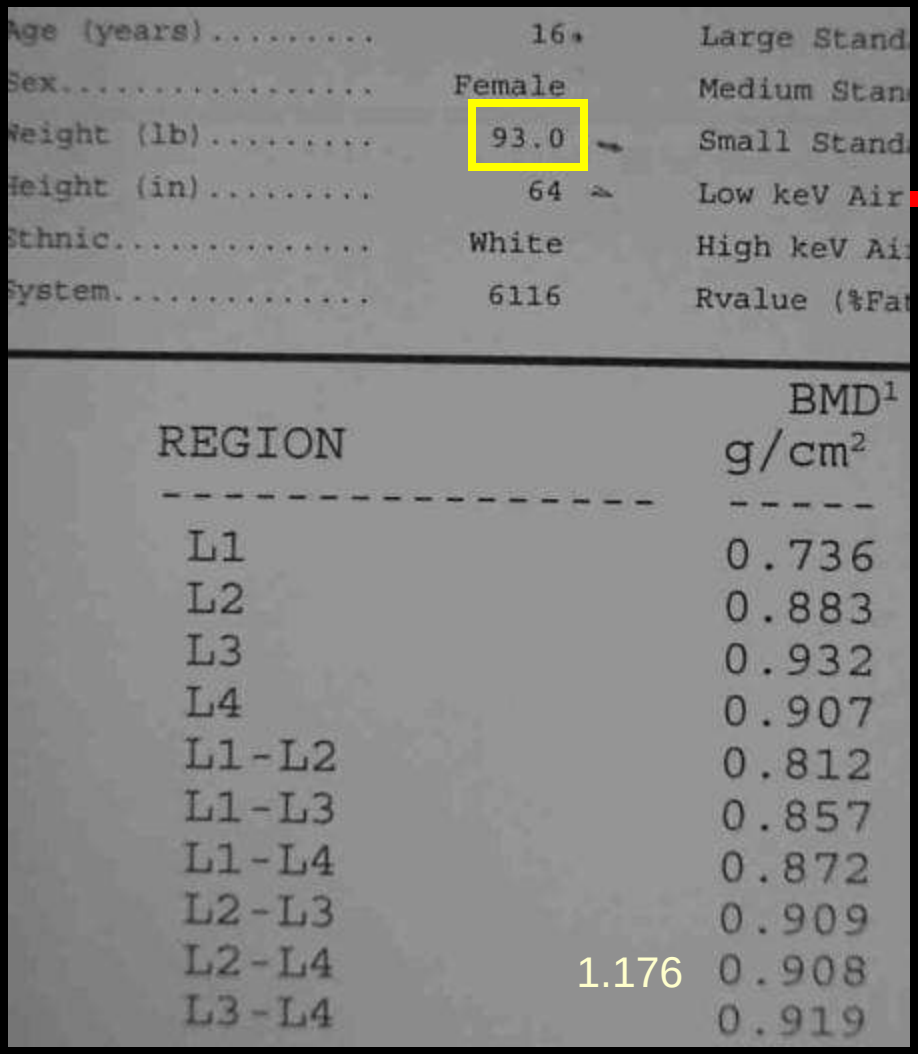
90Kg




53F

51Kg

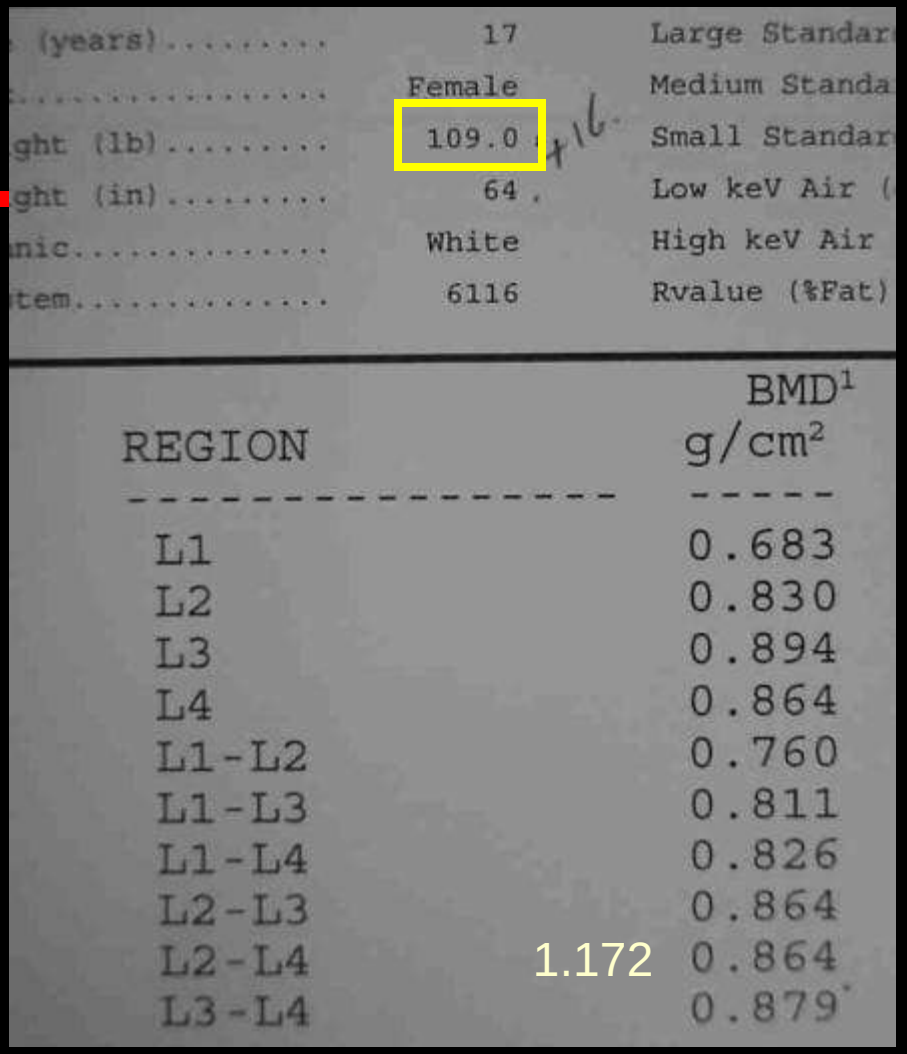




| Age (years) | 16 | Large Stand |
|---|---|---|
| Sex | Female | Medium Stan |
| Weight (lb) | 93.0 | Small Stand |
| Height (in) | 64 | Low keV Air |
| Ethnic | White | High keV Ai |
| System | 6116 | Rvalue (%Fa |

| REGION | BMD[1] g/cm² |
|---|---|
| L1 | 0.736 |
| L2 | 0.883 |
| L3 | 0.932 |
| L4 | 0.907 |
| L1-L2 | 0.812 |
| L1-L3 | 0.857 |
| L1-L4 | 0.872 |
| L2-L3 | 0.909 |
| L2-L4 | 0.908 |
| L3-L4 | 0.919 |

1.176



| (years) | 17 | Large Standar |
|---|---|---|
| | Female | Medium Standa |
| ght (lb) | 109.0 | Small Standar |
| ght (in) | 64 | Low keV Air ( |
| nic | White | High keV Air |
| tem | 6116 | Rvalue (%Fat) |

| REGION | BMD[1] g/cm² |
|---|---|
| L1 | 0.683 |
| L2 | 0.830 |
| L3 | 0.894 |
| L4 | 0.864 |
| L1-L2 | 0.760 |
| L1-L3 | 0.811 |
| L1-L4 | 0.826 |
| L2-L3 | 0.864 |
| L2-L4 | 0.864 |
| L3-L4 | 0.879 |

1.172

SD = 0.1 Both between -2 and -3 SD below mean for age

1Y, 16lb gain, 5% BMD loss

= significant increase in fracture risk

# Bone Densitometry
# Comparison with previous

- Are the studies comparable
- Always compare like with like
  - Thornton L1-4
  - 4th and Lewis (previously L2-4)
- Any intervening events
- Cannot compare Hologic and Lunar

# Bone Densitometry
# Comparison with previous

- David Sartoris's previous studies that do not mention the region or levels measured, were standardized for L1-4 and the femoral neck.
- He usually did not quote BMD.
- Many previous studies were prior to the current database.
- Use the percent young adult as a guide to percentage change.

# Bone Densitometry
# Comparison with previous

- If over a period of time there is an increase in BMD in the lower lumbar spine and decrease in the upper lumbar spine, it is likely there is OA of the lower facet joints, and the upper lumbar spine is a truer reflection of useful BMD.

# Bone Densitometry
# Comparison with previous

- Increase in BMD of the femoral neck can be due to calcar buttressing with OA of the hip.

# Bone Densitometry
# Comparison with previous

- If you want to eyeball the % for a comparison, use the young adult % since the reference range will not change with age.
- A static bone density is actually a good result over a significant period of time
- If a test is 1% precise, then a change has to be greater than 2% to be significant

# Bone Densitometry
# Comparison with previous

- If you would have expected the bone density to have fallen 4% in 2 years, and it is static, then this is a positive response to RX

# Bone Densitometry
# Comparison with previous

- Generally Rx affects all levels equally.
- OA does not.

# Bone Densitometry
# Comparison with previous

Height 5'5" Weight 125
Current Medical Problems: Bone density f/u

Reason for Bone Density Assessment? Actonel
Current Medications:

* Do you smoke? Y (N) For how long? ____ How many per day? ____
* Do you drink alcohol regularly? (Y) N If yes, drinks per day? 1-2/week
* Dietary Calcium? (High) Low
* Supplemental Calcium? (Y) N 600 mg/day

FOR WOMEN ONLY: Premenopausal Perimenopausal (Postmenopausal)
* Irregular periods? Y N
* Hysterectomy? Y N
* Ovaries removed? Y N
* Are you taking: Birth control pills? Y (N) Hormone replacement? Y (N)

| FOR ALL... | HAVE YOU HAD: | | | | |
|---|---|---|---|---|---|
| Any non-trauma related fractures? | Hip | Spine | Wrist/Forearm | Humerus | |
| Abnormal Blood calcium levels? | Y (N) | When? | | | |
| History of blood clots? | Y (N) | When? | | | |
| Diabetes? | Y (N) | When? | | | |
| Kidney stones? | Y (N) | When? | | | |
| Known Bowel disease? | Y (N) | When? | | | |
| Other major diseases? | Y (N) | When? | | | |

Hx: Tamoxifen x 5 yrs stopped 2003

Do you have any of the following?
Heart disease? Y (N)
Hypertension? Y (N)
Hyperthyroidism? Y (N)
Hypothyroidism? Y (N)

Have you taken?
Thyroid hormones? Y (N) How long? ____
Cortisone or prednisone? Y (N) How long? ____
Any seizure medications? Y (N) How long? ____
Diuretics? Y (N) How long? ____
Miacalcin Calcimar Fosamax Raloxifene(Evista) Other Actonel
for the treatment of Osteoporosis?

HAVE OTHERS IN YOUR FAMILY HAD: GM, Mother
Osteoporosis? (Y) N
Hip fractures? (Y) N
Kidney stones? Y N

Alias Name:
Exam (LS)(L)(FO)(T)
Age: 55 Years
History: ACTONEL, COMP TO PREVIOUS
Diagnosis: OSTEOPENIA
Requesting MD: SAWIRES, AMAL R, M.D.
Comments:

| | | | |
|---|---|---|---|
| Height / Weight: | 65.0 in. 125.0 lbs. | Measured: | 7/5/2006 11:21:26 AM (9.30) |
| Sex / Ethnic: | Female Asian | Analyzed: | 7/5/2006 11:29:36 AM (9.30) |

Reference: AP Spine L1-L4

| Region | BMD (g/cm²) | Young-Adult T-Score | Age-Matched Z-Score |
|---|---|---|---|
| L1 | 0.929 | -1.7 | -0.5 |
| L2 | 0.969 | -1.9 | -0.8 |
| L3 | 1.077 | -1.0 | 0.1 |
| L1-L4 | 0.975 | -1.7 | -0.6 |

Image not for diagnosis

Reference: Left Femur Total

| Region | BMD (g/cm²) | Young-Adult T-Score | Age-Matched Z-Score |
|---|---|---|---|
| Neck | 0.759 | -2.0 | -0.8 |
| Total | 0.831 | -1.4 | -0.5 |

Image not for diagnosis

Reference: Right Femur Total

| Region | BMD (g/cm²) | Young-Adult T-Score | Age-Matched Z-Score |
|---|---|---|---|
| Neck | 0.787 | -1.8 | -0.6 |
| Total | 0.864 | -1.1 | -0.3 |

# Bone Densitometry

| | | | | | |
|---|---|---|---|---|---|
| Height / Weight: | 65.0 in. | 125.0 lbs. | Measured: | 7/5/2006 | 11:21:26 AM (9.30) |
| Sex / Ethnic: | Female | Asian | Analyzed: | 7/5/2006 | 11:29:36 AM (9.30) |

## ANCILLARY RESULTS [AP Spine]

| Region | BMD [1] (g/cm²) | Young-Adult [2] (%) | Young-Adult [2] T-Score | Age-Matched [3] (%) | Age-Matched [3] Z-Score | BMC (g) | Area (cm²) | Width (cm) | Height (cm) |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 0.929 | 82 | -1.7 | 93 | -0.5 | 11.34 | 12.21 | 3.9 | 3.16 |
| L2 | 0.969 | 81 | -1.9 | 91 | -0.8 | 12.51 | 12.90 | 3.9 | 3.28 |
| L3 | 1.077 | 90 | -1.0 | 101 | 0.1 | 15.96 | 14.81 | 4.5 | 3.28 |
| L4 | 0.926 | 77 | -2.3 | 87 | -1.2 | 16.67 | 18.00 | 4.9 | 3.68 |
| L1-L2 | 0.950 | 82 | -1.8 | 92 | -0.7 | 23.85 | 25.11 | 3.9 | 6.44 |
| L1-L3 | 0.997 | 85 | -1.4 | 96 | -0.3 | 39.81 | 39.92 | 4.1 | 9.72 |
| L1-L4 | 0.975 | 83 | -1.7 | 93 | -0.6 | 56.48 | 57.93 | 4.3 | 13.40 |
| L2-L3 | 1.027 | 86 | -1.4 | 96 | -0.3 | 28.47 | 27.72 | 4.2 | 6.56 |
| L2-L4 | 0.987 | 82 | -1.8 | 93 | -0.6 | 45.13 | 45.72 | 4.4 | 10.24 |
| L3-L4 | 0.994 | 83 | -1.7 | 93 | -0.6 | 32.63 | 32.82 | 4.7 | 6.96 |

# Bone Densitometry

| | | | | | |
|---|---|---|---|---|---|
| Height / Weight: | 65.0 in. | 125.0 lbs. | Measured: | 7/5/2006 | 11:23:10 AM (9.30) |
| Sex / Ethnic: | Female | Asian | Analyzed: | 7/5/2006 | 11:26:42 AM (9.30) |

## ANCILLARY RESULTS [Left Femur]

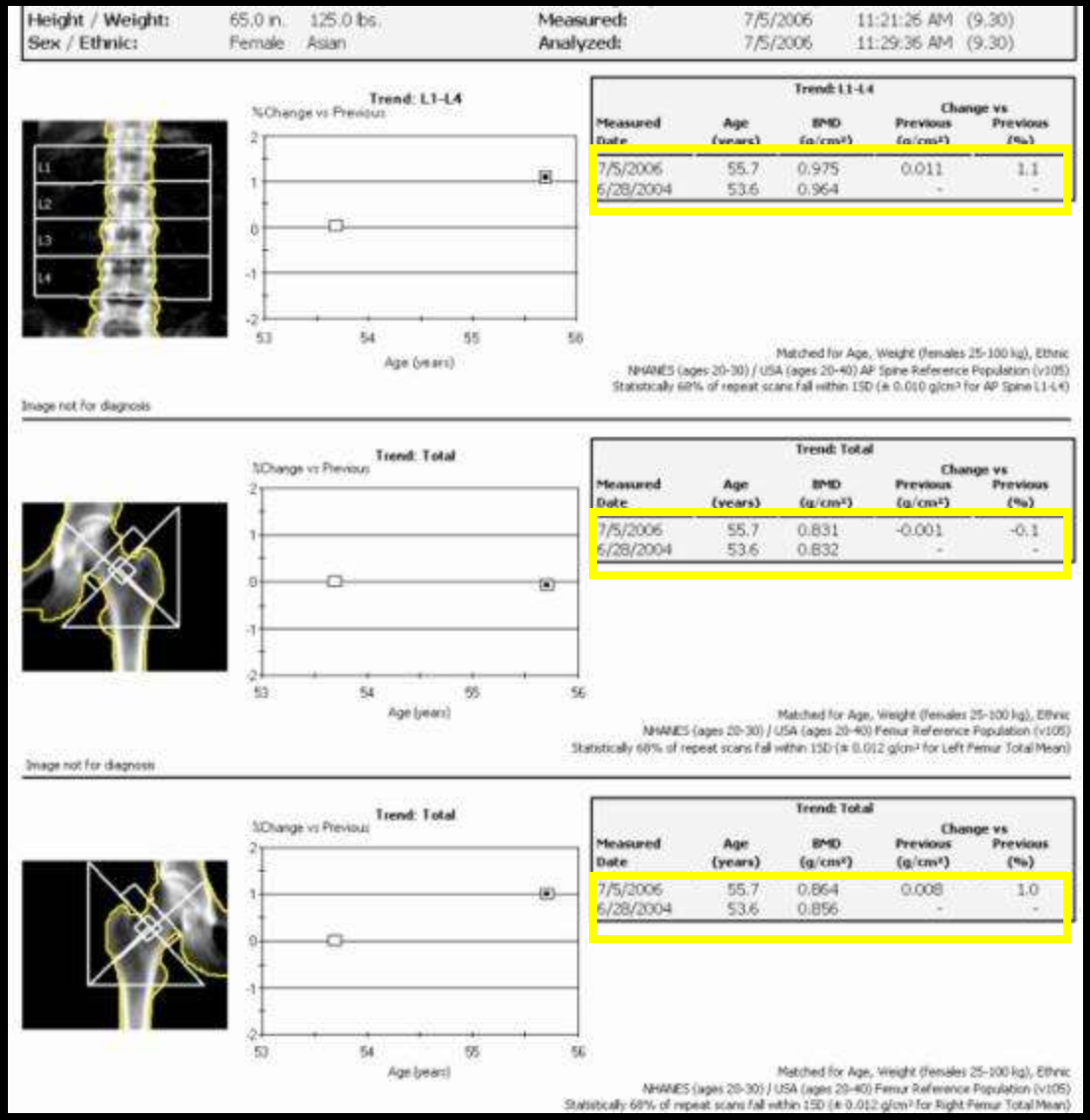
| Region | BMD [1] (g/cm²) | Young-Adult [2] (%) | Young-Adult [2] T-Score | Age-Matched [3] (%) | Age-Matched [3] Z-Score | BMC (g) | Area (cm²) |
|---|---|---|---|---|---|---|---|
| Neck | 0.759 | 73 | -2.0 | 87 | -0.8 | 3.70 | 4.87 |
| Upper Neck | 0.581 | 71 | -2.0 | 84 | -0.9 | 1.41 | 2.42 |
| Wards | 0.659 | 72 | -1.9 | 92 | -0.5 | 1.74 | 2.63 |
| Troch | 0.689 | 81 | -1.4 | 93 | -0.4 | 6.61 | 9.60 |
| Shaft | 0.941 | - | - | - | - | 14.61 | 15.52 |
| Total | 0.831 | 82 | -1.4 | 93 | -0.5 | 24.91 | 29.98 |

| | | | | | |
|---|---|---|---|---|---|
| Height / Weight: | 65.0 in. | 125.0 lbs. | Measured: | 7/5/2006 | 11:24:05 AM (9.30) |
| Sex / Ethnic: | Female | Asian | Analyzed: | 7/5/2006 | 11:26:44 AM (9.30) |

## ANCILLARY RESULTS [Right Femur]

| Region | BMD [1] (g/cm²) | Young-Adult [2] (%) | Young-Adult [2] T-Score | Age-Matched [3] (%) | Age-Matched [3] Z-Score | BMC (g) | Area (cm²) |
|---|---|---|---|---|---|---|---|
| Neck | 0.787 | 76 | -1.8 | 91 | -0.6 | 3.74 | 4.75 |
| Upper Neck | 0.636 | 77 | -1.5 | 92 | -0.5 | 1.49 | 2.35 |
| Wards | 0.706 | 78 | -1.6 | 98 | -0.1 | 1.77 | 2.51 |
| Troch | 0.684 | 80 | -1.4 | 93 | -0.5 | 6.58 | 9.62 |
| Shaft | 1.003 | - | - | - | - | 15.16 | 15.11 |
| Total | 0.864 | 86 | -1.1 | 96 | -0.3 | 25.47 | 29.48 |

# Bone Densitometry



| Height / Weight: | 65.0 in. | 125.0 lbs. | Measured: | 7/5/2006 | 11:21:26 AM (9.30) |
|---|---|---|---|---|---|
| Sex / Ethnic: | Female | Asian | Analyzed: | 7/5/2006 | 11:29:36 AM (9.30) |

Trend: L1-L4

%Change vs Previous

Age (years)

| Measured Date | Age (years) | BMD (g/cm²) | Change vs Previous (g/cm²) | Change vs Previous (%) |
|---|---|---|---|---|
| 7/5/2006 | 55.7 | 0.975 | 0.011 | 1.1 |
| 6/28/2004 | 53.6 | 0.964 | - | - |

Matched for Age, Weight (females 25-100 kg), Ethnic
NHANES (ages 20-30) / USA (ages 20-40) AP Spine Reference Population (v105)
Statistically 68% of repeat scans fall within 1SD (± 0.010 g/cm² for AP Spine L1-L4)

Image not for diagnosis

Trend: Total

%Change vs Previous

Age (years)

| Measured Date | Age (years) | BMD (g/cm²) | Change vs Previous (g/cm²) | Change vs Previous (%) |
|---|---|---|---|---|
| 7/5/2006 | 55.7 | 0.831 | -0.001 | -0.1 |
| 6/28/2004 | 53.6 | 0.832 | - | - |

Matched for Age, Weight (females 25-100 kg), Ethnic
NHANES (ages 20-30) / USA (ages 20-40) Femur Reference Population (v105)
Statistically 68% of repeat scans fall within 1SD (± 0.012 g/cm² for Left Femur Total Mean)

Image not for diagnosis

Trend: Total

%Change vs Previous

Age (years)

| Measured Date | Age (years) | BMD (g/cm²) | Change vs Previous (g/cm²) | Change vs Previous (%) |
|---|---|---|---|---|
| 7/5/2006 | 55.7 | 0.864 | 0.008 | 1.0 |
| 6/28/2004 | 53.6 | 0.856 | - | - |

Matched for Age, Weight (females 25-100 kg), Ethnic
NHANES (ages 20-30) / USA (ages 20-40) Femur Reference Population (v105)
Statistically 68% of repeat scans fall within 1SD (± 0.012 g/cm² for Right Femur Total Mean)

# Bone mass in healthy children

Radiology 1991;179:735-738

# Bone mass in healthy children

- Increases with age, weight and pubertal Tanner stage.
- Tanner stage and weight are best predictors of bone mass.
- Age, sex, race, activity and diet are not good predictors, when weight and Tanner stage are controlled.

Radiology 1991;179:735-738

# Bone mass in healthy children

- Make sure we have at least the age and weight of the child, if not the Tanner stage.

Radiology 1991;179:735-738

# BMD in children and adolescents

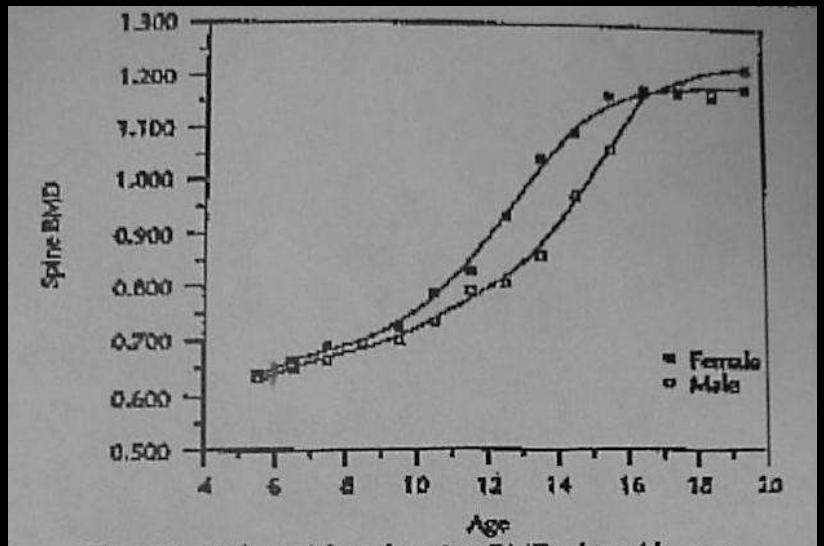



Figure 1. Male and female spine BMD plotted by age.

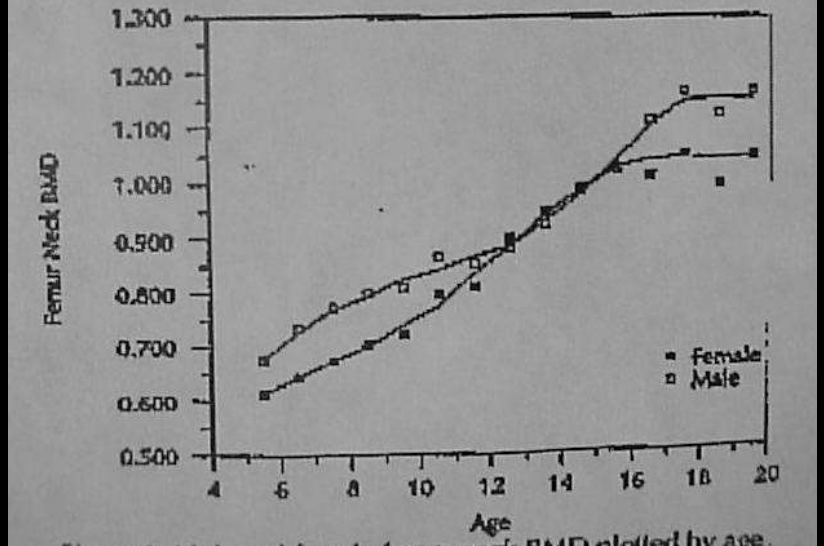



Figure 2. Male and female femur neck BMD plotted by age.

# BMD in children and adolescents

Table 1. Mean BMD values for female spine (SD=0.10), femur regions (SD=0.10), and total body (SD=0.08).

| Age | n | Spine | n | Neck | Ward's | Troch | n | Total Body |
|---|---|---|---|---|---|---|---|---|
| 5 | 42 | 0.638 | 14 | 0.613 | 0.726 | 0.615 | 8 | 0.766 |
| 6 | 46 | 0.662 | 24 | 0.643 | 0.783 | 0.621 | 11 | 0.793 |
| 7 | 64 | 0.687 | 32 | 0.676 | 0.708 | 0.623 | 31 | 0.814 |
| 8 | 87 | 0.691 | 58 | 0.707 | 0.737 | 0.623 | 42 | 0.829 |
| 9 | 68 | 0.724 | 34 | 0.725 | 0.754 | 0.630 | 25 | 0.835 |
| 10 | 68 | 0.787 | 40 | 0.798 | 0.818 | 0.702 | 27 | 0.871 |
| 11 | 48 | 0.828 | 30 | 0.811 | 0.802 | 0.706 | 30 | 0.905 |
| 12 | 63 | 0.928 | 40 | 0.901 | 0.879 | 0.781 | 22 | 0.959 |
| 13 | 60 | 1.041 | 32 | 0.946 | 0.925 | 0.800 | 20 | 1.011 |
| 14 | 73 | 1.093 | 49 | 0.982 | 0.958 | 0.826 | 28 | 1.046 |
| 15 | 58 | 1.162 | 35 | 1.029 | 1.013 | 0.867 | 25 | 1.103 |
| 16 | 57 | 1.176 | 35 | 1.011 | 1.013 | 0.855 | 22 | 1.118 |
| 17 | 45 | 1.172 | 33 | 1.051 | 1.068 | 0.879 | 26 | 1.134 |
| 18 | 57 | 1.162 | 30 | 0.994 | 0.965 | 0.809 | 20 | 1.109 |
| 19 | 43 | 1.184 | 28 | 1.044 | 1.035 | 0.825 | 22 | 1.121 |

BMD in children and adolescents- Female- L2-4- Lunar

# BMD in children and adolescents

*Table 2. Mean BMD values for male spine (SD=0.10), femur regions (SD=0.10), and total body (SD=0.08).*

| Age | n | Spine | n | Neck | Ward's | Troch | n | Total Body |
|---|---|---|---|---|---|---|---|---|
| 5 | 42 | 0.635 | 6 | 0.675 | 0.649 | 0.677 | 8 | 0.762 |
| 6 | 55 | 0.650 | 20 | 0.736 | 0.765 | 0.680 | 18 | 0.793 |
| 7 | 59 | 0.662 | 28 | 0.775 | 0.801 | 0.715 | 23 | 0.822 |
| 8 | 82 | 0.693 | 49 | 0.801 | 0.822 | 0.717 | 36 | 0.836 |
| 9 | 55 | 0.698 | 28 | 0.812 | 0.838 | 0.712 | 18 | 0.848 |
| 10 | 55 | 0.733 | 29 | 0.868 | 0.920 | 0.765 | 19 | 0.889 |
| 11 | 54 | 0.790 | 27 | 0.854 | 0.882 | 0.758 | 21 | 0.914 |
| 12 | 61 | 0.804 | 33 | 0.881 | 0.866 | 0.721 | 23 | 0.921 |
| 13 | 45 | 0.856 | 21 | 0.924 | 0.921 | 0.805 | 21 | 0.964 |
| 14 | 55 | 0.970 | 21 | 0.988 | 0.979 | 0.860 | 17 | 1.020 |
| 15 | 40 | 1.061 | 11 | 1.024 | 0.996 | 0.889 | 11 | 1.059 |
| 16 | 46 | 1.168 | 23 | 1.108 | 1.161 | 0.989 | 18 | 1.173 |
| 17 | 22 | 1.187 | 12 | 1.164 | 1.131 | 0.992 | 12 | 1.190 |
| 18 | 39 | 1.172 | 18 | 1.120 | 1.075 | 0.903 | 8 | 1.168 |
| 19 | 26 | 1.222 | 4 | 1.162 | 1.138 | 0.940 | 3 | 1.182 |

BMD in children and adolescents- Male- L2-4- Lunar

# Cases

# New Case

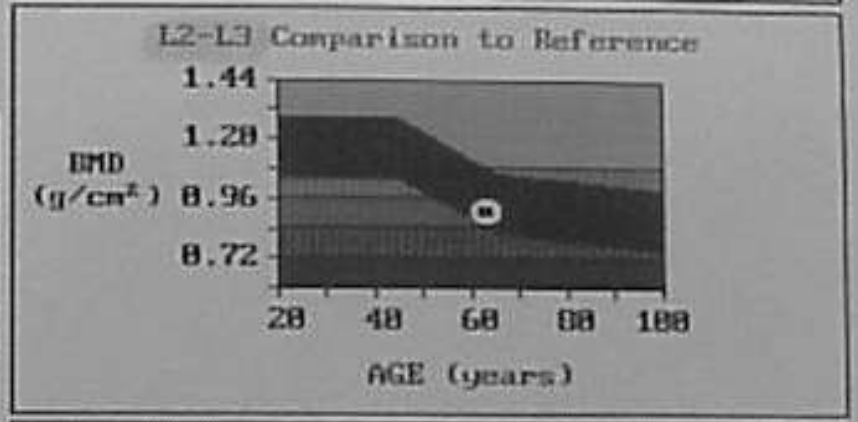
| REGION | BMD[1] g/cm² | Young Adult[2] % | Young Adult[2] Z | Age Matched[3] % | Age Matched[3] Z |
|---|---|---|---|---|---|
| L1 | 0.935 | 83 | -1.63 | 105 | 0.39 |
| L2 | 0.951 | 79 | -2.07 | 99 | -0.06 |
| L3 | 0.877 | 73 | -2.69 | 92 | -0.68 |
| L4 | 0.801 | 67 | -3.33 | 84 | -1.31 |
| L1-L2 | 0.944 | 82 | -1.72 | 104 | 0.30 |
| L1-L3 | 0.917 | 78 | -2.11 | 99 | -0.09 |
| L1-L4 | 0.887 | 75 | -2.44 | 95 | -0.43 |
| L2-L3 | 0.911 | 76 | -2.41 | 95 | -0.39 |
| L2-L4 | 0.875 | 73 | -2.71 | 91 | -0.69 |
| L3-L4 | 0.841 | 70 | -2.99 | 88 | -0.97 |

ANCILLARY SPINE RESULTS**

| Region of Interest | BMC (grams) | Area ($cm^2$) | Width (cm) | Height (cm) |
|---|---|---|---|---|
| L1 | 8.66 | 9.26 | 3.51 | 2.64 |
| L2 | 10.82 | 11.38 | 3.65 | 3.12 |
| L3 | 11.93 | 13.61 | 3.91 | 3.48 |
| L4 | 9.69 | 12.10 | 4.38 | 2.76 |
| L1-L2 | 19.48 | 20.64 | 3.58 | 5.76 |
| L1-L3 | 31.41 | 34.24 | 3.71 | 9.24 |
| L1-L4 | 41.10 | 46.34 | 3.86 | 12.00 |
| L2-L3 | 22.75 | 24.98 | 3.79 | 6.60 |
| L2-L4 | 32.44 | 37.08 | 3.96 | 9.36 |
| L3-L4 | 21.62 | 25.70 | 4.12 | 6.24 |

| REGION | BMD[1] g/cm² | Young Adult[2] % | Young Adult[2] Z | Age Matched[3] % | Age Matched[3] Z |
|---|---|---|---|---|---|
| NECK | 0.756 | 77 | -1.87 | 98 | -0.15 |
| WARDS | 0.620 | 68 | -2.23 | 97 | -0.13 |
| TROCH | 0.672 | 85 | -1.07 | 101 | 0.05 |

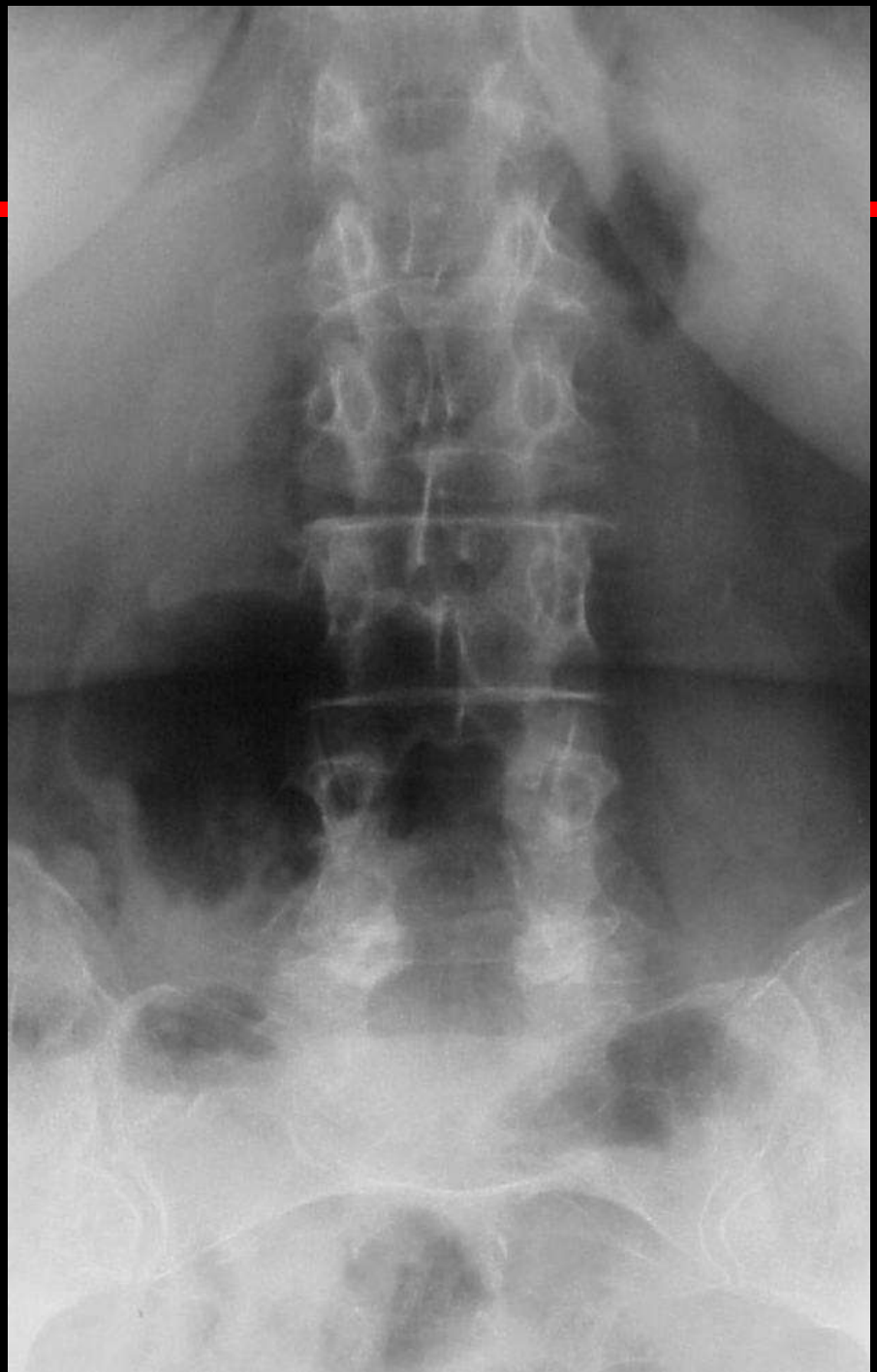

LUNAR®




| | |
|---|---|
| L2-L3 BMD (g/cm²)[1] | 0.911 ± 0.02 |
| L2-L3 % Young Adult[2] | 76 ± 3 |
| L2-L3 % Age Matched[3] | 95 ± 3 |

| | | | | | |
|---|---|---|---|---|---|
| Age (years) | 63 | Large Standard | 277.12 | Scan Mode | Medium |
| Sex | Female | Medium Standard | 284.81 | Scan Type | DPX |
| Weight (Kg) | 54.0 | Small Standard | 147.83 | Collimation (mm) | 1.48 |
| Height (cm) | 147 | Low keV Air (cps) | 855548 | Sample Size (mm) | 1.2x 1.2 |
| Ethnic | White | High keV Air (cps) | 520265 | Current (uA) | 750 |
| System | 6550 | Rvalue (%Fat) | 1.350(21.2) | | |

| REGION | BMD[1] g/cm² | Young Adult[2] % | Young Adult[2] Z | Age Matched[3] % | Age Matched[3] Z |
|---|---|---|---|---|---|
| L1 | 0.935 | 83 | -1.63 | 105 | 0.39 |
| L2 | 0.951 | 79 | -2.07 | 99 | -0.06 |
| L3 | 0.877 | 73 | -2.69 | 92 | -0.68 |
| L4 | 0.801 | 67 | -3.33 | 84 | -1.31 |
| L1-L2 | 0.944 | 82 | -1.72 | 104 | 0.30 |
| L1-L3 | 0.917 | 78 | -2.11 | 99 | -0.09 |
| L1-L4 | 0.887 | 75 | -2.44 | 95 | -0.43 |
| L2-L3 | 0.911 | 76 | -2.41 | 95 | -0.39 |
| L2-L4 | 0.875 | 73 | -2.71 | 91 | -0.69 |
| L3-L4 | 0.841 | 70 | -2.99 | 88 | -0.97 |

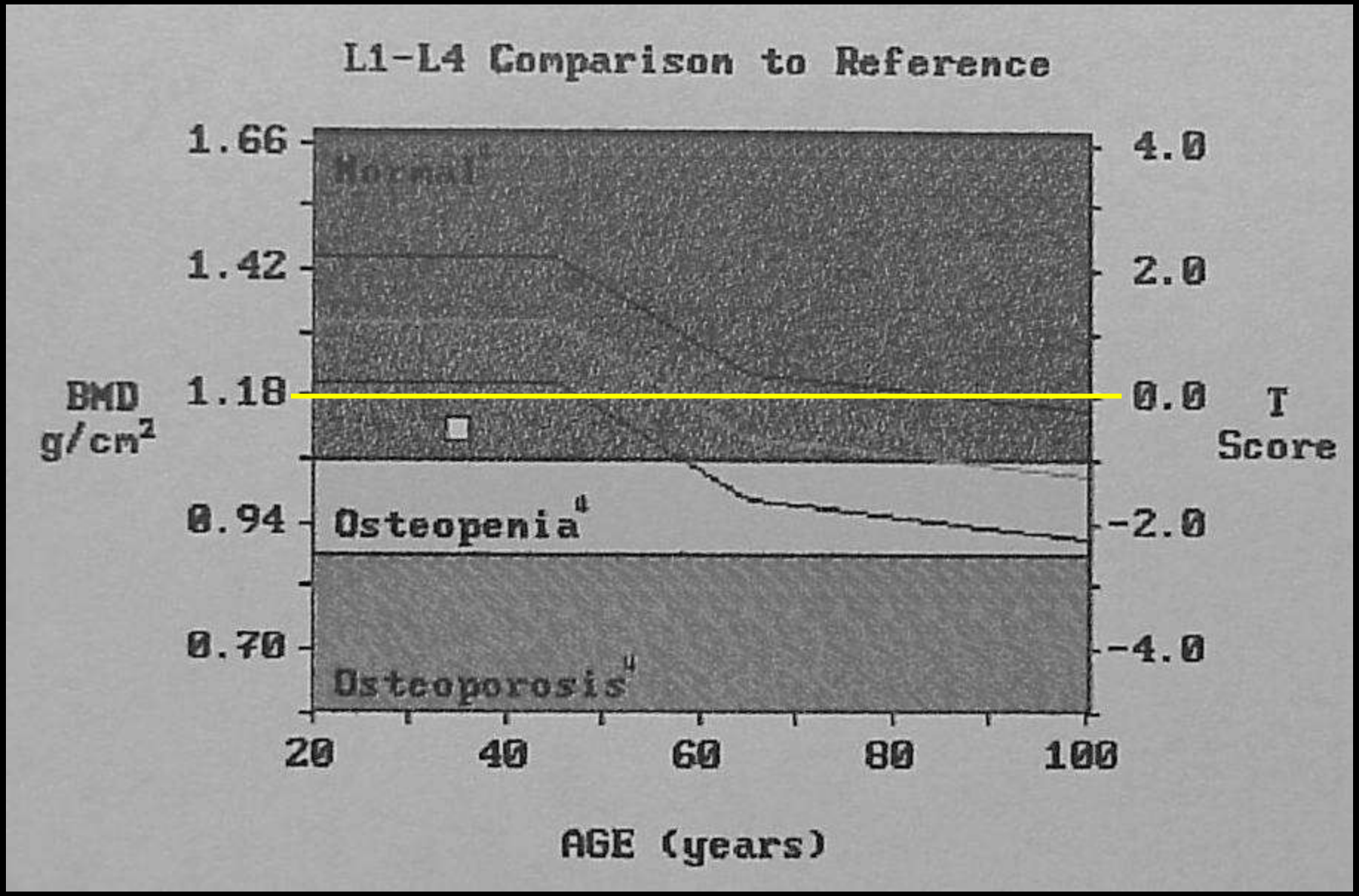


# Report

- Because of the previous laminectomy at L4, which may also be affecting the reading on the inferior aspect of L3, the BMD is averaged at L1-2. Note is also made of mild decrease in the L4 vertebral height.

# New Case

| Region | BMD[1] g/cm² | Young % | Adult[2] T | Age % | Matched[3] Z |
|---|---|---|---|---|---|
| L1 | 1.066 | 94 | -0.5 | 84 | -1.7 |
| L2 | 1.166 | 97 | -0.3 | 87 | -1.4 |
| L3 | 1.107 | 92 | -0.8 | 83 | -1.9 |
| L4 | 1.128 | 94 | -0.6 | 84 | -1.8 |
| L1-L2 | 1.116 | 97 | -0.3 | 86 | -1.5 |
| L1-L3 | 1.113 | 95 | -0.5 | 85 | -1.6 |
| L1-L4 | 1.117 | 95 | -0.5 | 85 | -1.7 |
| L2-L3 | 1.136 | 95 | -0.5 | 85 | -1.7 |
| L2-L4 | 1.132 | 94 | -0.6 | 85 | -1.7 |
| L3-L4 | 1.118 | 93 | -0.7 | 83 | -1.8 |






35F White 242lbs 62in

# Report

- Because of the patients weight, the T score may not fully represent the fracture risk, and note should be made that the Z score is 1.7 SD below age and weight matched.

# New Case

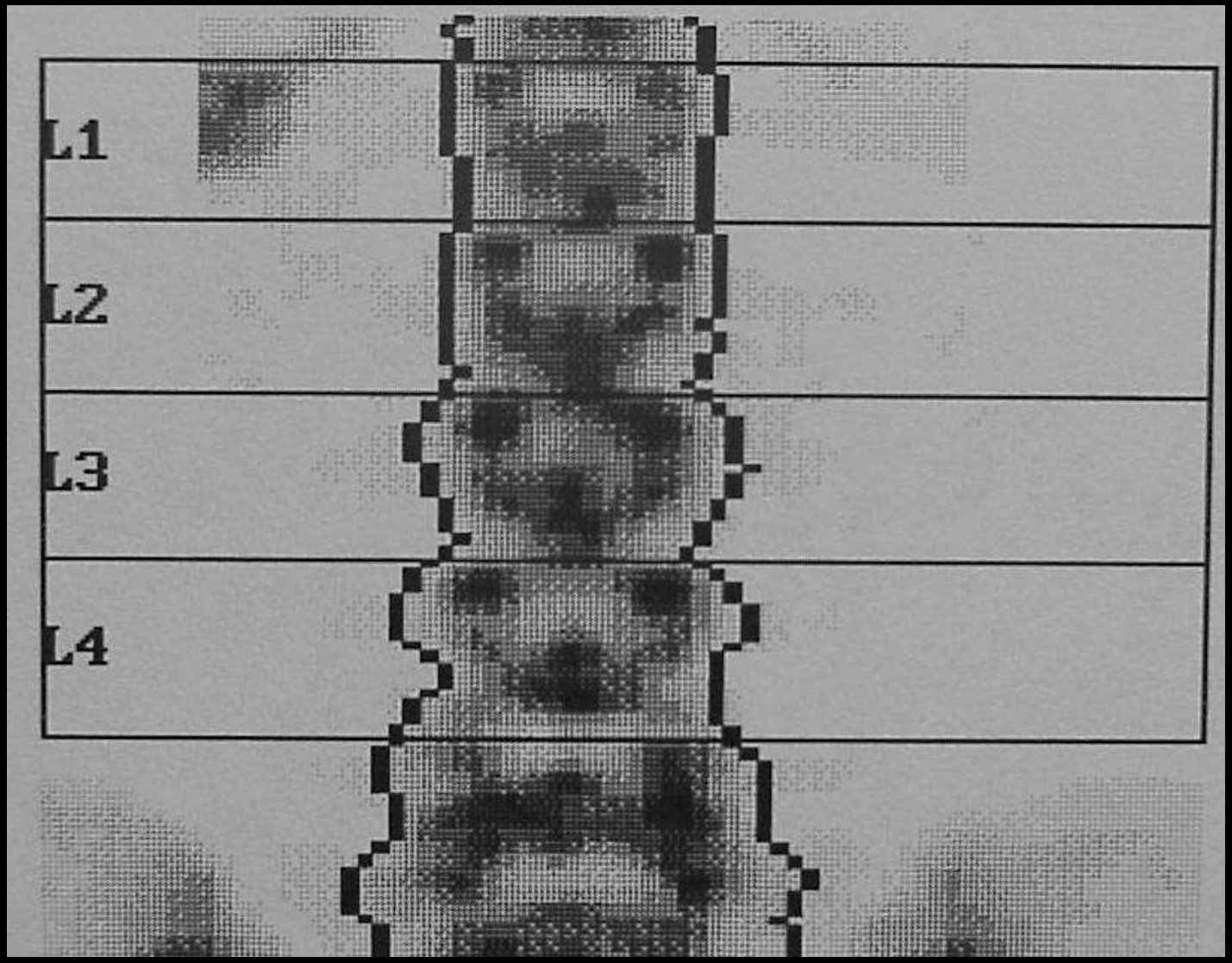
| REGION | BMD[1] g/cm² | Young Adult[2] % | Young Adult[2] Z | Age Matched[3] % | Age Matched[3] Z |
|---|---|---|---|---|---|
| NECK | 0.702 | 66 | -3.07 | 67 | -2.84 |
| WARDS | 0.736 | 77 | -1.73 | 80 | -1.43 |
| TROCH | 0.598 | 64 | -3.02 | 65 | -2.91 |

| REGION | BMD[1] g/cm² | Young Adult[2] % | Young Adult[2] Z | Age Matched[3] % | Age Matched[3] Z |
|---|---|---|---|---|---|
| L1 | 0.537 | 46 | -5.19 | 48 | -4.92 |
| L2 | 0.704 | 57 | -4.47 | 58 | -4.20 |
| L3 | 0.640 | 52 | -5.00 | 53 | -4.74 |
| L4 | 0.653 | 53 | -4.89 | 54 | -4.62 |
| L1-L2 | 0.627 | 52 | -4.77 | 54 | -4.50 |
| L1-L3 | 0.632 | 52 | -4.82 | 54 | -4.55 |
| L1-L4 | 0.637 | 52 | -4.86 | 54 | -4.59 |
| L2-L3 | 0.673 | 54 | -4.73 | 56 | -4.46 |
| L2-L4 | 0.666 | 54 | -4.78 | 55 | -4.52 |
| L3-L4 | 0.647 | 52 | -4.95 | 54 | -4.68 |

# Report

- The very low bone density is compatible with the known diagnosis of osteogenesis imperfecta.

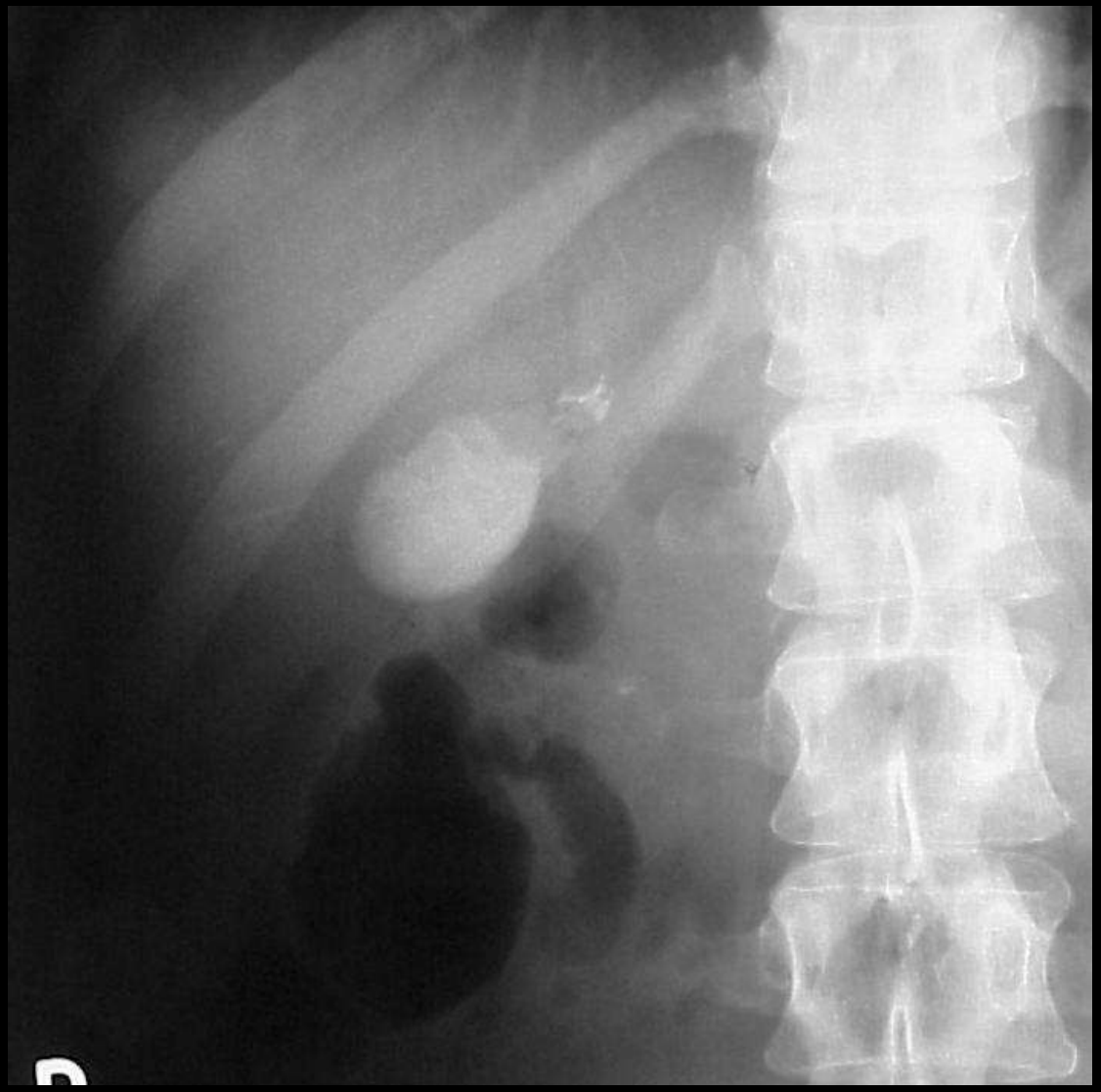
# New Case






46 F

| REGION | BMD[1] g/cm² | Young Adult[2] % | Young Adult[2] T | Age Matched[3] % | Age Matched[3] Z |
|---|---|---|---|---|---|
| L1 | 1.421 | 126 | 2.42 | 131 | 2.81 |
| L2 | 1.490 | 124 | 2.41 | 129 | 2.81 |
| L3 | 1.520 | 127 | 2.67 | 132 | 3.06 |
| L4 | 1.481 | 123 | 2.35 | 128 | 2.74 |
| L1-L2 | 1.457 | 127 | 2.56 | 132 | 2.95 |
| L1-L3 | 1.480 | 126 | 2.58 | 132 | 2.98 |
| L1-L4 | 1.480 | 125 | 2.50 | 131 | 2.90 |
| L2-L3 | 1.506 | 125 | 2.55 | 131 | 2.94 |
| L2-L4 | 1.496 | 125 | 2.47 | 130 | 2.86 |
| L3-L4 | 1.499 | 125 | 2.49 | 130 | 2.89 |





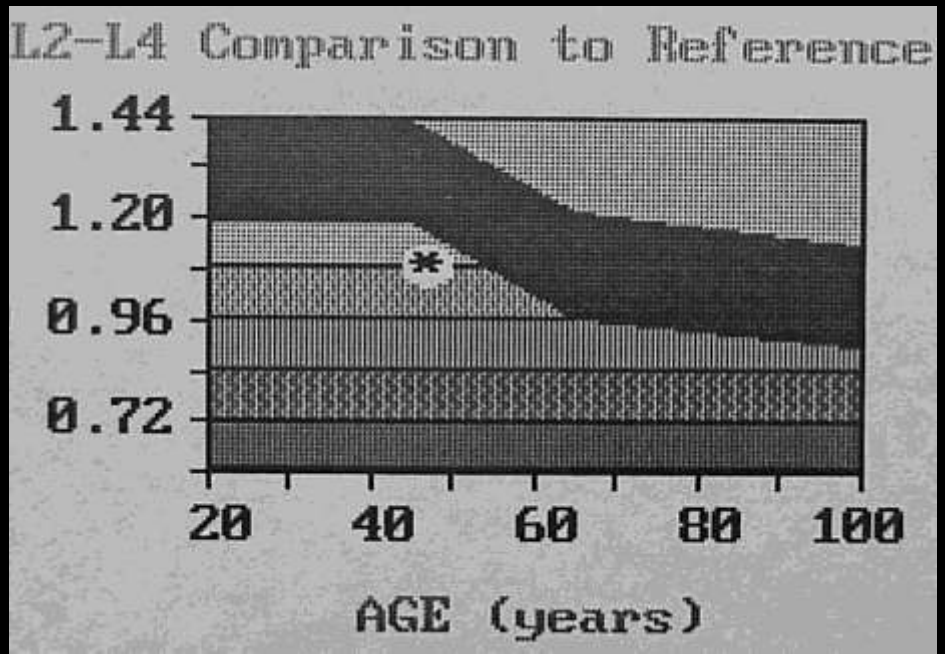
46 F Calcified bile

# Report

- Although the calcified bile is seen on the DEXA scan, it is outside the measured region and will not affect the reading.

# New Case

| REGION | BMD[1] g/cm² | Young Adult[2] % | Young Adult[2] T | Age Matched[3] % | Age Matched[3] Z |
|---|---|---|---|---|---|
| L1 | 0.954 | 84 | -1.47 | 79 | -2.08 |
| L2 | 0.997 | 83 | -1.69 | 78 | -2.35 |
| L3 | 1.166 | 97 | -0.28 | 91 | -0.93 |
| L4 | 1.112 | 93 | -0.73 | 87 | -1.38 |
| L1-L2 | 0.977 | 85 | -1.44 | 80 | -2.07 |
| L1-L3 | 1.045 | 89 | -1.04 | 84 | -1.68 |
| L1-L4 | 1.064 | 90 | -0.96 | 85 | -1.60 |




Black

# Report

- The Z score is worse than the T score at all levels because the the Z score is compared to weight and ethnicity and African American  females naturally have a higher bone density than the standard Caucasian used for the T score, even at the age of 47.

# New Case

| SCAN DATE | REGION | BMD g/cm2 | % YOUNG ADULT | % AGE MATCHED |
|---|---|---|---|---|
| 13.02.1996 | L2-L4 | 1.279 | 107 | 112 |
| 08.10.1998 | L2-L4 | 1.307 | 109 | 118 |
| 13.02.1996 | NECK | 0.842 | 86 | 93 |
| 08.10.1998 | NECK | 0.788 | 80 | 89 |



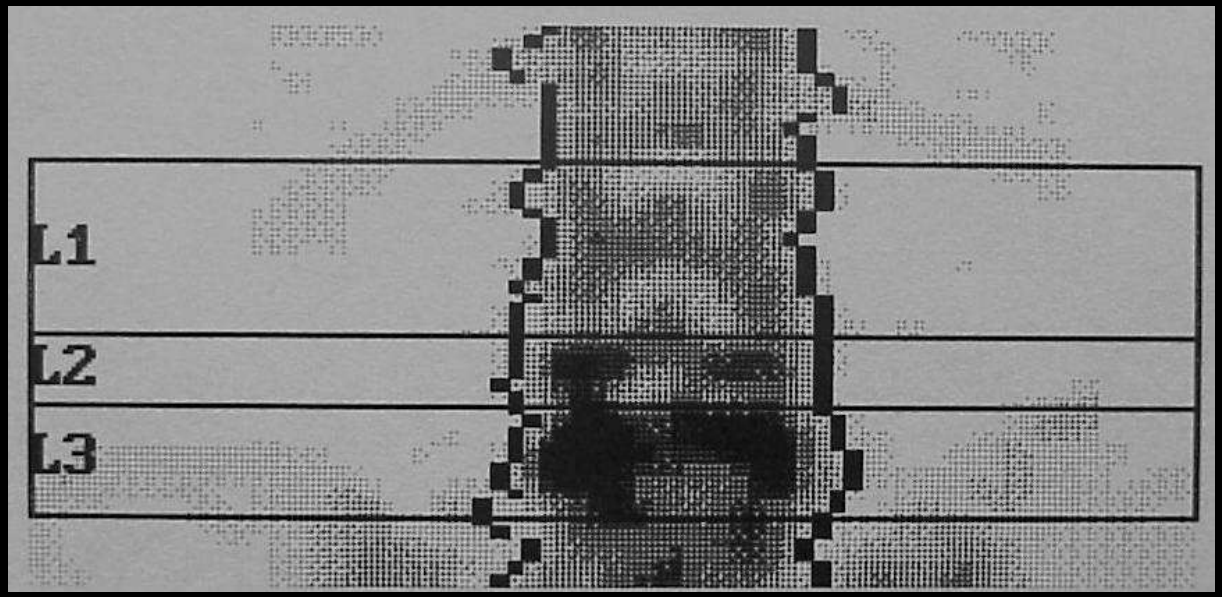
49F 2Y8M gap Lx spine up, Fem neck down

# Report

- A common cause for the bone density of the lumbar spine to increase whilst that of the femoral neck decreases over time is, the development of lower lumbar spine end plate sclerosis and facet osteophytes.

# New Case

| REGION | BMD[1] g/cm² | Young Adult[2] % | Young Adult[2] Z | Age Matched[3] % | Age Matched[3] Z |
|---|---|---|---|---|---|
| L1 | 1.168 | 103 | 0.32 | 118 | 1.48 |
| L2 | 1.574 | 131 | 3.12 | 149 | 4.28 |
| L3 | 2.096 | 175 | 7.46 | 198 | 8.63 |
| L1-L2 | 1.299 | 113 | 1.24 | 129 | 2.41 |
| L1-L3 | 1.571 | 134 | 3.35 | 153 | 4.51 |
| L2-L3 | 1.896 | 158 | 5.80 | 179 | 6.97 |



# Report

- It is likely that only L1 represents close to true bone density and use of femoral neck measurements alone is recommended.

# New Case

| REGION | BMD[1] g/cm² | Young Adult[2] % | Young Adult[2] Z | Age Matched[3] % | Age Matched[3] Z |
|---|---|---|---|---|---|
| L1 | 1.075 | 95 | -0.45 | 99 | -0.10 |
| L2 | 1.247 | 104 | 0.39 | 108 | 0.75 |
| L3 | 1.235 | 103 | 0.29 | 107 | 0.65 |
| L4 | 1.132 | 94 | -0.57 | 98 | -0.21 |
| L1-L2 | 1.162 | 101 | 0.10 | 105 | 0.46 |
| L1-L3 | 1.192 | 102 | 0.19 | 106 | 0.55 |
| L1-L4 | 1.175 | 100 | -0.04 | 103 | 0.32 |
| L2-L3 | 1.240 | 103 | 0.33 | 107 | 0.69 |
| L2-L4 | 1.201 | 100 | 0.01 | 104 | 0.37 |
| L3-L4 | 1.185 | 99 | -0.13 | 102 | 0.23 |

| REGION | BMD[1] g/cm² | Young Adult[2] % | Young Adult[2] Z | Age Matched[3] % | Age Matched[3] Z |
|---|---|---|---|---|---|
| NECK | 1.685 | 172 | 5.87 | 183 | 6.38 |
| WARDS | 1.973 | 217 | 8.18 | 244 | 8.95 |
| TROCH | 1.286 | 163 | 4.51 | 166 | 4.65 |




50F dense R femoral neck

# Report

- In view of the significant discrepancy between the right femoral neck and lumbar spine measurements , radiographs of the right hip/pelvis are recommended.

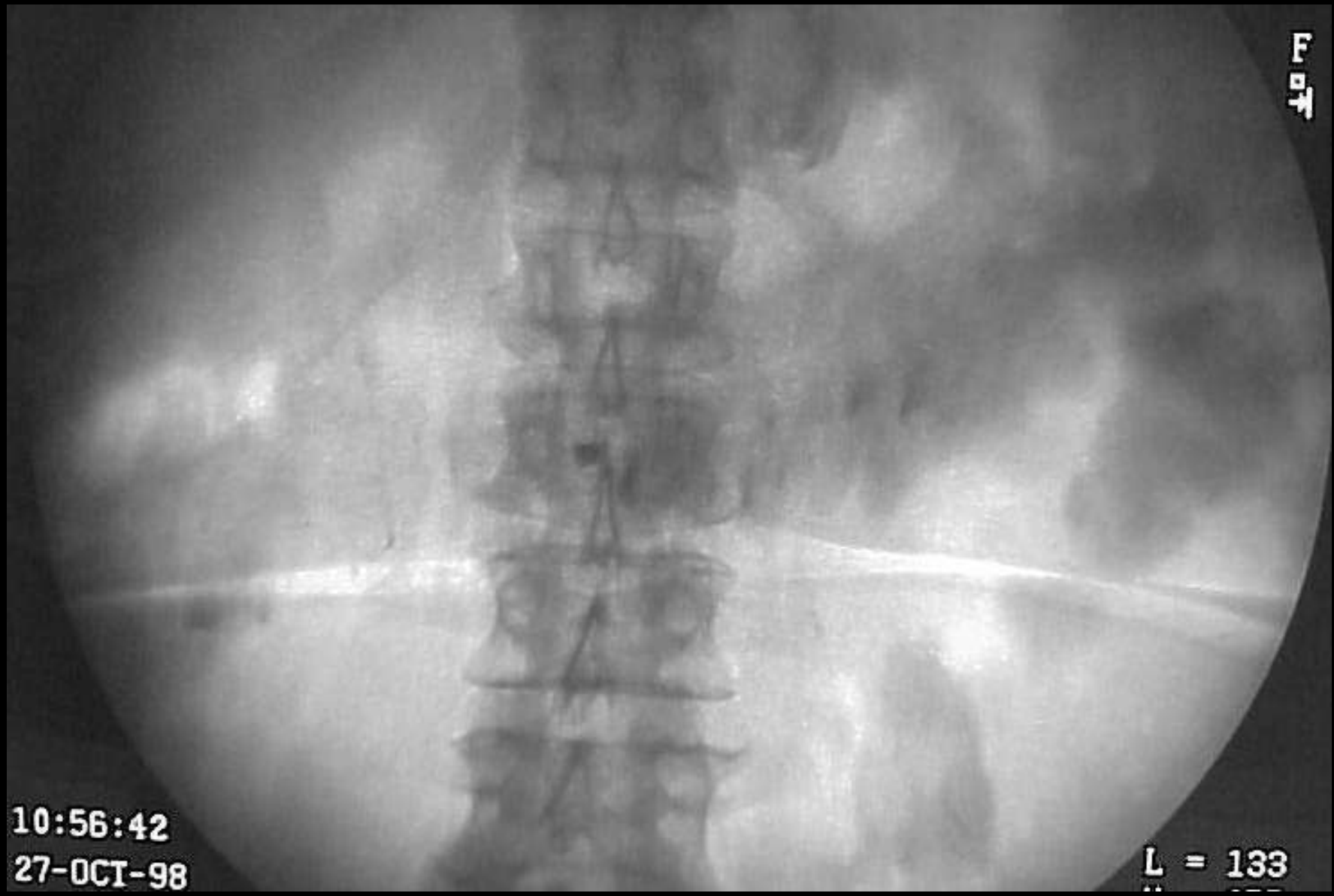
# New Case

2d earlier

| REGION | BMD[1] g/cm² | Young Adult[2] % | Young Adult[2] Z | Age Matched[3] % | Age Matched[3] Z |
|---|---|---|---|---|---|
| L1 | 1.148 | 102 | 0.15 | 106 | 0.53 |
| L2 | 1.299 | 108 | 0.82 | 113 | 1.21 |
| L3 | 1.233 | 103 | 0.27 | 107 | 0.65 |
| L4 | 1.099 | 92 | -0.84 | 95 | -0.46 |
| L1-L2 | 1.225 | 106 | 0.62 | 111 | 1.00 |
| L1-L3 | 1.227 | 105 | 0.48 | 109 | 0.86 |
| L1-L4 | 1.191 | 101 | 0.09 | 105 | 0.48 |
| L2-L3 | 1.264 | 105 | 0.53 | 110 | 0.92 |
| L2-L4 | 1.204 | 100 | 0.03 | 104 | 0.41 |
| L3-L4 | 1.162 | 97 | -0.31 | 101 | 0.07 |

2d later

| REGION | BMD[1] g/cm² | Young Adult[2] % | Young Adult[2] Z | Age Matched[3] % | Age Matched[3] Z |
|---|---|---|---|---|---|
| L1 | 1.132 | 100 | 0.02 | 104 | 0.40 |
| L2 | 1.243 | 104 | 0.35 | 108 | 0.74 |
| L3 | 1.253 | 104 | 0.44 | 109 | 0.83 |
| L4 | 1.109 | 92 | -0.76 | 96 | -0.37 |
| L1-L2 | 1.190 | 103 | 0.33 | 108 | 0.71 |
| L1-L3 | 1.213 | 104 | 0.36 | 108 | 0.74 |
| L1-L4 | 1.183 | 100 | 0.02 | 104 | 0.41 |
| L2-L3 | 1.248 | 104 | 0.40 | 108 | 0.78 |
| L2-L4 | 1.197 | 100 | -0.03 | 104 | 0.36 |
| L3-L4 | 1.178 | 98 | -0.19 | 102 | 0.20 |




2 51F Barium in diverticulum from recent enema

# Report

- It was noticed that the patient has had a recent barium study and that barium may therefore falsely elevate the bone density.  A repeat study is therfore recommended.

# New Case

53F

51Kg

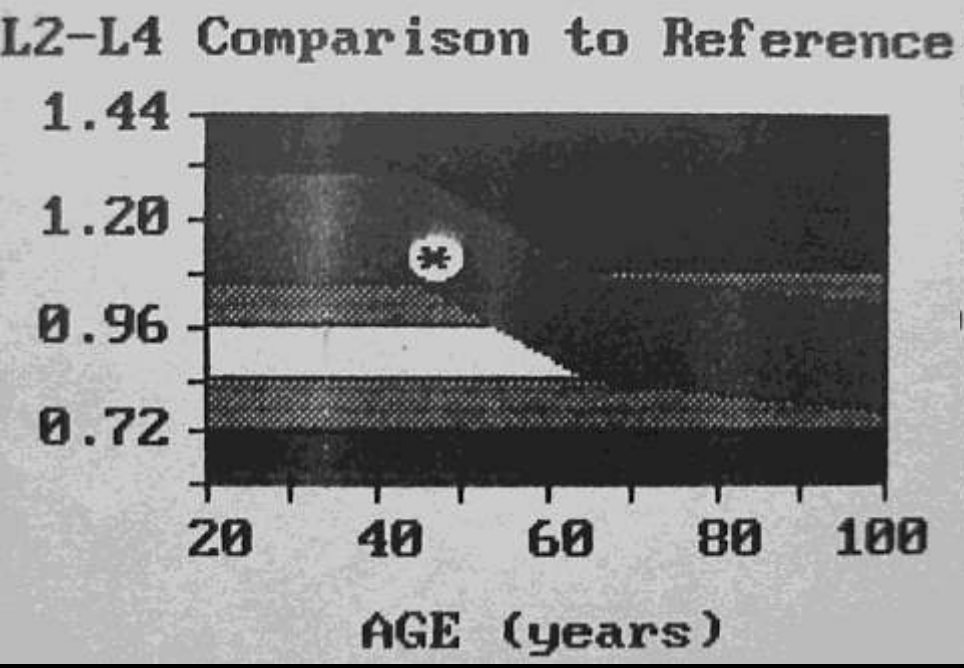
6 yr later, 8Kg wt loss

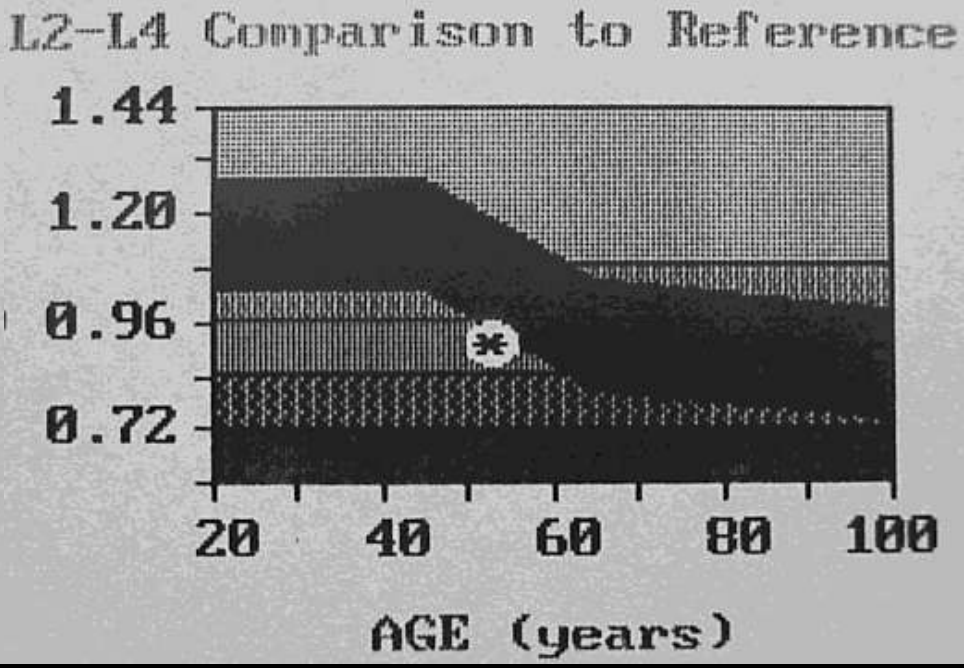
| REGION | BMD[1] g/cm² | Young Adult[2] % | Young Adult[2] Z | Age Matched[3] % | Age Matched[3] Z |
|---|---|---|---|---|---|
| L1 | 0.877 | 78 | -2.11 | 89 | -0.91 |
| L2 | 0.945 | 79 | -2.12 | 90 | -0.92 |
| L3 | 0.968 | 81 | -1.93 | 92 | -0.73 |
| L4 | 0.818 | 68 | -3.19 | 77 | -1.99 |
| L1-L2 | 0.914 | 79 | -1.97 | 91 | -0.77 |
| L1-L3 | 0.935 | 80 | -1.96 | 91 | -0.76 |
| L1-L4 | 0.903 | 77 | -2.30 | 87 | -1.10 |
| L2-L3 | 0.958 | 80 | -2.02 | 91 | -0.82 |
| L2-L4 | 0.911 | 76 | -2.41 | 86 | -1.21 |
| L3-L4 | 0.895 | 75 | -2.54 | 85 | -1.34 |

47F

59Kg

| REGION | BMD[1] g/cm² | Young Adult[2] % | Young Adult[2] Z | Age Matched[3] % | Age Matched[3] Z |
|---|---|---|---|---|---|
| L1 | 1.085 | 96 | -0.38 | 100 | 0.00 |
| L2 | 1.165 | 97 | -0.29 | 101 | 0.09 |
| L3 | 1.194 | 100 | -0.05 | 103 | 0.33 |
| L4 | 0.993 | 83 | -1.72 | 86 | -1.34 |
| L1-L2 | 1.125 | 98 | -0.20 | 102 | 0.18 |
| L1-L3 | 1.150 | 98 | -0.16 | 102 | 0.22 |
| L1-L4 | 1.109 | 94 | -0.59 | 98 | -0.21 |
| L2-L3 | 1.180 | 98 | -0.16 | 102 | 0.22 |
| L2-L4 | 1.116 | 93 | -0.70 | 97 | -0.32 |
| L3-L4 | 1.094 | 91 | -0.88 | 95 | -0.50 |




47F

59Kg

53F

51Kg

# Report

- As the patient loses weight the T score worsens at a faster rate than the Z score because the reference range for the Z score also is lowered.

- However with the loss of weight the fracture risk does not increase as much as the T score worsens.

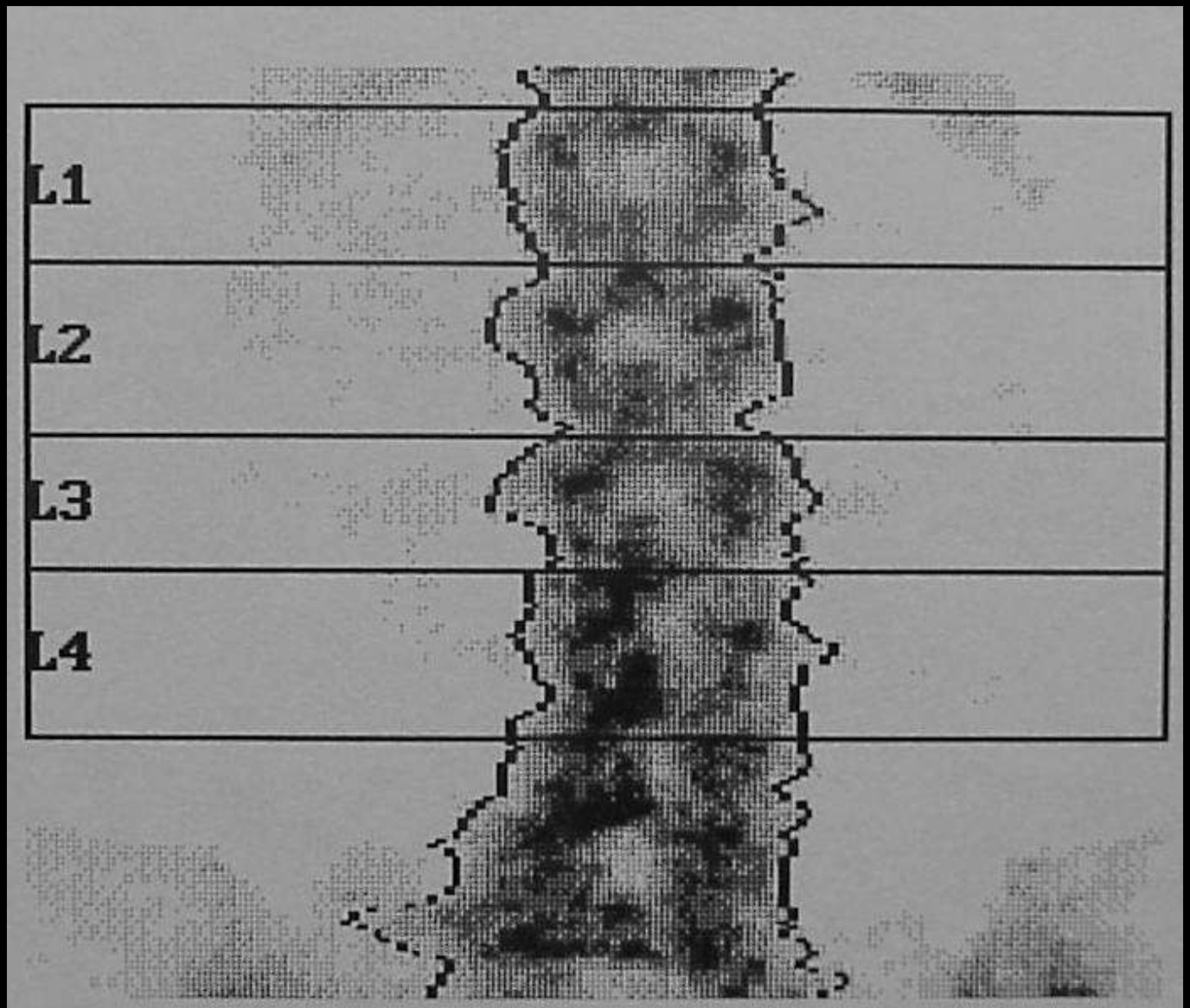


6 yr later, 8Kg wt loss

# New Case

| REGION | BMD[1] g/cm² | Young Adult[2] % | Young Adult[2] Z | Age Matched[3] % | Age Matched[3] Z |
|---|---|---|---|---|---|
| L1 | 1.314 | 116 | 1.53 | 133 | 2.74 |
| L2 | 1.521 | 127 | 2.68 | 144 | 3.89 |
| L3 | 1.525 | 127 | 2.71 | 145 | 3.91 |
| L4 | 1.771 | 148 | 4.76 | 168 | 5.96 |
| L1-L2 | 1.421 | 124 | 2.26 | 141 | 3.47 |
| L1-L3 | 1.453 | 124 | 2.36 | 142 | 3.57 |
| L1-L4 | 1.540 | 131 | 3.00 | 149 | 4.21 |
| L2-L3 | 1.523 | 127 | 2.69 | 144 | 3.90 |
| L2-L4 | 1.613 | 134 | 3.44 | 153 | 4.65 |
| L3-L4 | 1.660 | 138 | 3.84 | 157 | 5.04 |

| REGION | BMD[1] g/cm² | Young Adult[2] % | Young Adult[2] Z | Age Matched[3] % | Age Matched[3] Z |
|---|---|---|---|---|---|
| NECK | 1.195 | 122 | 1.79 | 138 | 2.74 |
| WARDS | 1.003 | 110 | 0.71 | 136 | 2.05 |
| TROCH | 0.878 | 111 | 0.80 | 117 | 1.16 |


L1
L2
L3
L4

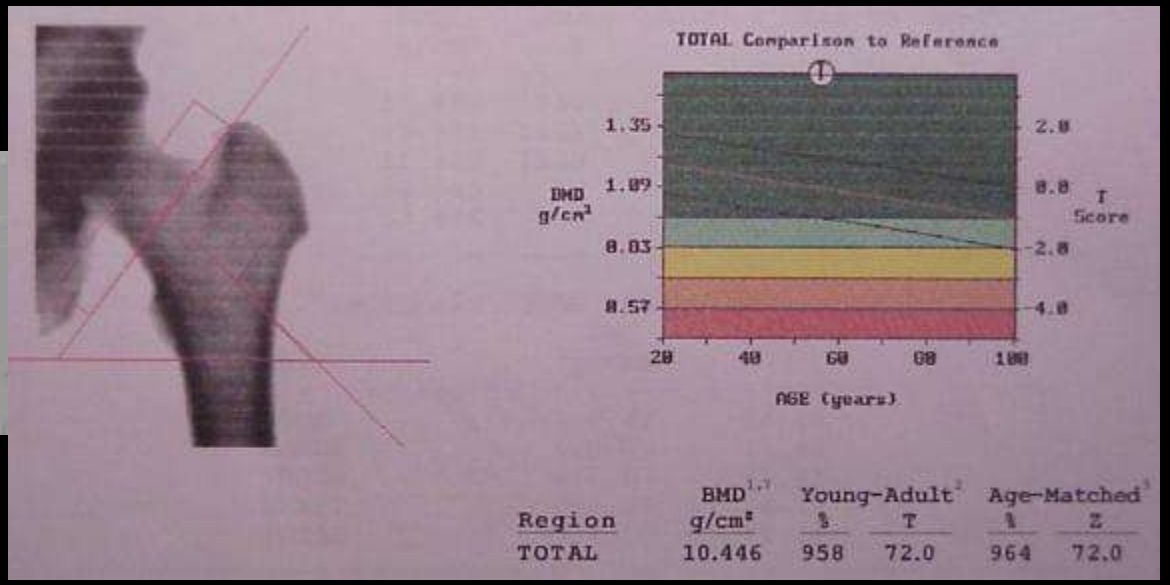
# Report

- Because of lower lumbar spine degenerative changes the lumbar spine should not be included in the study.

# New Case

ANCILLARY FEMUR RESULTS**

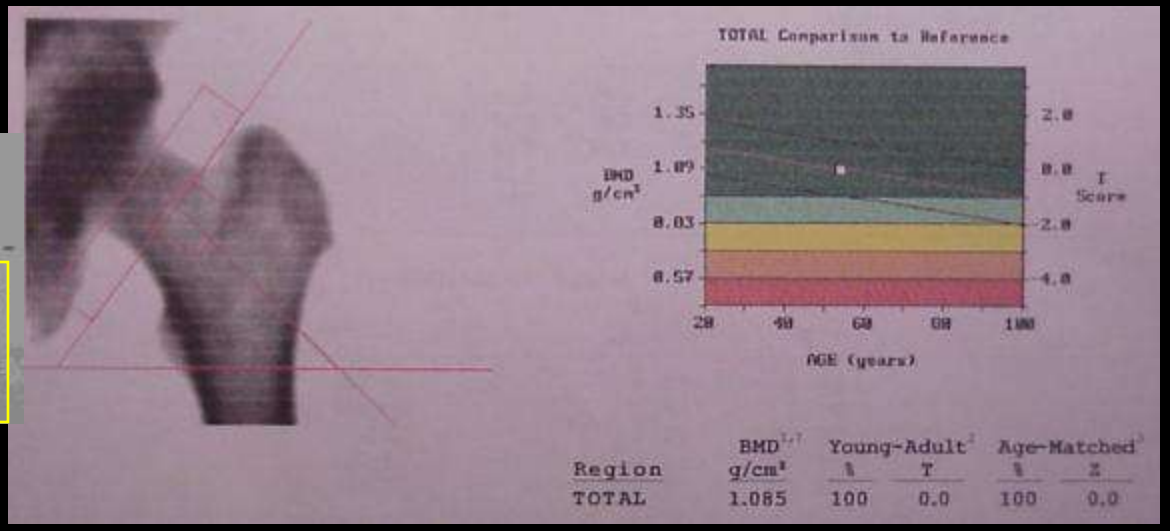
| Region | BMC (grams) | Area (cm²) |
|---|---|---|
| NECK | 106.33 | 10.14 |
| WARDS | 126.59 | 11.43 |
| TROCH | 415.57 | 39.91 |
| SHAFT | 232.23 | 22.14 |
| TOTAL | 754.13 | 72.19 |



# New Case

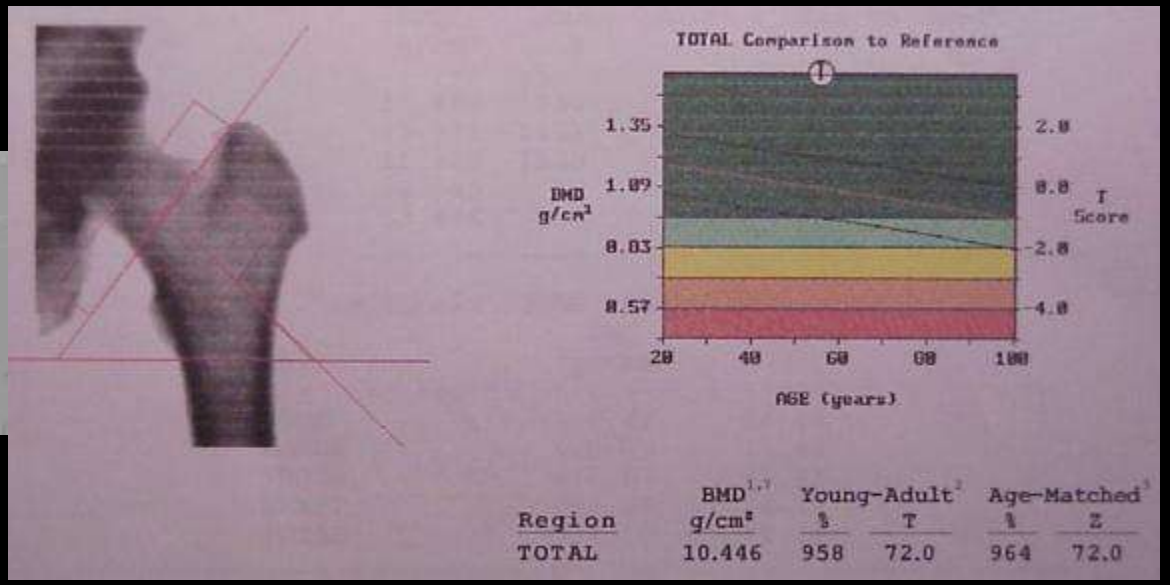
ANCILLARY FEMUR RESULTS**

| Region | BMC (grams) | Area (cm²) |
|---|---|---|
| NECK | 5.42 | 5.34 |
| WARDS | 2.60 | 3.16 |
| TROCH | 18.21 | 18.35 |
| SHAFT | 18.64 | 15.28 |
| TOTAL | 42.27 | 38.97 |




ANCILLARY FEMUR RESULTS**

| Region | BMC (grams) | Area (cm²) |
|---|---|---|
| NECK | 106.33 | 10.14 |
| WARDS | 126.59 | 11.43 |
| TROCH | 415.57 | 39.91 |
| SHAFT | 232.23 | 22.14 |
| TOTAL | 754.13 | 72.19 |






Rec. repeat

54M ESLD s/p trans

# Report

- Only technical error could account for such a finding and therefore repeat study is recommended.

# New Case

15m earlier

| REGION | BMD[1] g/cm² | Young Adult[2] % | T |
|---|---|---|---|
| L1 | 0.703 | 62 | -3.56 |
| L2 | 0.735 | 61 | -3.87 |
| L3 | 0.797 | 66 | -3.36 |
| L4 | 0.788 | 66 | -3.43 |
| L1-L2 | 0.721 | 63 | -3.58 |
| L1-L3 | 0.748 | 64 | -3.52 |
| L1-L4 | 0.760 | 64 | -3.50 |
| L2-L3 | 0.767 | 64 | -3.61 |
| L2-L4 | 0.775 | 65 | -3.55 |
| L3-L4 | 0.792 | 66 | -3.40 |

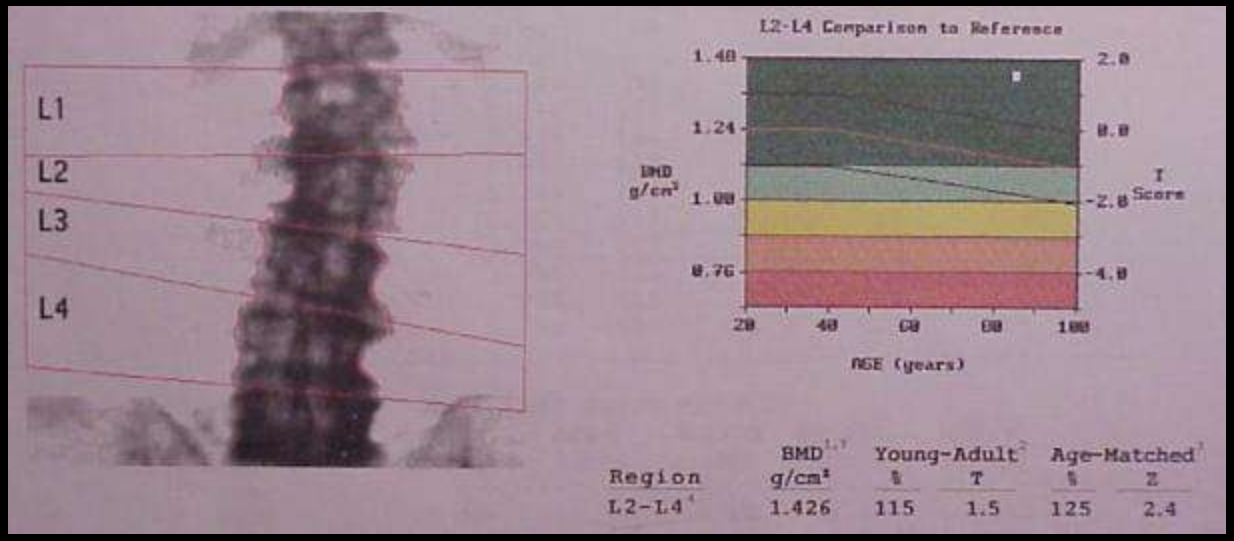
15m later

| REGION | BMD[1] g/cm² | Young Adult[2] % | T |
|---|---|---|---|
| L1 | 0.716 | 63 | -3.45 |
| L2 | 0.790 | 66 | -3.42 |
| L3 | 0.836 | 70 | -3.03 |
| L4 | 0.875 | 73 | -2.71 |
| L1-L2 | 0.755 | 66 | -3.29 |
| L1-L3 | 0.784 | 67 | -3.22 |
| L1-L4 | 0.811 | 69 | -3.08 |
| L2-L3 | 0.813 | 68 | -3.22 |
| L2-L4 | 0.837 | 70 | -3.03 |
| L3-L4 | 0.857 | 71 | -2.86 |

# Report

- If all levels increase in bone density over time, it is likely a response to treatment.

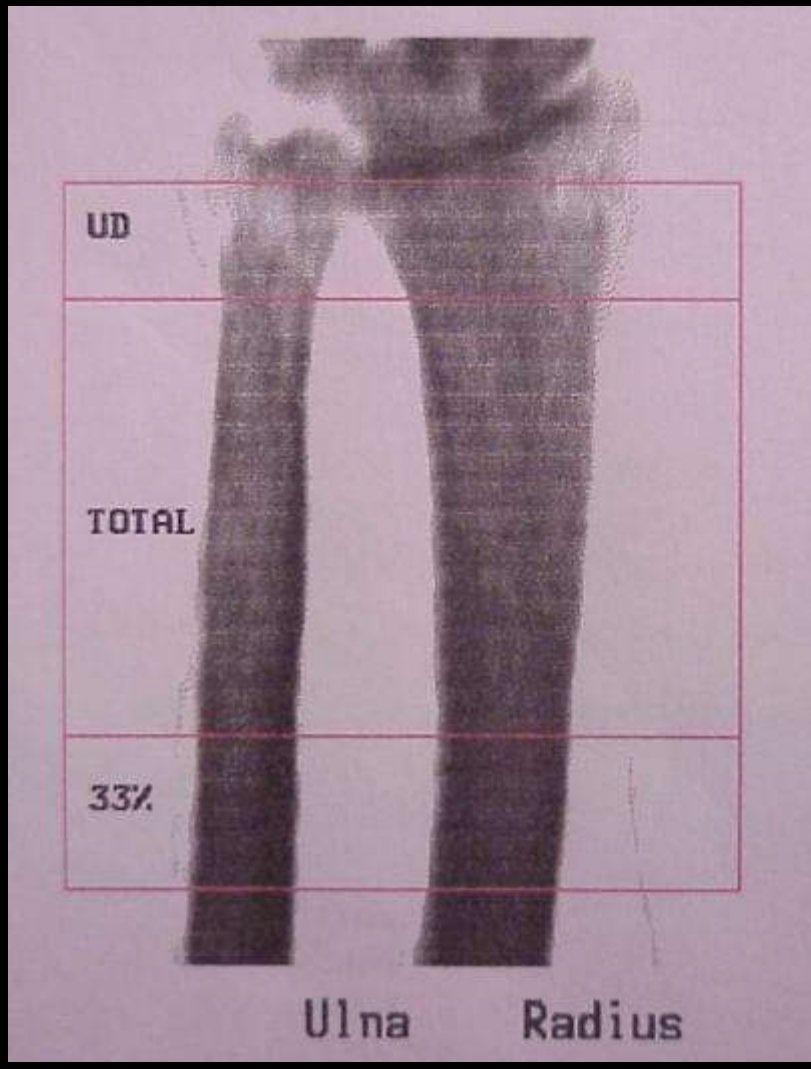
# New Case




| Region | BMD[1] g/cm² | Young Adult[2] % | T |
|---|---|---|---|
| L1 | 1.129 | 97 | -0.3 |
| L2 | 1.380 | 111 | 1.2 |
| L3 | 1.414 | 114 | 1.5 |
| L4 | 1.471 | 119 | 1.9 |
| L1-L2 | 1.249 | 104 | 0.4 |
| L1-L3 | 1.304 | 108 | 0.8 |
| L1-L4 | 1.353 | 111 | 1.1 |
| L2-L3 | 1.398 | 113 | 1.3 |
| L2-L4 | 1.426 | 115 | 1.5 |
| L3-L4 | 1.446 | 117 | 1.7 |

| Height (cm) | BMC/W (g/cm) |
|---|---|
| 3.48 | 3.93 |
| 2.76 | 3.81 |
| 3.12 | 4.41 |
| 3.60 | 5.30 |

| Region | | BMD[1,6] g/cm² | Young % | Adult[2] T |
|---|---|---|---|---|
| RADIUS | UD | 0.317 | 75 | -2.6 |
| ULNA | UD | 0.234 | - | - |
| BOTH | UD | 0.294 | - | - |
| RADIUS | 33% | 0.608 | 75 | -2.5 |
| ULNA | 33% | 0.640 | - | - |
| BOTH | 33% | 0.622 | - | - |
| RADIUS | TOTAL | 0.440 | 72 | -3.1 |
| ULNA | TOTAL | 0.440 | - | - |
| BOTH | TOTAL | 0.440 | - | - |

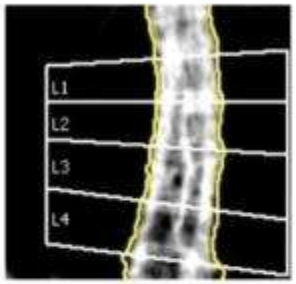


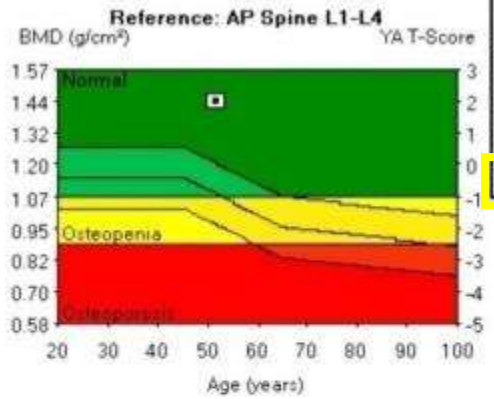
# Report

- When the lumbar spine and hips cannot be used we turn to the distal radius and use the ultradistal measurement.

# New Case

| | | | | | |
|---|---|---|---|---|---|
| Height / Weight: | 59.0 in. | 117.0 lbs. | Measured: | 10/4/2006 | 2:33:29 PM (9.30) |
| Sex / Ethnic: | Female | Asian | Analyzed: | 10/4/2006 | 2:42:38 PM (9.30) |

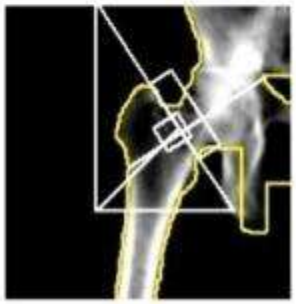


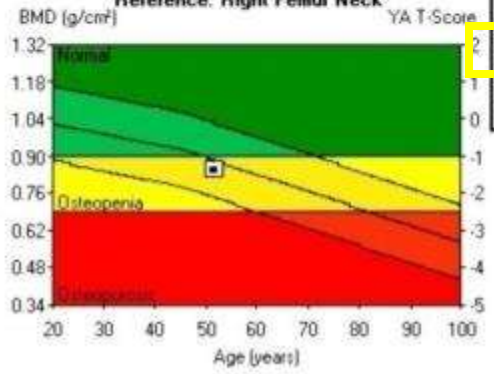




| Region | BMD (g/cm²) | Young-Adult T-Score | Age-Matched Z-Score |
|---|---|---|---|
| L1 | 1.543 | 3.3 | 4.2 |
| L2 | 1.585 | 3.1 | 4.0 |
| L3 | 1.469 | 2.0 | 2.9 |
| L1-L4 | 1.446 | 2.0 | 2.9 |

Matched for Age, Weight (females 25-100 kg), Ethnic
NHANES (ages 20-30) / USA (ages 20-40) AP Spine Reference Population (v105)
Statistically 68% of repeat scans fall within 1SD (± 0.010 g/cm² for AP Spine L1-L4)

Image not for diagnosis






| Region | BMD (g/cm²) | Young-Adult T-Score | Age-Matched Z-Score |
|---|---|---|---|
| Neck | 0.846 | -1.4 | -0.3 |
| Troch | 0.630 | -1.9 | -1.0 |
| Total | 0.822 | -1.5 | -0.7 |

Matched for Age, Weight (females 25-100 kg), Ethnic
NHANES (ages 20-30) / USA (ages 20-40) Femur Reference Population (v105)
Statistically 68% of repeat scans fall within 1SD (± 0.014 g/cm² for Right Femur Neck)

| | | | | | |
|---|---|---|---|---|---|
| Height / Weight: | 59.0 in. | 117.0 lbs. | Measured: | 10/4/2006 | 2:33:29 PM (9.30) |
| Sex / Ethnic: | Female | Asian | Analyzed: | 10/4/2006 | 2:42:38 PM (9.30) |

## ANCILLARY RESULTS [AP Spine]

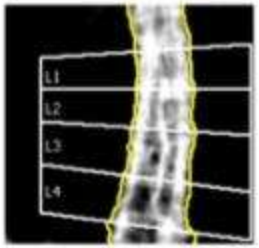
| Region | BMD [1] (g/cm²) | Young-Adult [2] (%) | Young-Adult [2] T-Score | Age-Matched [3] (%) | Age-Matched [3] Z-Score | BMC (g) | Area (cm²) | Width (cm) | Height (cm) |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 1.543 | 135 | 3.3 | 150 | 4.2 | 17.95 | 11.63 | 4.1 | 2.86 |
| L2 | 1.585 | 131 | 3.1 | 144 | 4.0 | 18.62 | 11.75 | 4.3 | 2.74 |
| L3 | 1.469 | 120 | 2.0 | 132 | 2.9 | 24.73 | 16.83 | 4.6 | 3.67 |
| L4 | 1.266 | 104 | 0.4 | 114 | 1.3 | 22.29 | 17.61 | 5.1 | 3.49 |
| L1-L2 | 1.565 | 133 | 3.2 | 147 | 4.1 | 36.57 | 23.38 | 4.2 | 5.60 |
| L1-L3 | 1.525 | 129 | 2.8 | 142 | 3.7 | 61.30 | 40.21 | 4.3 | 9.26 |
| L1-L4 | 1.446 | 121 | 2.0 | 133 | 2.9 | 83.59 | 57.82 | 4.5 | 12.75 |
| L2-L3 | 1.517 | 125 | 2.5 | 137 | 3.4 | 43.35 | 28.58 | 4.4 | 6.41 |
| L2-L4 | 1.421 | 116 | 1.6 | 128 | 2.6 | 65.64 | 46.19 | 4.6 | 9.89 |
| L3-L4 | 1.365 | 112 | 1.2 | 123 | 2.1 | 47.02 | 34.44 | 4.8 | 7.15 |

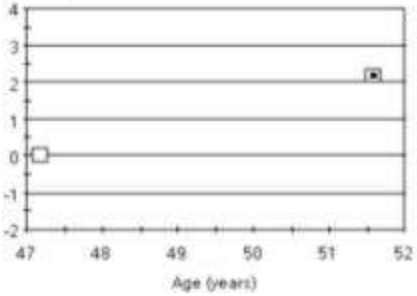
| | | | | | |
|---|---|---|---|---|---|
| Height / Weight: | 59.0 in. | 117.0 lbs. | Measured: | 10/4/2006 | 2:35:41 PM (9.30) |
| Sex / Ethnic: | Female | Asian | Analyzed: | 10/4/2006 | 2:42:39 PM (9.30) |

## ANCILLARY RESULTS [Right Femur]

| Region | BMD [1] (g/cm²) | Young-Adult [2] (%) | Young-Adult [2] T-Score | Age-Matched [3] (%) | Age-Matched [3] Z-Score | BMC (g) | Area (cm²) |
|---|---|---|---|---|---|---|---|
| Neck | 0.846 | 81 | -1.4 | 96 | -0.3 | 4.26 | 5.03 |
| Upper Neck | 0.664 | 83 | -1.1 | 96 | -0.2 | 1.72 | 2.51 |
| Wards | 0.633 | 70 | -2.1 | 85 | -0.9 | 1.78 | 2.81 |
| Troch | 0.630 | 74 | -1.9 | 84 | -1.0 | 7.27 | 11.54 |
| Shaft | 0.976 | - | - | - | - | 13.35 | 13.67 |
| Total | 0.822 | 82 | -1.5 | 91 | -0.7 | 24.87 | 30.24 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Height / Weight: | 59.0 in. | 117.0 lbs. | Measured: | 10/4/2006 | 2:33:29 PM | (9.30) |
| Sex / Ethnic: | Female | Asian | Analyzed: | 10/4/2006 | 2:42:38 PM | (9.30) |

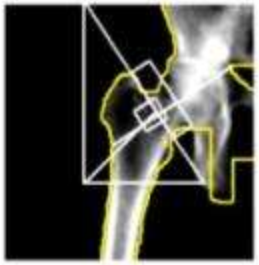


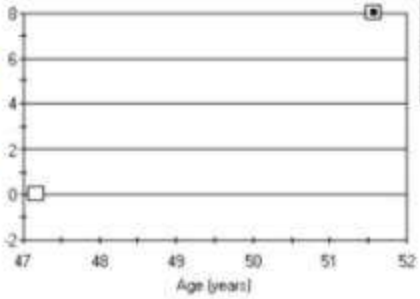




| Trend: L1-L4 | | | | |
|---|---|---|---|---|
| | | | Change vs | |
| Measured Date | Age (years) | BMD (g/cm²) | Previous (g/cm²) | Previous (%) |
| 10/4/2006 | 51.5 | 1.446 | 0.031 | 2.2 |
| 5/2/2002 | 47.1 | 1.415 | - | - |

Matched for Age, Weight (Females 25-100 kg), Ethnic
NHANES (ages 20-30) / USA (ages 20-40) AP Spine Reference Population (v105)
Statistically 68% of repeat scans fall within 1SD (± 0.010 g/cm² for AP Spine L1-L4)

Image not for diagnosis






| Trend: Neck | | | | |
|---|---|---|---|---|
| | | | Change vs | |
| Measured Date | Age (years) | BMD (g/cm²) | Previous (g/cm²) | Previous (%) |
| 10/4/2006 | 51.5 | 0.846 | 0.063 | 8.0 |
| 5/2/2002 | 47.1 | 0.783 | - | - |

Matched for Age, Weight (Females 25-100 kg), Ethnic
NHANES (ages 20-30) / USA (ages 20-40) Femur Reference Population (v105)
Statistically 68% of repeat scans fall within 1SD (± 0.014 g/cm² for Right Femur Neck)

# Report

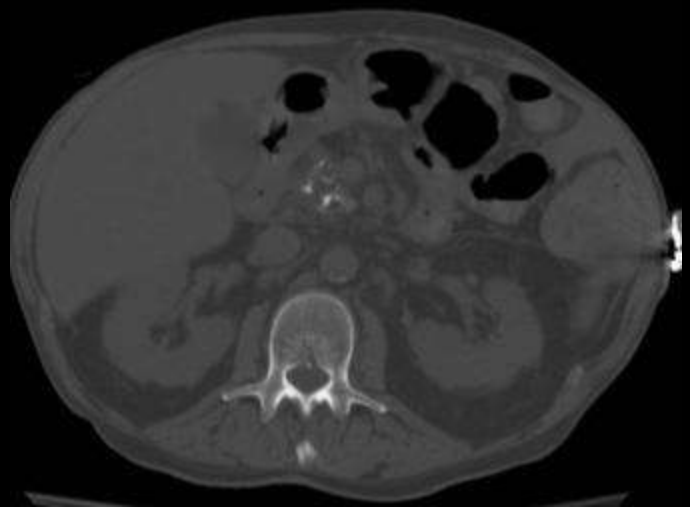
- Increase in lumbar spine bone density is due to syndesmophytes and ligament ossification.

# New Case

| | | | |
|---|---|---|---|
| Height / Weight: | 68.0 in. 135.0 lbs. | Measured: | 11/28/2006 10:42:51 AM (9.30) |
| Sex / Ethnic: | Male White | Analyzed: | 11/28/2006 10:51:05 AM (9.30) |

## ANCILLARY RESULTS [AP Spine]

| Region | BMD[1] (g/cm²) | Young-Adult[2] (%) | Young-Adult[2] T-Score | Age-Matched[3] (%) | Age-Matched[3] Z-Score | BMC (g) | Area (cm²) | Width (cm) | Height (cm) |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 1.250 | 108 | 0.8 | 119 | 1.6 | 18.41 | 14.72 | 4.2 | 3.47 |
| L2 | 1.393 | 112 | 1.3 | 123 | 2.2 | 20.17 | 14.48 | 4.3 | 3.36 |
| L3 | 1.373 | 111 | 1.1 | 121 | 2.0 | 21.67 | 15.79 | 4.4 | 3.57 |
| L4 | 1.201 | 97 | -0.3 | 106 | 0.6 | 23.48 | 19.55 | 4.9 | 3.99 |
| L1-L2 | 1.321 | 110 | 1.0 | 121 | 1.9 | 38.58 | 29.20 | 4.3 | 6.83 |
| L1-L3 | 1.339 | 111 | 1.1 | 121 | 2.0 | 60.25 | 44.99 | 4.3 | 10.40 |
| L1-L4 | 1.297 | 106 | 0.6 | 117 | 1.5 | 83.73 | 64.54 | 4.5 | 14.39 |
| L2-L3 | 1.382 | 111 | 1.2 | 122 | 2.1 | 41.84 | 30.27 | 4.4 | 6.93 |
| L2-L4 | 1.311 | 106 | 0.6 | 116 | 1.5 | 65.32 | 49.81 | 4.5 | 10.92 |
| L3-L4 | 1.278 | 103 | 0.3 | 113 | 1.2 | 45.15 | 35.34 | 4.7 | 7.56 |



# Report

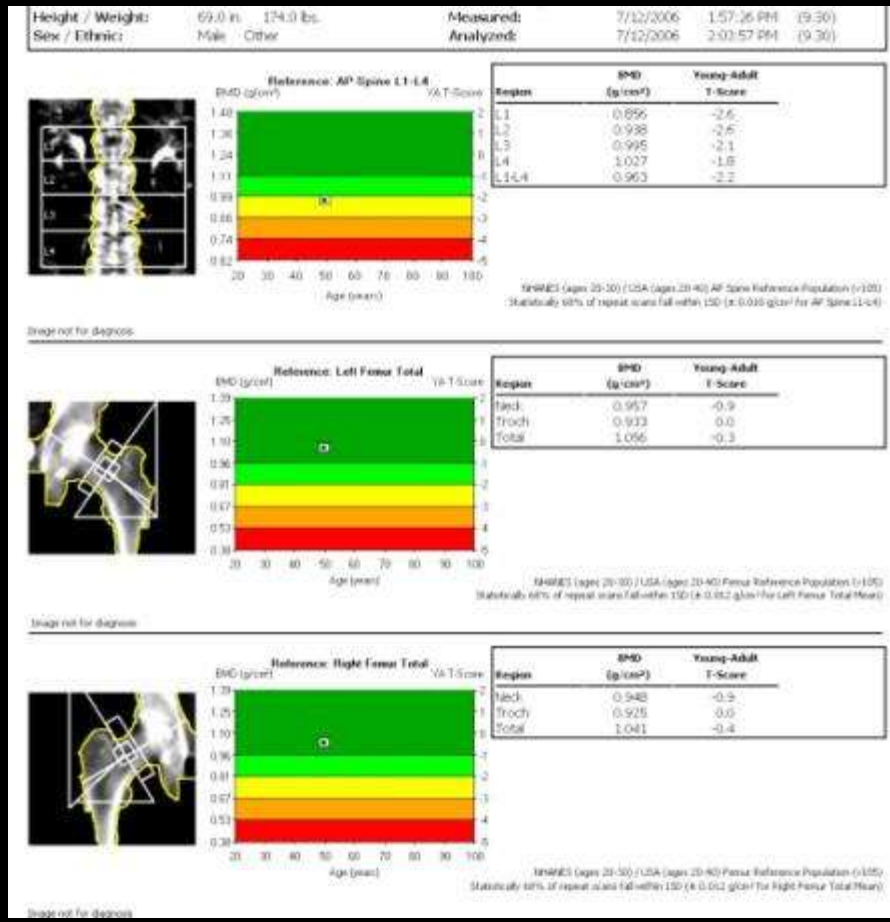
- Calcium anterior to the spine can increase apparent BMD.

# New Case

| | | | | | |
|---|---|---|---|---|---|
| Height / Weight: | 69.0 in. 174.0 lbs. | Measured: | 7/12/2006 | 1:57:26 PM | (9.30) |
| Sex / Ethnic: | Male Other | Analyzed: | 7/12/2006 | 2:03:57 PM | (9.30) |

**ANCILLARY RESULTS [AP Spine]**

| Region | BMD [1] (g/cm²) | Young-Adult [2] (%) | Young-Adult [2] T-Score | Age-Matched (%) | Age-Matched Z-Score | BMC (g) | Area (cm²) | Width (cm) | Height (cm) |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 0.856 | 73 | -2.6 | - | - | 11.68 | 13.63 | 3.8 | 3.57 |
| L2 | 0.938 | 75 | -2.6 | - | - | 14.77 | 15.74 | 4.2 | 3.78 |
| L3 | 0.995 | 80 | -2.1 | - | - | 18.37 | 18.47 | 4.8 | 3.89 |
| L4 | 1.027 | 82 | -1.8 | - | - | 20.46 | 19.93 | 5.1 | 3.89 |
| L1-L2 | 0.900 | 74 | -2.6 | - | - | 26.44 | 29.38 | 4.0 | 7.35 |
| L1-L3 | 0.937 | 77 | -2.3 | - | - | 44.81 | 47.84 | 4.2 | 11.24 |
| L1-L4 | 0.963 | 78 | -2.2 | - | - | 65.27 | 67.77 | 4.5 | 15.12 |
| L2-L3 | 0.969 | 77 | -2.3 | - | - | 33.14 | 34.21 | 4.5 | 7.67 |
| L2-L4 | 0.990 | 79 | -2.1 | - | - | 53.59 | 54.14 | 4.7 | 11.55 |
| L3-L4 | 1.011 | 81 | -2.0 | - | - | 38.83 | 38.39 | 4.9 | 7.77 |

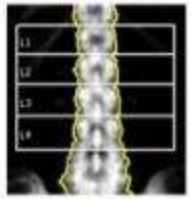


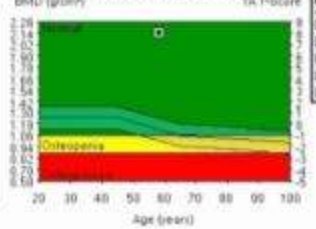
# Report

- If the patient does not wish to divulge their personal details, only T score and not Z score can be produced.

# New Case

| | | | | | |
|---|---|---|---|---|---|
| Height / Weight: | 67.0 in. | 180.0 lbs. | Measured: | 4/18/2006 | 1:49:06 PM (9:30) |
| Sex / Ethnic: | Female | White | Analyzed: | 4/18/2006 | 1:53:06 PM (9:30) |

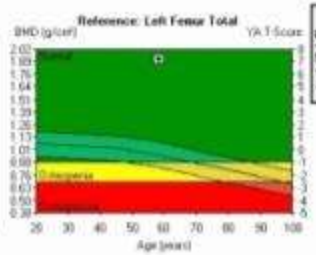





| Region | BMD (g/cm²) | Young Adult T-Score | Age-Matched Z-Score |
|---|---|---|---|
| L1 | 1.914 | 6.5 | 7.0 |
| L2 | 2.169 | 8.1 | 8.6 |
| L3 | 2.308 | 9.2 | 9.7 |
| L4 | 2.131 | 7.8 | 8.3 |
| L1-L4 | 2.139 | 8.0 | 8.5 |

Matched for Age, Weight (females 25-100 kg), Ethnic
NHANES (ages 20-30) / USA (ages 20-40) AP Spine Reference Population (v105)
Statistically 68% of repeat scans fall within 1SD (± 0.010 g/cm² for AP Spine L1-L4)

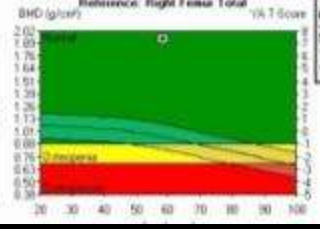
Image not for diagnosis




| Region | BMD (g/cm²) | Young Adult T-Score | Age-Matched Z-Score |
|---|---|---|---|
| Neck | 1.746 | 5.1 | 5.9 |
| Troch | 1.709 | 7.5 | 7.9 |
| Total | 1.915 | 7.2 | 7.6 |

Matched for Age, Weight (females 25-100 kg), Ethnic
NHANES (ages 20-30) / USA (ages 20-40) Femur Reference Population (v105)
Statistically 68% of repeat scans fall within 1SD (± 0.011 g/cm² for Left Femur Total Mean)

Image not for diagnosis




| Region | BMD (g/cm²) | Young Adult T-Score | Age-Matched Z-Score |
|---|---|---|---|
| Neck | 1.819 | 5.6 | 6.4 |
| Troch | 1.692 | 7.3 | 7.8 |
| Total | 1.930 | 7.3 | 7.7 |


| | | | | | |
|---|---|---|---|---|---|
| Height / Weight: | 67.0 in. | 180.0 lbs. | Measured: | 4/18/2006 | 1:49:06 PM (9:30) |
| Sex / Ethnic: | Female | White | Analyzed: | 4/18/2006 | 1:53:06 PM (9:30) |


## ANCILLARY RESULTS [AP Spine]

| Region | BMD [1] (g/cm²) | Young Adult [2] (%) | Young Adult [2] T-Score | Age-Matched [3] (%) | Age-Matched [3] Z-Score | BMC (g) | Area (cm²) | Width (cm) | Height (cm) |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 1.914 | 169 | 6.5 | 179 | 7.0 | 20.80 | 10.87 | 3.7 | 2.94 |
| L2 | 2.169 | 181 | 8.1 | 190 | 8.6 | 25.52 | 11.77 | 3.9 | 3.05 |
| L3 | 2.308 | 192 | 9.2 | 203 | 9.7 | 30.06 | 13.02 | 4.1 | 3.15 |
| L4 | 2.131 | 178 | 7.8 | 187 | 8.3 | 34.26 | 16.07 | 4.6 | 3.47 |
| L1-L2 | 2.047 | 176 | 7.3 | 185 | 7.9 | 46.33 | 22.64 | 3.8 | 5.99 |
| L1-L3 | 2.142 | 183 | 8.1 | 193 | 8.6 | 76.39 | 35.66 | 3.9 | 9.14 |
| L1-L4 | 2.139 | 181 | 8.0 | 191 | 8.5 | 110.64 | 51.73 | 4.1 | 12.60 |
| L2-L3 | 2.242 | 187 | 8.7 | 197 | 9.2 | 55.58 | 24.79 | 4.0 | 6.20 |
| L2-L4 | 2.199 | 183 | 8.3 | 193 | 8.8 | 89.84 | 40.86 | 4.2 | 9.66 |
| L3-L4 | 2.211 | 184 | 8.4 | 194 | 8.9 | 64.31 | 29.09 | 4.4 | 6.62 |

# Report

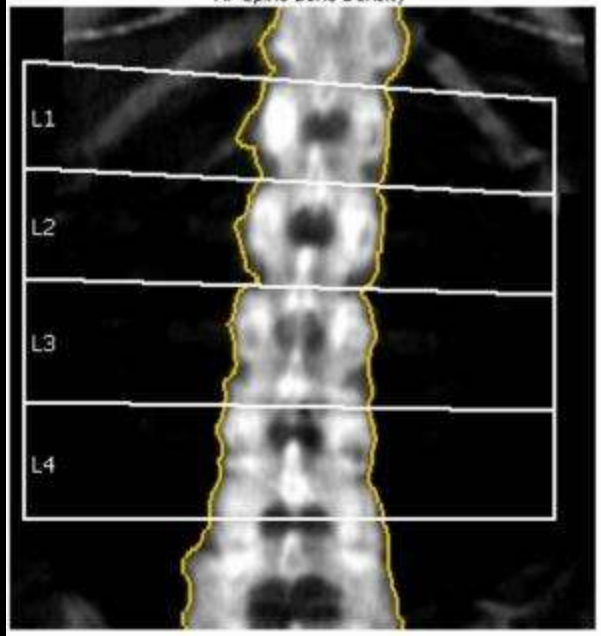
- Benign bone sclerosis such as Worth's disease or Van Buchem's, or a variant of osteopetrosis.

- Recommend repeat DEXA to check for spurious result.

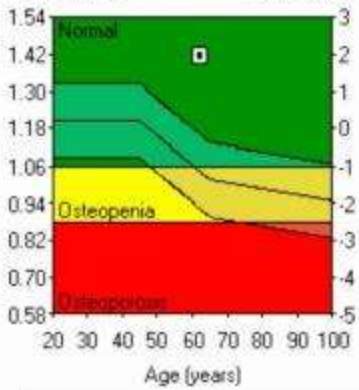
# New Case

| | | | | | |
|---|---|---|---|---|---|
| **Height / Weight:** | 66.1 in. | 157.0 lbs. | **Measured:** | 2/9/2007 | 1:11:43 PM (9.30) |
| **Sex / Ethnic:** | Female | White | **Analyzed:** | 2/9/2007 | 1:16:17 PM (9.30) |

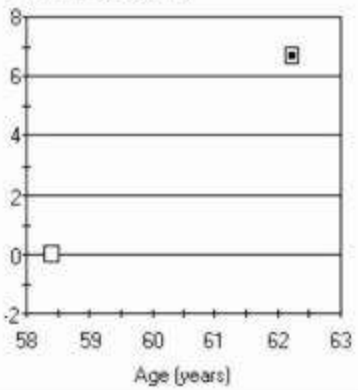
AP Spine Bone Density




**Reference: L1-L4**




**Trend: L1-L4**




| Region | [1] BMD (g/cm²) | [2] Young-Adult T-Score | [3] Age-Matched Z-Score |
|---|---|---|---|
| L1 | 1.367 | 2.0 | 3.1 |
| L2 | 1.386 | 1.5 | 2.7 |
| L3 | 1.405 | 1.7 | 2.9 |
| L4 | 1.481 | 2.3 | 3.5 |
| L1-L2 | 1.377 | 1.8 | 2.9 |
| L1-L3 | 1.387 | 1.8 | 3.0 |
| L1-L4 | 1.415 | 2.0 | 3.1 |
| L2-L3 | 1.396 | 1.6 | 2.8 |
| L2-L4 | 1.428 | 1.9 | 3.1 |
| L3-L4 | 1.445 | 2.0 | 3.2 |

**Trend: L1-L4**

| Measured Date | Age (years) | [1] BMD (g/cm²) | Change vs Baseline (%) | Change vs Baseline (%/yr) |
|---|---|---|---|---|
| 2/9/2007 | 62.2 | 1.415 | 6.7 * | 1.7 * |
| 4/16/2003 | 58.4 | 1.326 | baseline | baseline |

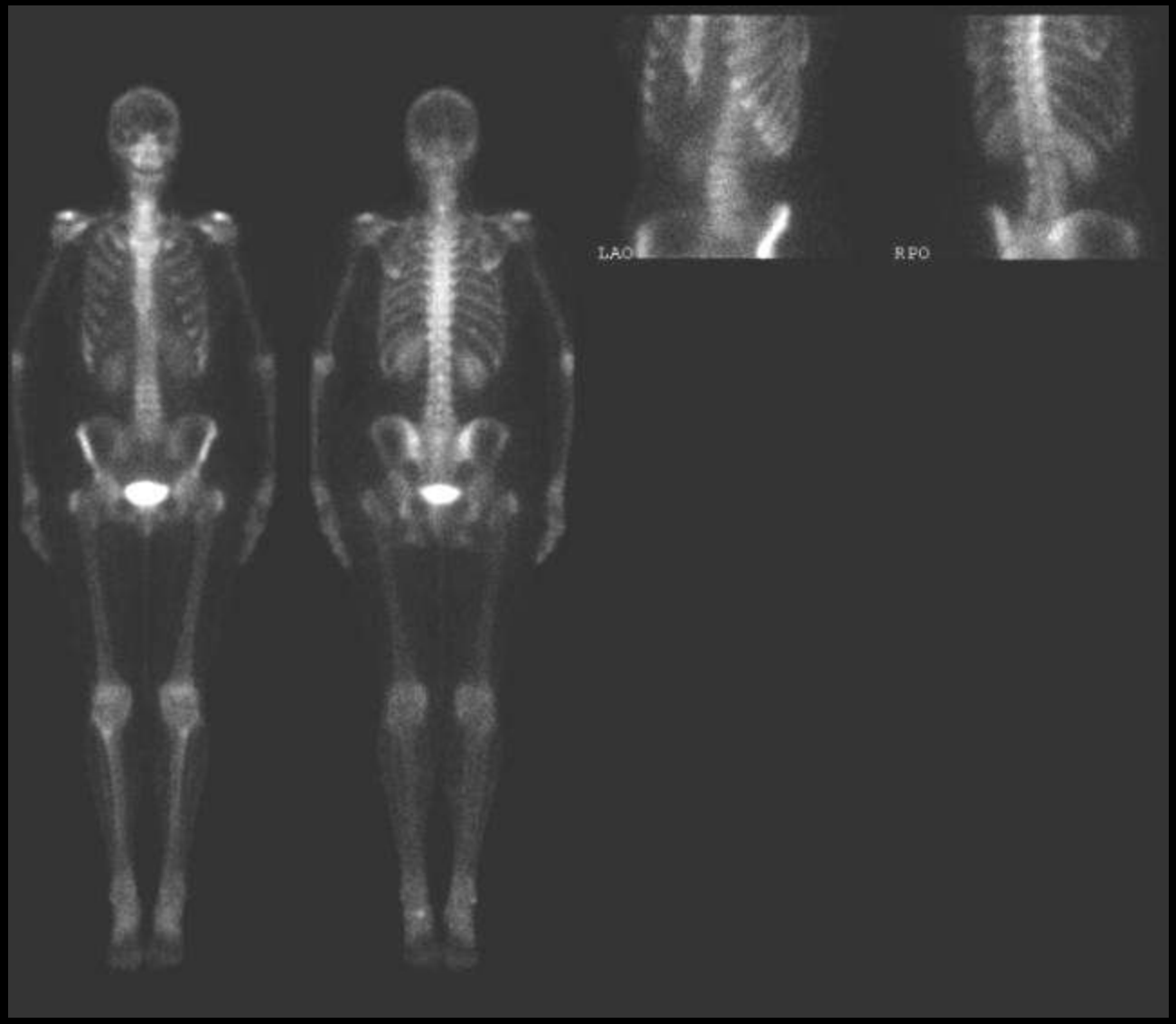
COMMENTS: f/u 4/03/ESTROGEN/hs





62F

MDP



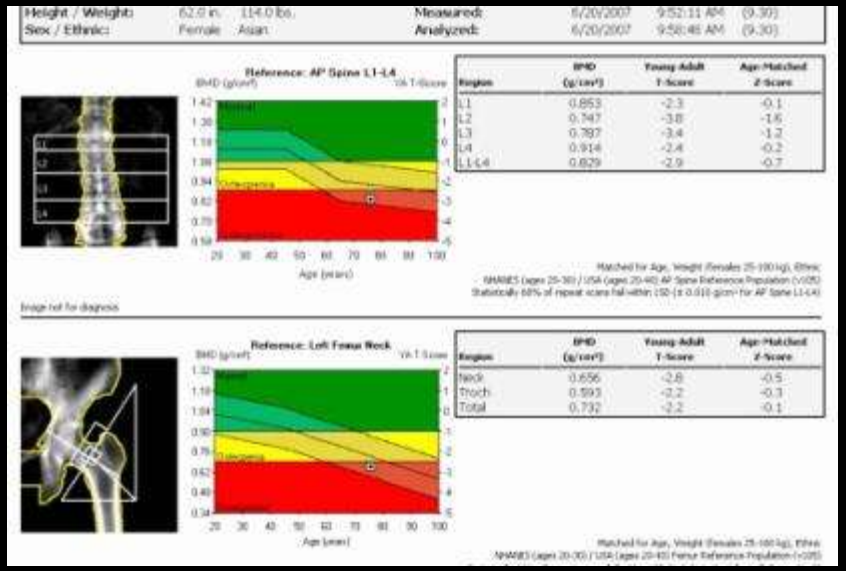



62F

# Report

- Benign sclerotic lesion L1
- Levels may be incorrect.

# New Case



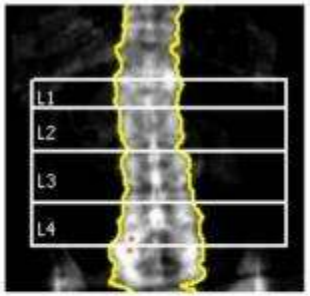
| | | | | | | |
|---|---|---|---|---|---|---|
| Height / Weight: | 62.0 in. | 114.0 lbs. | Measured: | 6/20/2007 | 9:52:11 AM | (9.30) |
| Sex / Ethnic: | Female | Asian | Analyzed: | 6/20/2007 | 9:58:48 AM | (9.30) |

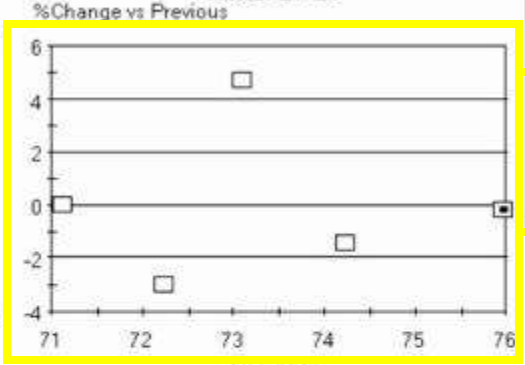
## ANCILLARY RESULTS [AP Spine]

| Region | BMD [1] (g/cm²) | Young-Adult [2] (%) | Young-Adult [2] T-Score | Age-Matched [3] (%) | Age-Matched [3] Z-Score | BMC (g) | Area (cm²) | Width (cm) | Height (cm) |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 0.853 | 75 | -2.3 | 99 | -0.1 | 5.35 | 6.28 | 3.8 | 1.67 |
| L2 | 0.747 | 62 | -3.8 | 80 | -1.6 | 6.75 | 9.04 | 3.4 | 2.63 |
| L3 | 0.787 | 66 | -3.4 | 84 | -1.2 | 9.74 | 12.38 | 3.9 | 3.14 |
| L4 | 0.914 | 76 | -2.4 | 98 | -0.2 | 11.82 | 12.92 | 4.8 | 2.68 |
| L1-L2 | 0.790 | 68 | -3.1 | 88 | -0.9 | 12.10 | 15.32 | 3.6 | 4.30 |
| L1-L3 | 0.799 | 67 | -3.2 | 87 | -1.0 | 21.85 | 27.69 | 3.7 | 7.44 |
| L1-L4 | 0.829 | 70 | -2.9 | 91 | -0.7 | 33.66 | 40.62 | 4.0 | 10.12 |
| L2-L3 | 0.770 | 64 | -3.6 | 82 | -1.4 | 16.49 | 21.42 | 3.7 | 5.77 |
| L2-L4 | 0.824 | 69 | -3.1 | 88 | -0.9 | 28.31 | 34.34 | 4.1 | 8.44 |
| L3-L4 | 0.852 | 71 | -2.9 | 91 | -0.7 | 21.56 | 25.30 | 4.4 | 5.82 |

76F

| | | | | | |
|---|---|---|---|---|---|
| Height / Weight: | 62.0 in. | 114.0 lbs. | Measured: | 6/20/2007 | 9:52:11 AM (9.30) |
| Sex / Ethnic: | Female | Asian | Analyzed: | 6/20/2007 | 9:58:48 AM (9.30) |



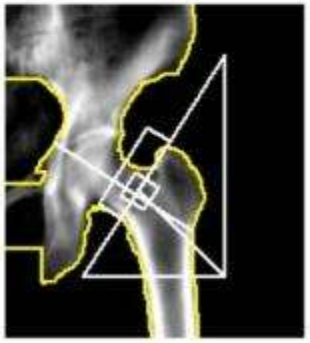



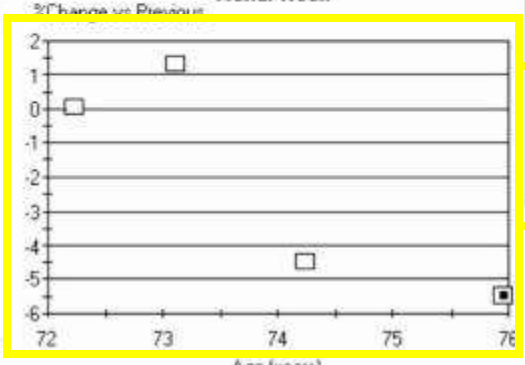

**Trend: L1-L4**

| Measured Date | Age (years) | BMD (g/cm²) | Change vs Previous (g/cm²) | Change vs Previous (%) |
|---|---|---|---|---|
| 6/20/2007 | 75.9 | 0.829 | -0.002 | -0.2 |
| 9/27/2005 | 74.2 | 0.830 | -0.012 | -1.5 |
| 8/12/2004 | 73.1 | 0.843 | 0.038 | 4.7 |
| 9/30/2003 | 72.2 | 0.805 | -0.025 | -3.0 |
| 8/20/2002 | 71.1 | 0.830 | - | - |

Matched for Age, Weight (females 25-100 kg), Ethnic
NHANES (ages 20-30) / USA (ages 20-40) AP Spine Reference Population (v10S)
Statistically 68% of repeat scans fall within 1SD (± 0.010 g/cm² for AP Spine L1-L4)

Image not for diagnosis






**Trend: Neck**

| Measured Date | Age (years) | BMD (g/cm²) | Change vs Previous (g/cm²) | Change vs Previous (%) |
|---|---|---|---|---|
| 6/20/2007 | 75.9 | 0.656 | -0.038 | -5.5 |
| 9/27/2005 | 74.2 | 0.694 | -0.033 | -4.5 |
| 8/12/2004 | 73.1 | 0.726 | 0.009 | 1.3 |
| 9/30/2003 | 72.2 | 0.717 | - | - |

Matched for Age, Weight (females 25-100 kg), Ethnic
NHANES (ages 20-30) / USA (ages 20-40) Femur Reference Population (v10S)
Statistically 68% of repeat scans fall within 1SD (± 0.014 g/cm² for Left Femur Neck)

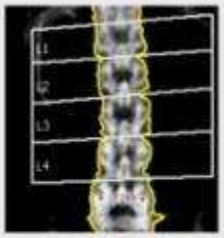
Image not for diagnosis

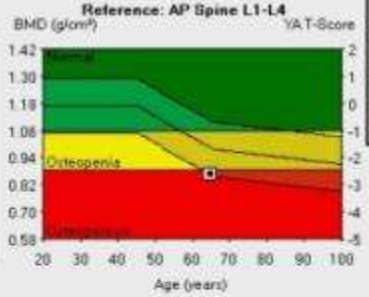
# Report

- When a vertebrae collapses, initially it will be of higher density.

# New Case

| | | | | | |
|---|---|---|---|---|---|
| Height / Weight: | 66.0 in. | 137.0 lbs. | Measured: | 11/21/2006 | 4:19:22 PM (9.30) |
| Sex / Ethnic: | Female | White | Analyzed: | 11/21/2006 | 4:35:45 PM (9.30) |

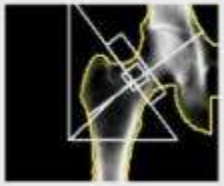


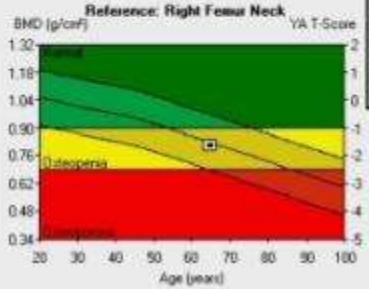




| Region | BMD (g/cm²) | Young-Adult T-Score | Age-Matched Z-Score |
|---|---|---|---|
| L1 | 0.813 | -2.6 | -1.0 |
| L2 | 0.793 | -3.4 | -1.7 |
| L3 | 0.878 | -2.7 | -1.0 |
| L4 | 0.963 | -2.0 | -0.3 |
| L1-L4 | 0.867 | -2.6 | -0.9 |

Matched for Age, Weight (females 25-100 kg), Ethnic
NHANES (ages 20-30) / USA (ages 20-40) AP Spine Reference Population (v105)
Statistically 68% of repeat scans fall within 1SD (± 0.010 g/cm²) for AP Spine L1-L4)

Image not for diagnosis






| Region | BMD (g/cm²) | Young-Adult T-Score | Age-Matched Z-Score |
|---|---|---|---|
| Neck | 0.811 | -1.6 | -0.1 |
| Troch | 0.697 | -1.3 | -0.1 |
| Total | 0.831 | -1.4 | -0.2 |

Matched for Age, Weight (females 25-100 kg), Ethnic
NHANES (ages 20-20) / USA (ages 20-40) Femur Reference Population (v105)

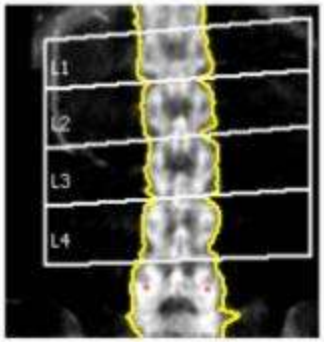

| | | | | | |
|---|---|---|---|---|---|
| Height / Weight: | 66.0 in. | 137.0 lbs. | Measured: | 11/21/2006 | 4:19:22 PM (9.30) |
| Sex / Ethnic: | Female | White | Analyzed: | 11/21/2006 | 4:35:45 PM (9.30) |

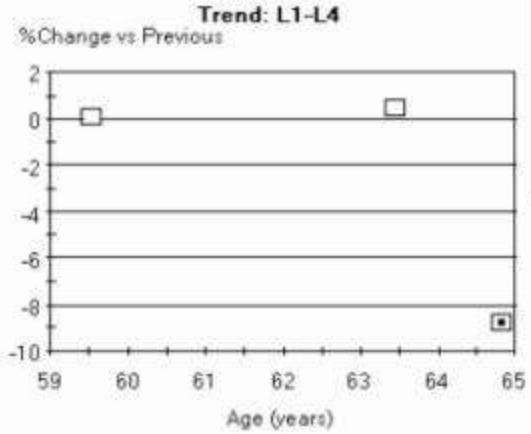

## ANCILLARY RESULTS [AP Spine]

| Region | BMD [1] (g/cm²) | Young-Adult [2] (%) | Young-Adult [2] T-Score | Age-Matched [3] (%) | Age-Matched [3] Z-Score | BMC (g) | Area (cm²) | Width (cm) | Height (cm) |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 0.813 | 72 | -2.6 | 87 | -1.0 | 9.21 | 11.34 | 3.9 | 2.93 |
| L2 | 0.793 | 66 | -3.4 | 79 | -1.7 | 9.86 | 12.42 | 3.8 | 3.30 |
| L3 | 0.878 | 73 | -2.7 | 88 | -1.0 | 11.56 | 13.17 | 3.8 | 3.47 |
| L4 | 0.963 | 80 | -2.0 | 96 | -0.3 | 14.14 | 14.69 | 4.0 | 3.65 |
| L1-L2 | 0.803 | 69 | -3.0 | 83 | -1.4 | 19.07 | 23.76 | 3.8 | 6.24 |
| L1-L3 | 0.829 | 71 | -2.8 | 85 | -1.2 | 30.63 | 36.93 | 3.8 | 9.71 |
| L1-L4 | 0.867 | 73 | -2.6 | 88 | -0.9 | 44.77 | 51.63 | 3.9 | 13.36 |
| L2-L3 | 0.837 | 70 | -3.0 | 84 | -1.4 | 21.42 | 25.59 | 3.8 | 6.77 |
| L2-L4 | 0.883 | 74 | -2.6 | 88 | -1.0 | 35.56 | 40.29 | 3.9 | 10.43 |
| L3-L4 | 0.923 | 77 | -2.3 | 92 | -0.6 | 25.70 | 27.86 | 3.9 | 7.13 |

65F

| | | | | | | |
|---|---|---|---|---|---|---|
| Height / Weight: | 66.0 in. | 137.0 lbs. | Measured: | 11/21/2006 | 4:19:22 PM | (9.30) |
| Sex / Ethnic: | Female | White | Analyzed: | 11/21/2006 | 4:35:45 PM | (9.30) |



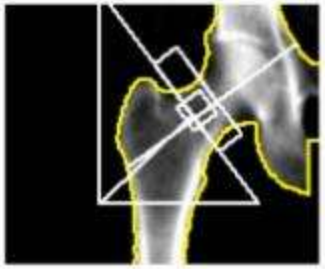



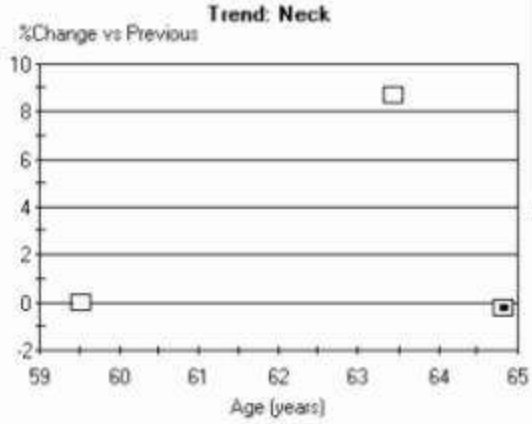

**Trend: L1-L4**

| Measured Date | Age (years) | BMD (g/cm²) | Change vs Previous (g/cm²) | Change vs Previous (%) |
|---|---|---|---|---|
| 11/21/2006 | 64.8 | 0.867 | -0.084 | -8.8 |
| 7/6/2005 | 63.4 | 0.951 | 0.004 | 0.4 |
| 8/2/2001 | 59.5 | 0.947 | - | - |

Matched for Age, Weight (females 25-100 kg), Ethnic
NHANES (ages 20-30) / USA (ages 20-40) AP Spine Reference Population (v105)
Statistically 68% of repeat scans fall within 1SD (± 0.010 g/cm² for AP Spine L1-L4)

Image not for diagnosis

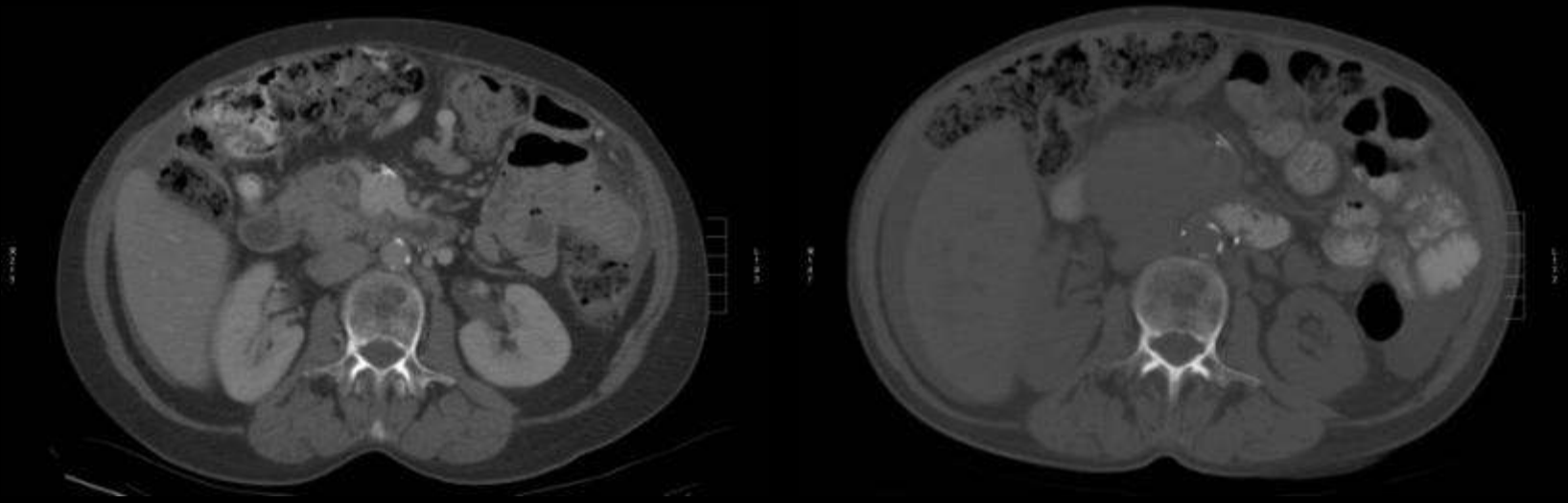





**Trend: Neck**

| Measured Date | Age (years) | BMD (g/cm²) | Change vs Previous (g/cm²) | Change vs Previous (%) |
|---|---|---|---|---|
| 11/21/2006 | 64.8 | 0.811 | -0.002 | -0.2 |
| 7/6/2005 | 63.4 | 0.813 | 0.065 | 8.7 |
| 8/2/2001 | 59.5 | 0.748 | - | - |

Matched for Age, Weight (females 25-100 kg), Ethnic



1Y prior

2m prior

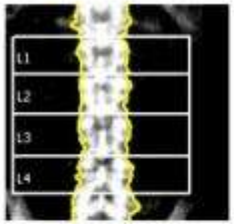
DEXA with islet cell met to L2 65F

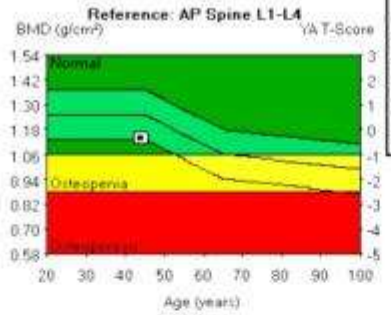
# Report

- Look out for vertebrae with a different and unaccountable bone density, either higher or lower.

# New Case

| | | | | | |
|---|---|---|---|---|---|
| Height / Weight: | 62.0 in. | 182.0 lbs. | Measured: | 7/5/2006 | 1:54:04 PM (9.30) |
| Sex / Ethnic: | Female | Hispanic | Analyzed: | 7/5/2006 | 1:59:06 PM (9.30) |

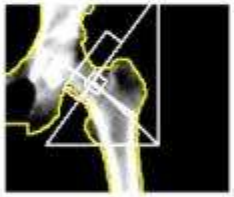


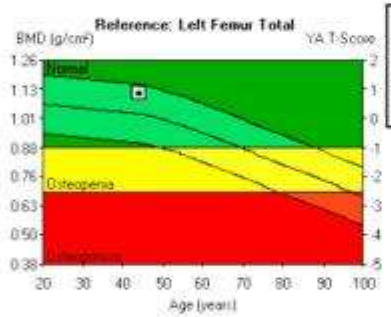




| Region | BMD (g/cm²) | Young-Adult T-Score | Age-Matched Z-Score |
|---|---|---|---|
| L1 | 1.118 | -0.1 | -0.7 |
| L2 | 1.203 | 0.0 | -0.6 |
| L3 | 1.088 | -0.9 | -1.5 |
| L4 | 1.157 | -0.4 | -0.9 |
| L1-L4 | 1.141 | -0.3 | -0.9 |

Matched for Age, Weight (females 25-100 kg), Ethnic
NHANES (ages 20-30) / USA (ages 20-40) AP Spine Reference Population (v105)
Statistically 68% of repeat scans fall within 1SD (± 0.010 g/cm² for AP Spine L1-L4)

Image not for diagnosis

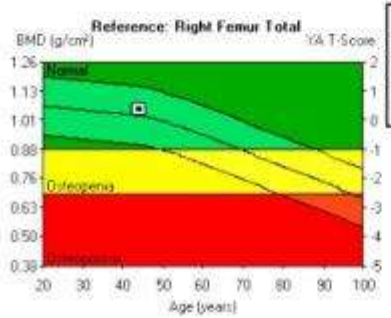





| Region | BMD (g/cm²) | Young-Adult T-Score | Age-Matched Z-Score |
|---|---|---|---|
| Neck | 1.045 | 0.1 | 0.2 |
| Troch | 0.882 | 0.3 | 0.1 |
| Total | 1.113 | 0.8 | 0.7 |

Matched for Age, Weight (females 25-100 kg), Ethnic
NHANES (ages 20-30) / USA (ages 20-40) Femur Reference Population (v105)
Statistically 68% of repeat scans fall within 1SD (± 0.012 g/cm² for Left Femur Total Mean)

Image not for diagnosis




| Region | BMD (g/cm²) | Young-Adult T-Score | Age-Matched Z-Score |
|---|---|---|---|
| Neck | 0.973 | -0.5 | -0.3 |
| Troch | 0.801 | -0.4 | -0.6 |
| Total | 1.055 | 0.4 | 0.2 |

Matched for Age, Weight (females 25-100 kg), Ethnic

| | | | | | |
|---|---|---|---|---|---|
| Height / Weight: | 62.0 in. | 182.0 lbs. | Measured: | 7/5/2006 | 1:54:04 PM (9.30) |
| Sex / Ethnic: | Female | Hispanic | Analyzed: | 7/5/2006 | 1:59:06 PM (9.30) |

## ANCILLARY RESULTS [AP Spine]

| Region | BMD [1] (g/cm²) | Young-Adult [2] (%) | Young-Adult [2] T-Score | Age-Matched [3] (%) | Age-Matched [3] Z-Score | BMC (g) | Area (cm²) | Width (cm) | Height (cm) |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 1.118 | 99 | -0.1 | 93 | -0.7 | 12.24 | 10.94 | 3.7 | 2.97 |
| L2 | 1.203 | 100 | 0.0 | 95 | -0.6 | 14.42 | 11.99 | 3.7 | 3.26 |
| L3 | 1.088 | 91 | -0.9 | 86 | -1.5 | 14.02 | 12.88 | 3.7 | 3.44 |
| L4 | 1.157 | 96 | -0.4 | 91 | -0.9 | 14.55 | 12.57 | 4.1 | 3.05 |
| L1-L2 | 1.162 | 100 | 0.0 | 94 | -0.6 | 26.66 | 22.93 | 3.7 | 6.22 |
| L1-L3 | 1.126 | 97 | -0.3 | 92 | -0.9 | 40.68 | 35.82 | 3.7 | 9.66 |
| L1-L4 | 1.141 | 97 | -0.3 | 91 | -0.9 | 55.23 | 48.39 | 3.8 | 12.71 |
| L2-L3 | 1.144 | 95 | -0.5 | 90 | -1.1 | 28.44 | 24.87 | 3.7 | 6.69 |
| L2-L4 | 1.148 | 96 | -0.4 | 90 | -1.0 | 42.99 | 37.45 | 3.9 | 9.74 |
| L3-L4 | 1.122 | 94 | -0.6 | 88 | -1.2 | 28.57 | 25.46 | 3.9 | 6.48 |

| | | | | | |
|---|---|---|---|---|---|
| Height / Weight: | 62.0 in. | 182.0 lbs. | Measured: | 7/5/2006 | 1:57:23 PM (9.30) |
| Sex / Ethnic: | Female | Hispanic | Analyzed: | 7/5/2006 | 1:58:45 PM (9.30) |

## ANCILLARY RESULTS [Left Femur]

| Region | BMD [1] (g/cm²) | Young-Adult [2] (%) | Young-Adult [2] T-Score | Age-Matched [3] (%) | Age-Matched [3] Z-Score | BMC (g) | Area (cm²) |
|---|---|---|---|---|---|---|---|
| Neck | 1.045 | 101 | 0.1 | 103 | 0.2 | 3.96 | 3.79 |
| Upper Neck | 0.899 | 101 | 0.1 | 103 | 0.1 | 1.65 | 1.86 |
| Wards | 0.890 | 98 | -0.2 | 98 | -0.1 | 1.42 | 1.60 |
| Troch | 0.882 | 104 | 0.3 | 102 | 0.1 | 9.66 | 10.95 |
| Shaft | 1.321 | - | - | - | - | 17.67 | 13.37 |
| Total | 1.113 | 110 | 0.8 | 108 | 0.7 | 31.30 | 28.12 |

| | | | | | |
|---|---|---|---|---|---|
| Height / Weight: | 62.0 in. | 182.0 lbs. | Measured: | 7/5/2006 | 1:58:07 PM (9.30) |
| Sex / Ethnic: | Female | Hispanic | Analyzed: | 7/5/2006 | 1:58:48 PM (9.30) |

## ANCILLARY RESULTS [Right Femur]

| Region | BMD [1] (g/cm²) | Young-Adult [2] (%) | Young-Adult [2] T-Score | Age-Matched [3] (%) | Age-Matched [3] Z-Score | BMC (g) | Area (cm²) |
|---|---|---|---|---|---|---|---|
| Neck | 0.973 | 94 | -0.5 | 96 | -0.3 | 5.20 | 5.34 |
| Upper Neck | 0.892 | 97 | -0.3 | 104 | 0.3 | 2.31 | 2.62 |
| Wards | 0.990 | 109 | 0.6 | 109 | 0.6 | 3.14 | 3.17 |
| Troch | 0.801 | 94 | -0.4 | 92 | -0.6 | 8.35 | 10.43 |
| Shaft | 1.284 | - | - | - | - | 17.35 | 13.51 |
| Total | 1.055 | 105 | 0.4 | 103 | 0.2 | 30.90 | 29.28 |

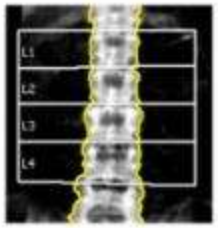
44F

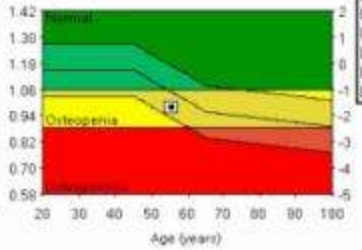
# Report

- 5’2”, 182lbs

# New Case

| | | | | | |
|---|---|---|---|---|---|
| Height / Weight: | 65.0 in. | 125.0 lbs. | Measured: | 7/5/2006 | 11:21:26 AM (9.30) |
| Sex / Ethnic: | Female | Asian | Analyzed: | 7/5/2006 | 11:29:36 AM (9.30) |

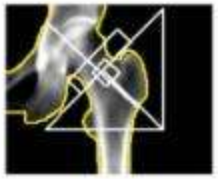


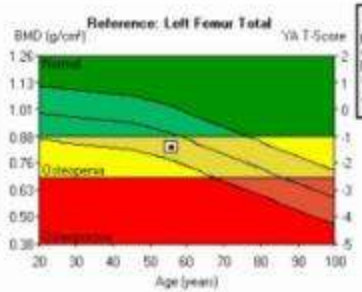




| Region | BMD (g/cm²) | Young-Adult T-Score | Age-Matched Z-Score |
|---|---|---|---|
| L1 | 0.929 | -1.7 | -0.5 |
| L2 | 0.969 | -1.9 | -0.8 |
| L3 | 1.077 | -1.0 | 0.1 |
| L4 | 0.926 | -2.3 | -1.2 |
| L1-L4 | 0.975 | -1.7 | -0.6 |

Matched for Age, Weight (Females 25-100 kg), Ethnic
NHANES (ages 20-30) / USA (ages 20-40) AP Spine Reference Population (v105)
Statistically 68% of repeat scans fall within 1SD (± 0.010 g/cm² for AP Spine L1-L4)

Image not for diagnosis

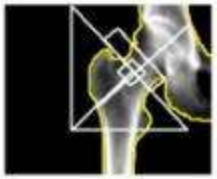


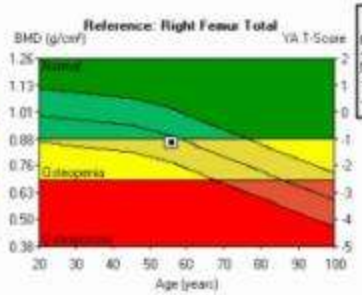



| Region | BMD (g/cm²) | Young-Adult T-Score | Age-Matched Z-Score |
|---|---|---|---|
| Neck | 0.759 | -2.0 | -0.8 |
| Troch | 0.689 | -1.4 | -0.4 |
| Total | 0.831 | -1.4 | -0.5 |

Matched for Age, Weight (Females 25-100 kg), Ethnic
NHANES (ages 20-30) / USA (ages 20-40) Femur Reference Population (v105)
Statistically 68% of repeat scans fall within 1SD (± 0.012 g/cm² for Left Femur Total Mean)

Image not for diagnosis






| Region | BMD (g/cm²) | Young-Adult T-Score | Age-Matched Z-Score |
|---|---|---|---|
| Neck | 0.787 | -1.8 | -0.6 |
| Troch | 0.684 | -1.4 | -0.5 |
| Total | 0.864 | -1.1 | -0.3 |

Matched for Age, Weight (Females 25-100 kg), Ethnic

# Report

| | | | | | |
|---|---|---|---|---|---|
| Height / Weight: | 65.0 in. | 125.0 lbs. | Measured: | 7/5/2006 | 11:21:26 AM (9.30) |
| Sex / Ethnic: | Female | Asian | Analyzed: | 7/5/2006 | 11:29:36 AM (9.30) |

## ANCILLARY RESULTS [AP Spine]

| Region | BMD [1] (g/cm²) | Young-Adult [2] (%) | Young-Adult [2] T-Score | Age-Matched [3] (%) | Age-Matched [3] Z-Score | BMC (g) | Area (cm²) | Width (cm) | Height (cm) |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 0.929 | 82 | -1.7 | 93 | -0.5 | 11.34 | 12.21 | 3.9 | 3.16 |
| L2 | 0.969 | 81 | -1.9 | 91 | -0.8 | 12.51 | 12.90 | 3.9 | 3.28 |
| L3 | 1.077 | 90 | -1.0 | 101 | 0.1 | 15.96 | 14.81 | 4.5 | 3.28 |
| L4 | 0.926 | 77 | -2.3 | 87 | -1.2 | 16.67 | 18.00 | 4.9 | 3.68 |
| L1-L2 | 0.950 | 82 | -1.8 | 92 | -0.7 | 23.85 | 25.11 | 3.9 | 6.44 |
| L1-L3 | 0.997 | 85 | -1.4 | 96 | -0.3 | 39.81 | 39.92 | 4.1 | 9.72 |
| L1-L4 | 0.975 | 83 | -1.7 | 93 | -0.6 | 56.48 | 57.93 | 4.3 | 13.40 |
| L2-L3 | 1.027 | 86 | -1.4 | 96 | -0.3 | 28.47 | 27.72 | 4.2 | 6.56 |
| L2-L4 | 0.987 | 82 | -1.8 | 93 | -0.6 | 45.13 | 45.72 | 4.4 | 10.24 |
| L3-L4 | 0.994 | 83 | -1.7 | 93 | -0.6 | 32.63 | 32.82 | 4.7 | 6.96 |

| | | | | | |
|---|---|---|---|---|---|
| Height / Weight: | 65.0 in. | 125.0 lbs. | Measured: | 7/5/2006 | 11:23:10 AM (9.30) |
| Sex / Ethnic: | Female | Asian | Analyzed: | 7/5/2006 | 11:26:42 AM (9.30) |

## ANCILLARY RESULTS [Left Femur]

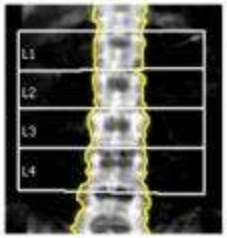
| Region | BMD [1] (g/cm²) | Young-Adult [2] (%) | Young-Adult [2] T-Score | Age-Matched [3] (%) | Age-Matched [3] Z-Score | BMC (g) | Area (cm²) |
|---|---|---|---|---|---|---|---|
| Neck | 0.759 | 73 | -2.0 | 87 | -0.8 | 3.70 | 4.87 |
| Upper Neck | 0.581 | 71 | -2.0 | 84 | -0.9 | 1.41 | 2.42 |
| Wards | 0.659 | 72 | -1.9 | 92 | -0.5 | 1.74 | 2.63 |
| Troch | 0.689 | 81 | -1.4 | 93 | -0.4 | 6.61 | 9.60 |
| Shaft | 0.941 | - | - | - | - | 14.61 | 15.52 |
| Total | 0.831 | 82 | -1.4 | 93 | -0.5 | 24.91 | 29.98 |

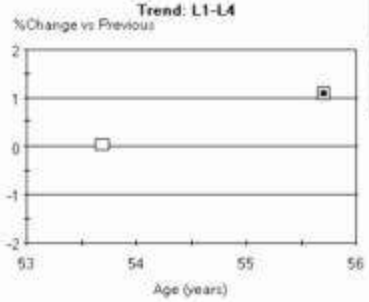
| | | | | | |
|---|---|---|---|---|---|
| Height / Weight: | 65.0 in. | 125.0 lbs. | Measured: | 7/5/2006 | 11:24:05 AM (9.30) |
| Sex / Ethnic: | Female | Asian | Analyzed: | 7/5/2006 | 11:26:44 AM (9.30) |

## ANCILLARY RESULTS [Right Femur]

| Region | BMD [1] (g/cm²) | Young-Adult [2] (%) | Young-Adult [2] T-Score | Age-Matched [3] (%) | Age-Matched [3] Z-Score | BMC (g) | Area (cm²) |
|---|---|---|---|---|---|---|---|
| Neck | 0.787 | 76 | -1.8 | 91 | -0.6 | 3.74 | 4.75 |
| Upper Neck | 0.636 | 77 | -1.5 | 92 | -0.5 | 1.49 | 2.35 |
| Wards | 0.706 | 78 | -1.6 | 98 | -0.1 | 1.77 | 2.51 |
| Troch | 0.684 | 80 | -1.4 | 93 | -0.5 | 6.58 | 9.62 |
| Shaft | 1.003 | - | - | - | - | 15.16 | 15.11 |
| Total | 0.864 | 86 | -1.1 | 96 | -0.3 | 25.47 | 29.48 |

| | | | | | |
|---|---|---|---|---|---|
| Height / Weight: | 65.0 in. | 125.0 lbs. | Measured: | 7/5/2006 | 11:21:26 AM (9.30) |
| Sex / Ethnic: | Female | Asian | Analyzed: | 7/5/2006 | 11:29:36 AM (9.30) |



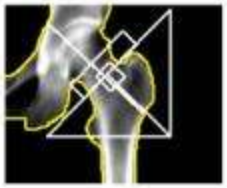



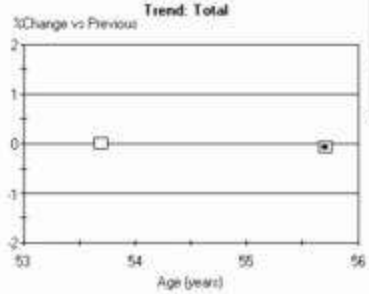

Trend: L1-L4

| Measured Date | Age (years) | BMD (g/cm²) | Change vs Previous (g/cm²) | Change vs Previous (%) |
|---|---|---|---|---|
| 7/5/2006 | 55.7 | 0.975 | 0.011 | 1.1 |
| 6/28/2004 | 53.6 | 0.964 | - | - |

Matched for Age, Weight (Females 25-100 kg), Ethnic
NHANES (ages 20-30) / USA (ages 20-40) AP Spine Reference Population (v105)
Statistically 68% of repeat scans fall within 1SD (± 0.010 g/cm² for AP Spine L1-L4)

Image not for diagnosis



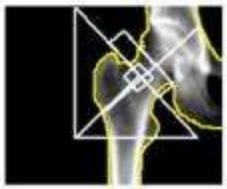


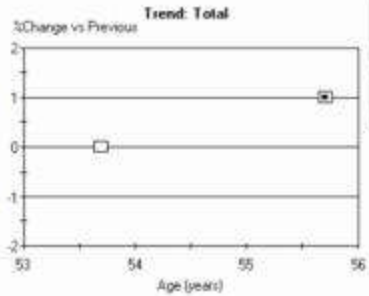

Trend: Total

| Measured Date | Age (years) | BMD (g/cm²) | Change vs Previous (g/cm²) | Change vs Previous (%) |
|---|---|---|---|---|
| 7/5/2006 | 55.7 | 0.831 | -0.001 | -0.1 |
| 6/28/2004 | 53.6 | 0.832 | - | - |

Matched for Age, Weight (females 25-100 kg), Ethnic
NHANES (ages 20-30) / USA (ages 20-40) Femur Reference Population (v105)
Statistically 68% of repeat scans fall within 1SD (± 0.012 g/cm² for Left Femur Total Mean)

Image not for diagnosis






Trend: Total

| Measured Date | Age (years) | BMD (g/cm²) | Change vs Previous (g/cm²) | Change vs Previous (%) |
|---|---|---|---|---|
| 7/5/2006 | 55.7 | 0.864 | 0.008 | 1.0 |
| 6/28/2004 | 53.6 | 0.856 | - | - |

Matched for Age, Weight (females 25-100 kg), Ethnic
NHANES (ages 20-30) / USA (ages 20-40) Femur Reference Population (v105)
Statistically 68% of repeat scans fall within 1SD (± 0.012 g/cm² for Right Femur Total Mean)

55F

# Report

- Good response to Rx

# Report

# Bone Densitometry
# DEPA

- $Gd^{153}$
- Accuracy similar to QCT
- Less radiation than QCT
- Measures cortical and trabecular
- Less sensitive to early changes
- Affected by aortic $Ca^{2+}$

# Bone Densitometry
# QCT

- Single energy 97% accurate
- Dual energy not routinely available
- 300mR
- Fat content adversely affects accuracy
- Difficult to reproduce positioning
- Can only measure trabecular bone
- 8X increase turnover of trabecular bone