

National Alliance of Medical Image Computing

2011 summer project week, MIT, Boston

Spine Segmentation & Osteoporosis Screening in CT

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Our Mission

Screening for osteoporosis in CT scans

Osteoporosis

A condition of decreased bone mass leading to fractures

Why Do We Focus on Osteoporosis?

Osteoporosis is common

1.5 million vertebral fractures per year (US)

180 thousand patients placed in nursing homes per year (US)

Osteoporosis is devastating

patient immobility, pain, mortality

18 billion dollar per year (US)

Osteoporosis is preventable and treatable

diet, exercise, quit smoking & access drinking

medication, fall prevention, etc...

However, findings of osteoporosis are frequently overlooked in CT studies

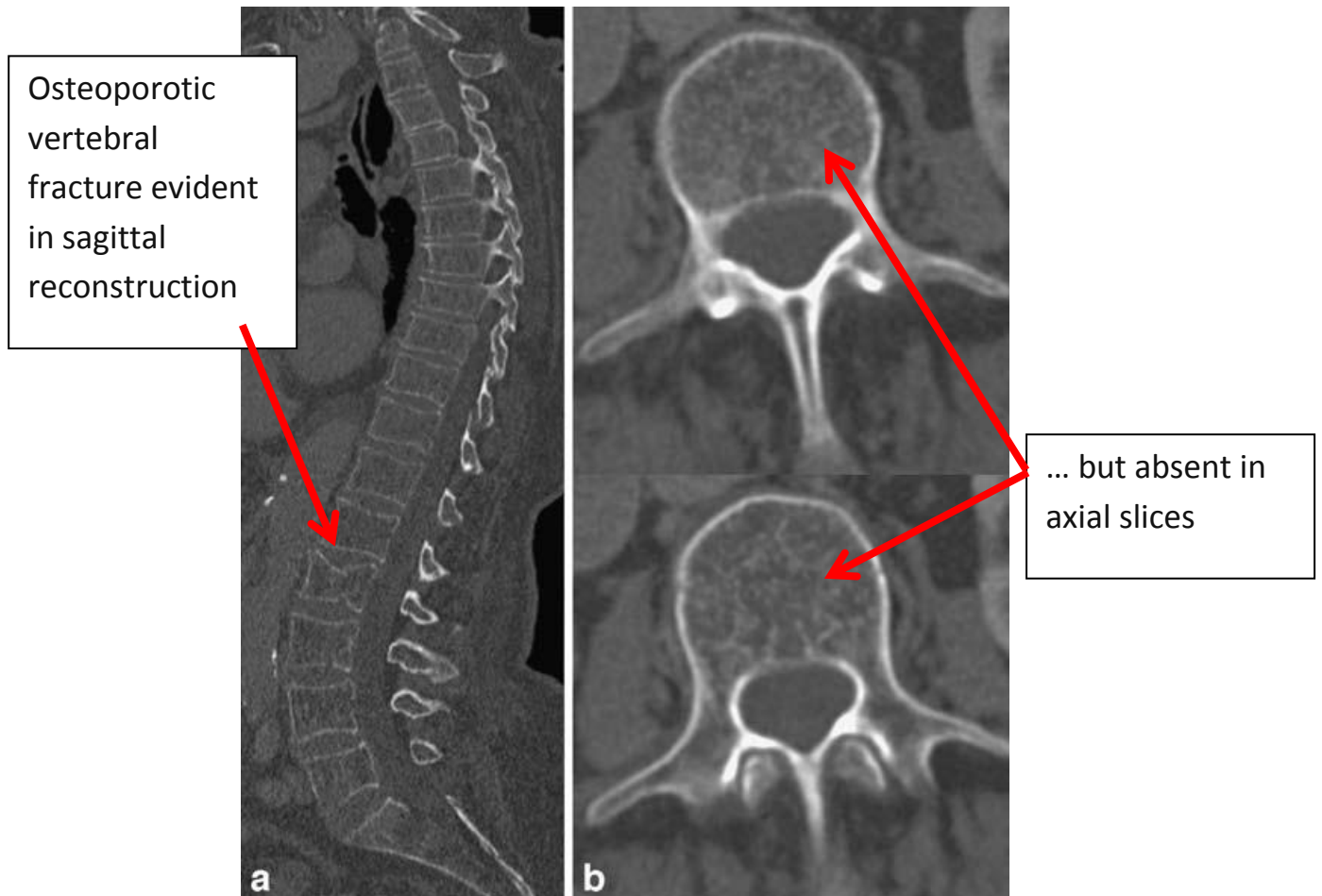


Image published in ESR 2008, Dirk Müller, Significance of sagittal reformations in routine thoracic and abdominal multislice CT studies for detecting osteoporotic fractures and other spine abnormalities

Although osteoporosis screening (based on bone mineral density) is recommended for all women over 65, compliance rate is low

Conclusion: Problem Statement

*Osteoporosis is a common, devastating, and treatable disease
which is under diagnosed*

Our Solution

*Automated screening for findings of osteoporosis, including
vertebral fractures, low bone density, etc. in CT scans performed
for other clinical reasons.*

Task #1 – Automated Spine Segmentation

[NA-MIC Spine Segmentation Challenge](#) + full automation

Phase I – Vertebral Body Segmentation

promising initial results

Goals for NA-MIC Project Week

Integrate vertebral body segmentation into Slicer

Collaborate to utilize and enhance solution

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