

Fixation in osteoporotic bone



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Fracture incidense



Donaldson 1990

Life time fracture risk (%)





Menn Kvinner

Kanis 2000

Osteoporosis



Dempster 2001



BMD vs bone strength



Courtney 1994

«Pull-out»-strength vs BMD



Reitman CA, J Spinal Disord Tech 2004

What's the problem

Inferior biology \rightarrow Increased complication rate Reduced bone strength \rightarrow Increased failure rate Reduced bone healing?

Increased rate of immobilisation problems

Surgery must be done more gently with more robust osteosynthesis

Osteoporotic Fractures



Intramedullary nailing



Mechanical and biological advantages

Full weight bearing @ day one

Less invasive

Intramedullary nailing



Angular stable looking screws?









Plating and osteoporosis



Locking plate

Mechanical and biological advantages

Long plate and spreading of the screws \rightarrow increased pull-out-strength

Increased working length \rightarrow facilitate callus formation and produce less strain



Perfect reduction and stabilisation























Facilitating stability? Cement augmentation?



Other ways to INCREASE the mechanical stability ?

Autologous bone

PMMA

May become too hot

Non-resorbable

Calcium phosphate

Theoretically good

Most studied



Bajammal JBJS 2008. Larsson 2004 (abstr.), Matsson JBJS B 2008, Larsson 2012

Look here before you run for buying!

Cements and other

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CONCLUSIONS: Orthopaedic surgeons should interpret claims made in orthopaedic print advertisements with caution. Approximately half of the claims are not supported by enough data to be used in a clinical decision-making process.

PRINT ADVERTISEMENTS

BY TIMOTHY BHATTACHARYYA, MD, PAUL TORNETTA III, MD, WILLIAM L. HEALY, MD, AND THOMAS A. EINHORN, MD

Investigation performed at Boston University Medical Center, Boston, and Lahey Clinic, Burlington, Massachusetts

Bajammal JBJS 2008. Larsson 2004 (abstr.), Matsson JBJS B 2008, Larsson 2012

Perfectly reduced, stabilised and cemented

What's next?

n

Improve biology

Nutrition!

Energy der Protein rich

D-vitamin

Correct defic



Avoid NSAID's and steroids

Premotes Reart, Brain, Bulan and Joins Rearts¹ 36.3 E so (100 mL)

Improve biology - medication

Common osteoporosis medicaments

Ati-Catabolic

(Alendronat, Aclasta og Prolia)

Anabolic

(Teriparatid (Forsteo))

3 studies (radius-, pertrochanteric- and pelvic#)

→More rapid healing and rehabilitation

Finally

Patients > 50 years have significantly ncreased risk for another fracture !

Consider treatment of osteoporosis

Yes, all patients ! Yes, always !

Summary

Relative stability

Self Mutrition implants

Minivitanii/ D technique

Plates

Intramedullary stands?

Locking screws Poller Screwsnt the next fracture Long plates Multiple locking screws

Bridging

Thank you



Courtesy to F Frihagen and JE Madsen