

The Orthopaedic Surgeon and the Diseases of Skeletal Metabolism

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ABSTRACT

Fragility fractures, namely fractures from low-energy mechanisms that would not produce fracture in a healthy bone, are most commonly caused by osteoporosis, and constitute a major financial burden worldwide. The effectiveness of systems for the prevention of fragility fractures, also known as fracture liaison services (FLS) has been investigated by numerous programs. The FLS is a coordinated care paradigm where several providers work together to help the patient manage their osteoporosis following a fragility fracture in order to help prevent subsequent fractures. FLS offers a thorough method for not only identifying individuals who are at risk for secondary fracture but also for putting into practice evidence-based therapies to stop further fractures. For the FLS to be successful, doctors, nurses, administration and national healthcare systems must work together toward the common objective of protecting patients aged 50 and older from fragility fractures. This review article discusses the current FLS programs, their pros and cons, and emphasizes on the Greek FLS model.

KEYWORDS: Osteoporosis; Fragility fractures; Fracture liaison services

Although the medical and financial consequences of Bone Metabolic Diseases and their main representative, Osteoporosis, are serious, the knowledge and the education of doctors all over the world is not proper, nor adequate. Fortunately, in Greece, doctors' education on this subject is better compared to other countries. That is because in our country we have three scientific societies (HSSBM, HELIOS, FFN) with numerous activities, such as teaching, research, etc, nationally and internationally. We also have five relating journals and a great central laboratory in Athens and some other smaller in university departments.

As Orthopaedic Surgeons, we have to be updated

with the increasing knowledge concerning the Metabolic Bone Diseases and to be aware of all the new developments around this wonderful tissue, the Bone. That is our main subject in every day clinical practice and the Metabolic Diseases are actually all the "Pathology" of our specialty, all the "cold" Orthopaedics which covers more than 70% of our everyday practice.

Continuous Medical Education (CME)

In our days every doctor accepts daily a "hurricane" of medical knowledge. In fact, general medical knowledge is doubled today every two months! That is due to 28000 medical journals with 25 million new

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scientific papers which are published every year, to thousands of scientific meetings worldwide and to the continuous clinical and research efforts from general medical staff. Two other factors for Medical knowledge are that after two years the doctors lose 50% of their medical knowledge as well as that this knowledge changes every day. (1) So, continuous Medical Education (CME) is absolutely necessary for all the new and older doctors through their lifetime.

Bone metabolic diseases and their main representative Osteoporosis are among the fast-growing topics and also many things have changed over the time in this subject. For example, it is not long ago when Estrogens, Calcitonin, Strontium, Parathormone, Fluorate and other drugs were among our basic weapons in the osteoporosis treatment and today have been withdrawn. (2,3,4)

It is well known that despite the size and the serious medical and financial consequences of osteoporosis, the knowledge and education of doctors for this disease is not all over the world the proper and adequate one. (4,5) One first explanation for this may be that physicians of many different specialties are implicated with osteoporosis and many of them find other topics more "attractive", like Orthopaedics--- operations, Rheumatologists----rheumatic diseases, Endocrinologists----hormonal disturbances and Diabetes. In a big international survey (2000) with the participation of National Societies of the UK, France, Germany, Italy, Spain and New Zealand a questionnaire was sent to all Orthopaedics asking for anonymous answers. The analysis of the results was performing in Sweden, and found that Orthopaedic Surgeons rarely send their patients for further treatment for osteoporosis after hip fracture and also that 50% of Orthopaedic Surgeons have no or insufficient education in osteoporosis. (4,5)

Educating Physicians in Metabolic Bone Disorders

In Greece, I would dare say that doctors' education on osteoporosis and other bone metabolic diseases is fairly good compared to the majority of other countries. (6,7,8) A great percentage of doctors of the three main specialties involved in bone metabolic diseases (Orthopaedics, Endocrinologists, Rheumatologists) know and are interested in metabolic bone diseases and mainly osteoporosis. (8,9,10) Although until now

no serious care and planning from the State exists, concerning the continuous education, osteoporosis and Metabolic bone diseases have gained the interest of great groups of doctors in Greece in the beginning of the 80's with the activity of some individuals as well as pharmaceutical companies. So today in our country we have societies, journals, books and research laboratories concerning the education of metabolic bone diseases. In detail three scientific societies exist. In 1986 the "Hellenic Society for the study of bone metabolism" (HSSBM) was founded which is a member of IOF. It has almost 700 members and has organized more than 80 National, International and Local meetings, as well as numerous protocols and guidelines. In 1996 the "Hellenic Osteoporosis Foundation" (HELIOS) was founded with almost 900 members, 150 scientific meetings, scholarships, monographies, clinical studies and guidelines. HELIOS is also a member of IOF. Recently the "Fragility Fracture Network" was founded, member of the International Network with increased similar activity. In our country five related scientific journals are also circulating, namely "Ostoun" (1990), "Musculoskeletal and Neuronal Interactions" (2000), "Skeletal Health" (2002), "Journal of Frailty, Sarcopenia and Falls (JFSF,2019), and "Journal of Research and Practice on Musculoskeletal system" (JRPMS,2020). In 1974 a great Laboratory research center in "KAT" Accident hospital was established. This belongs to the Medical School of Athens University. Its founder and first Director for many years was prof. Lyritis and after him the profs. N.Pap ioannou, I. Dontas and E. Chronopoulos. This center has had a lot of activities like lessons, scientific protocols, Masters, PhDs and from 2007 a postgraduate program for Metabolic Bone Diseases, with more than 600 students. Finally for educating physicians in Osteoporosis there are more than 30 books in our country about bone metabolism. The vast majority of them by professor G. Lyritis and some by professors A. Avramides, G. Kapetanos and others.

Orthopaedic Surgeon and Osteoporosis

As we have mentioned before, according to an international survey (2000), 50% of Orthopedic Surgeons have no or insufficient knowledge of bone metabolism and osteoporosis. (4,5). So, the first question arises. Are we orthopaedics or surgeons? Obviously, both.

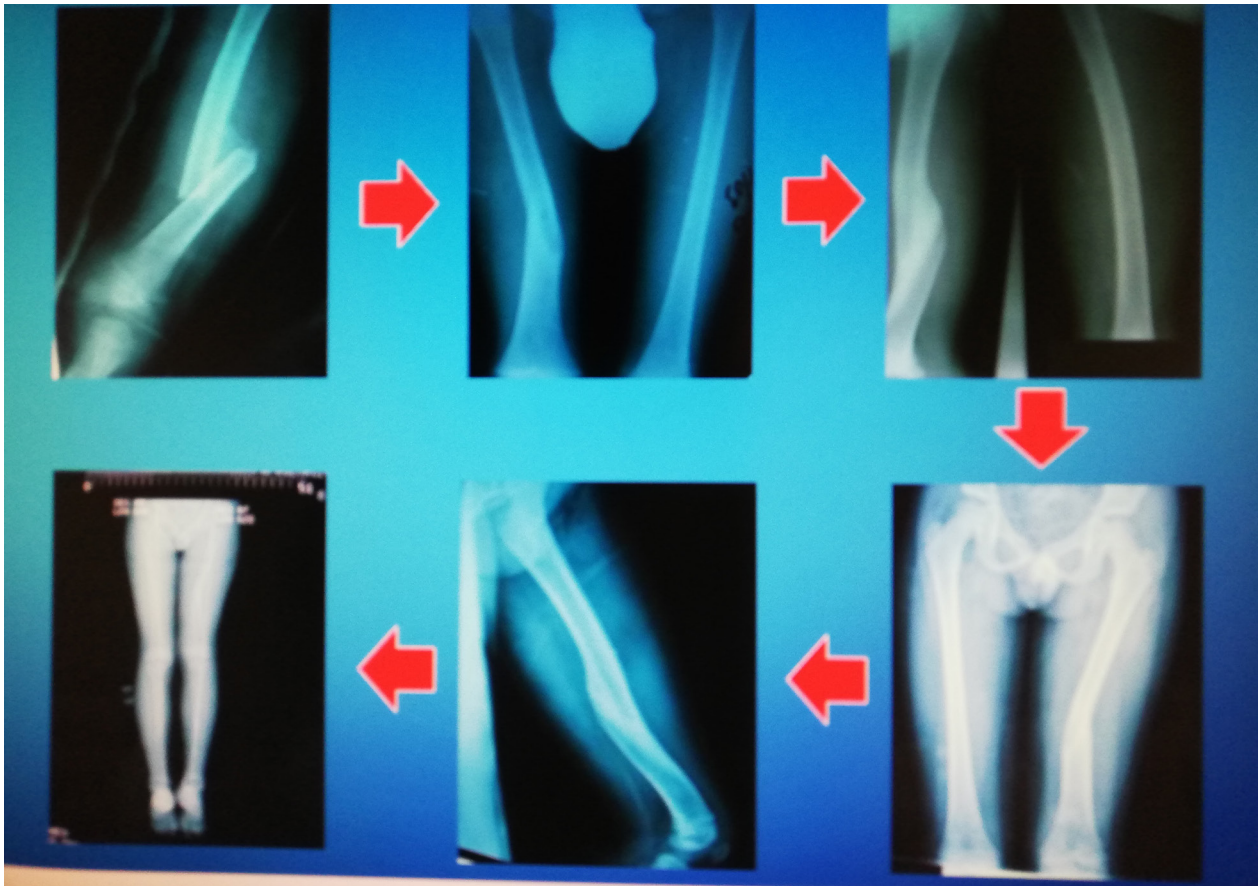


Fig. 1 Self-remodeling of a femoral fracture one year after the fracture.

And also" Are we orthopaedic surgeons or surgeons' orthopaedics?" I believe the first as "plastic surgeons and neurosurgeons", and not as "surgeons of abdomen etc." The second question is who keeps in his hand the bone, in every day clinical practice like orthopaedics? Nevertheless, we have to admit that "BONE" is not a simple material, a primitive tissue but it has wonderful and unique properties in comparison to other tissues, even with the so-called "kind" tissues.

These unique properties are; 1. The Regeneration. Every 10 years the whole skeleton is replaced. 2.The wonderful healing possibility Often after some years we cannot recognize the fracture.3. The self-remodeling and correction of minor deformities (Fig. 1) and 4. The long-even eternal- survival. The BONE counts the human and physical history and life.

From the above is obvious that pathophysiology of the bone is a very complicated issue which approach-

es and involves many specialties like endocrinology, rheumatology, orthopaedic, general medicine and others.

We have to point-out that in fact "metabolic bone diseases" cover more than 80% of every day clinical practice of Orthopaedics. Osteoporosis, osteoarthritis, healing of the fractures, Paget, rachitis-osteomalacia, tumors, rare metabolic syndromes are included to the metabolic bone diseases.

Why therefore a minority of Orthopaedics is not interested in bone metabolism? Is that topic very difficult? Is "surgery" more attractive and profitable? But after these all, have we the right to leave this attractive and promising topic of our specialty to the endocrinologists and rheumatologists only? Have we the right to deny the orthopaedic pathology and to keep only the title of "bone surgeons"?

It is well known that despite the size and serious medical and financial consequences of osteoporosis

sis and the wonderful world of bone metabolics, the knowledge and education of doctors for this topic is not all over the world the proper and adequate one. After all the above it is obvious how important for our specialty is to keep in touch and to stay close to this subject and to stop being only good: technicians" for the bone surgery.(10,12)


What do we have to do?

1. To open and enlarge the topic by including Osteoarthritis, Bone Tumors, and the healing of the fractures.
2. To establish in all University Orthopaedic departments as well as in the big regional hospitals' outpatients' departments and laboratories for bone metabolism.
3. To increase the activity of our societies, for ed-

ucation of the young doctors on these topics.

4. To persuade the authorities for the financial consequences of metabolic bone diseases (i.e. osteoporosis and osteoarthritis). Recently the Government announced the introduction of an optional a six months period training on metabolic diseases for the specialty in orthopaedics, that is of course a very important step.

5. To persuade the media to give the people the proper information.

6. Some other subjects should have better study and planning like: pre-certificate education of the students with proper books for them, the preparation of trainers, the registration of doctors' and scientific centres certification, the promote and encouraging of the clinical research and participation in local, national and international meetings relative to the topic, etc. 

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READY - MADE
CITATION

Kapetanios G. The Orthopaedic Surgeon and the Diseases of Skeletal Metabolism. *Acta Orthop Trauma Hell* 2023; 74(2): 2-5.