

Editorial

Pediatric Orthopedics is Science, Art and Prediction

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After encountering unusual cases of congenital scoliosis, severe forms of cerebral palsy, severe and lethal cases of Imperfect Osteogenesis; and after elongations in the outbreak of pseudarthrosis, I have come to the conclusion that Pediatric Orthopedics (PO) is not just an independent science. It has with predilection, as fundamental structural elements, a mix of science, art and prediction. All three have a scope that forms a system of specific and particular values. These scientific values, of art and prediction, are distinct and predominant; and some chapters of these values belong exclusively to PO. Some general knowledge has an ancient source and has its roots in Ancient Egypt and Mesopotamia; the medical practice during the years 3,500-3,000 BC allowed the statement of principles that are still valid today.

Pediatric Science and Orthopedics

Over the years, the PO has built an orderly accumulation of specific, theoretical, didactic and practical data that studies, researches and interprets the growth and development of the muscular and osteoarticular system of children and adolescents both as a normal phenomenon and as a pathology of this system. A substantial contribution in this regard is made by John Anthony Herring, who made an incomparable and unquestionable contribution to the synthesis and updating of this scientific knowledge which he periodically published in the treatise entitled "Tachdjian's Pediatric Orthopedics", deservedly called "The Bible of the pediatric orthopedist". Eugene Carragee did the same in Spinal Surgery: he promoted and supported Pediatric Spine Surgery through short publications in repeated editions.

PO includes substantial segments from all 3 branches of modern science: biological sciences (biology, chemistry and physics), formal sciences (logic, mathematics and computer science) and even the social sciences (when analyzing individuals and societies, they turn to psychology, sociology and public health). Logically, all these disciplines with their scientific methods, capitalize on the practical chance to be used and to allow appropriate treatment. Each of these disciplines contains theories and knowledge that overlap or often have their own nomenclature [1]. The notions from the empirical spectrum (natural and social sciences) incorporated in the PO allow the stated observations to

be tested in order to be validated by other researchers working under the same conditions [2]. Medical practice is an inexhaustible source in terms of therapeutic strategy in certain diseases. As in all medical disciplines, science in PO has a practical purpose and is part of the applied sciences as well as engineering. All knowledge is based on research conducted in academic and research centers. Fundamental research seeks solutions for applied research: osteogenesis, chondrogenesis, etc. The scientific production in these centers also had PO as its field; a number of these researches have had a resounding practical impact through the implementation of scientific policies. In this sense we can mention: eradication of hip development dysplasia in many states in Europe [3], which was possible thanks to Reinhard Graf; the considerable reduction of complications after the treatment of var-equine foot that could be done by Ignacio V Ponseti method; increasing the healing rate and the initiation of new treatment methods using the Ilizarov external fixator.

Infamy and envy

Superficiality and human stupidity, conjecturally arrived in undeserved positions, have denigrated all values incorporated in the definition of Pediatric Orthopedics. Some young doctors, eager to be without knowing, and the omniscient in other professions who have not understood, and know nothing of, true Pediatric Orthopedics, have modeled everything according to their own profession and their morbid conception. Inept comments about statements in which the doctor works on the boundary between known and unknown, made by those who believe that medicine is the field that can be analyzed by anyone, offend both their way of thinking and their peers who need special treatment. Aberrant behavior of some medical residents and young specialists who denigrate these values, won after centuries of toil and sacrifices made by doctors who had dedicated their work or life to build these values, denote lack of preparation and perfidious envy that have reached the level of hatred, hidden behind seemingly respectful statements. Turbulent times and miserable characters!

To denigrate a doctor on a site whose emblem is the definition of "Pediatric Orthopedics: "PO is Science, Art and Prediction"; photographed on a marble slab which was also signed by the

author, is a satanic act of barbarism and a smack on professional knowledge.

Art in Pediatric Orthopedics

The mastery, the excellence of a surgeon, confers on the surgical procedure act a touch of art. If a work of art gives glory to the author, a surgical act gives, first of all, health to the patient. The surgeon remains somewhat anonymous. Similar repetitive surgical acts can glorify the activity of a surgeon that only revelation leads him to the performance of "works of art". In these cases, in the surgery room the Divine merges with the human. Regardless of the spiritual sensitivity of the surgeon, the revelation confers safety and success to the surgical act.

It is present, not only in theology but also in poetry. Both poets and prophets claim to be inspired by outside forces. Although in contemporary cultures revelation is seen distinctly and is often contradictory, it is understood symbiotically with the same origin and purpose [4]: Divinity gives the expected value of the surgical act for the purpose of ameliorating or healing the patient.

The doctor can make art at all stages to establish the diagnosis and treatment. At the current stage, the art of diagnosis has specific valences and dimensions; for example: Subluxations and Hip Dislocations in Cerebral Palsy in the newborn and children aged 1-6 months remain in most cases undiagnosed; Imperfect Osteogenesis type 2 diagnosed intrauterine can survive in some cases; Acute osteomyelitis in a newborn diagnosed in the first 3 days can be cured; and so on. In Pediatric Orthopedics, the surgeon measures his art when he restores normal relationships and architecturally reconstructs, without an implant, some complex joints (hip, shoulder, ankle) that have the potential for regeneration based on memory of growing cartilage; so that with growth and development, by re-modeling, the configuration tends to normal [5]. The presence of growth cartilage memory is confirmed in the case of diaphyseal fractures of the femur in the newborn, if the diagnosis was established late, after the appearance of a vicious and hypertrophic callus. Even in these situations, the memory of the growth cartilage allows the correction of possible shortenings, so that at the age of 1 year, the child no longer shows shortening, even if they were significant. The law of growth cartilage memory and Wolff's law act in interdependence.

The potential memory of growth cartilage in one case, (in a newborn from a nomadic family, in which the fracture viciously consolidated at 90 degrees) was launched in an impetuous process of recovering the difference in length and in 3 years the pelvic limbs were equal. This memory has maximum potential in the newborn, gradually decreases with age and disappears with their closure. Art, inventiveness and creation mean the recovery of congenital scoliosis. Robert M. Campbell invented the VEPTR (and operated on the first patient in 1989 at the age of 6 months) when there

was no solution to save children with Congenital Scoliosis and Thoracic Insufficiency Syndrome. Art and strategy also mean the surgical reduction of Hip Dislocation from Imperfect Osteogenesis [6]. On this topic at the ARTOP Congress in Pitesti in 2014, Francois Fassier made a resounding presentation with extraordinary impact on the diagnosis and treatment of this dislocation.

Art is also what makes oncological surgery through resections-reconstructions in malignant bone tumors, thanks to the significant contributions of Rainer Kotz. Beyond the bistoury, in Pediatric Traumatology, art consists in the treatment and healing of fractures by orthopedic reduction. This art was developed by Kaye BWilkins, Petru Moroz and Alexandru Pesamosca. The sculptor Constantin Sinescu, a worthy successor of Constantin Brancusi, called by art critics "The second Brancusi in life" says: "Sculpture as an art is a similar operation to the surgery of a pediatric orthopedist. He and, we see the future." The work entitled "Geometric walking" (Figure 1) illustrates the position and appearance of the legs of a normal child, one year old; the flattened plantar arch at this age is to be configured hemi-elliptically (between 2 and 6 years) to attenuate weight and effort, symbolized by a triangular parallelepiped.



Figure 1: Geometric Walk. Sculptor impressed by instability in the motion of a child, aged between one and two years, catches the hypostasis of bilateral support phase, the walking stability geometry: legs a part, one in the back and the other one in the front.

Prediction

Prediction qualifies and nuances PO as a natural science. Through prediction, new data appear that describe biological phenomena based on clinical and experimental observations; predictions of the growth rate in limb inequalities, extension of lesions in iatrogenic quadriceps or arthrogryposis, spontaneous evolutions of some diseases, etc. Predictions are based on abductive, inductive or deductive reasoning; and the experience [7] of some physicians who have solid knowledge in the field and have

worked hard. The limit of allowable angles in long bone fractures in children is an eloquent example of prediction. The substantiated challenge of a prediction is proof of progress. Prediction inter-conditions the optimal timing of serial programming: the Paley D scale has a good prediction and is useful in medical practice.

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