

What makes external fixation a valid treatment option

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External fixation for bone realignment has been used for a long time; literature goes back to the early 1900s. Since then, many other applications have been added – for instance deformity correction and arthrodesis, trauma management and damage control orthopedics (DCO), among others. These two last mentioned conditions were part of the program's core elements of the highly educational course organized by Orthofix in Verona on December 11-13, 2019, entitled "Fundamentals of External Fixation." Addressed to a group of forty motivated young doctors from six different European countries - mainly orthopedic and trauma surgeons early in their professional career or with little practice when using external fixation devices - it was held by an international faculty of experts (a huge amount of surgical experience!) arriving from different medical schools and hospital organizations.



Biomechanics and stability, two key words.

When a bone breaks, nature works to heal the bone, which is a physiological process, and an orthopedic surgeon must help nature to restore the biological and mechanical properties of the bone as it was before the fracture. External fixation and frame assembly require a combination of pins, wire, clamps, rods, and rings to guarantee a stable construct that can apply **compressive, distractive, and/or neutral forces on the bone.** **Tommaso Maluta** - an orthopedic and trauma surgeon, and an adjunct professor from the Azienda Ospedaliera Universitaria Integrata Verona, Italy - focused his lecture on these main issues, as well as on the importance of **mastering the surgical technique**, and following the **indications** for safe and stable pin and wire insertion.



"At the end of the three-day course, all attendees, even the few younger residents, had a deeper knowledge about the specific principles and techniques behind the biomechanics of modular, monolateral, and circular external fixation devices, as they have a direct influence on bone stability and, consequently, on the whole bone's healing process" – **Prof. Hanschen** said.

Mark Hanschen was the faculty chairman. He is an orthopedic and trauma surgeon, and an associate professor at Rechts der Isar University Clinic in Munich, Germany.

He commented on the encouraging results of the course: *"All participants could test themselves with real clinical cases, and confront their decision-making process with us. From my own experience, it is essential for each participant to visualize his/her career as a continuous, growing path which may find in Orthofix Academy a reliable, supportive, and unconditional learning opportunity, especially in these days when healthcare systems are called to respond to the constant request to reduce medical costs."*

Questioned on the program format, he answered: *"It was clearly embedded, evidence-based, and covered all crucial matters. I was really honored to be the Chairman, and I learned a lot from my faculty colleagues, as well as from participants."*

More than one valid solution.

Participants could easily share doubts and discuss controversial clinical cases with experts. Let's take the case of a 35-year-old body builder, male, who fell on his outstretched hand during a football game. The wrist fracture presented some nerve concern and comminution, dorsal fragment, extraarticular fragment in the volar region. The main issues were whether to reduce or not, and which treatment solution

to adopt among plaster cast, open reduction with internal fixation (plating), flexible intramedullary nailing, or external fixation. Attendees could evaluate together with the faculty experts pro and contra of each single option, evaluating significant elements – from skin and neurological conditions to plate and pin site infection risks. In the end **external fixation** resulted as a **valid and effective solution over others**.

Nicola Tartaglia is a trauma surgeon, head of the Lower Limb and Foot & Ankle Traumatology Unit at the Regional Hospital F. Miulli in Acquaviva delle Fonti, near Bari in southern Italy: *“We know that in France surgeons prefer to use flexible intramedullary nailing and hybrid devices, while in Britain they frequently choose circular external fixators. As faculty we showed our younger colleagues that **there are many different and valid solutions to manage the same trauma case**. As surgeons our goal is to find **the best solution for the patient, restoring the natural functionality of the limb, free from any industry pressure**”* – he concluded.

Umberto Mezzadri is a director within the Traumatology Department at the Grande Ospedale Metropolitano Niguarda,

***knowledge, planning, and compassion.** We must never forget that we treat **a whole individual, not just an anatomical part of the body**, with wishes and expectations, a personal and psychological life, a familiar context. Considering these elements may facilitate our work and their compliance to the treatment”* – **U. Mezzadri** concluded.

An effective teaching methodology.

Based on the learning pyramid which recognizes the value of a perfect mix between listening and practicing, with frontal lectures and much hands-on experience, both in wet and dry labs, it helped the participants to **translate theoretical principles into a clinical setting**, encouraging them to **keep their mind open** and try to **think outside the box**. The possibility to work on real bodies at the ICLO Foundation was deeply appreciated by all participants. Some of them suggested spending more time in the labs, both wet and dry – for instance, practicing longer on broken sawbones.

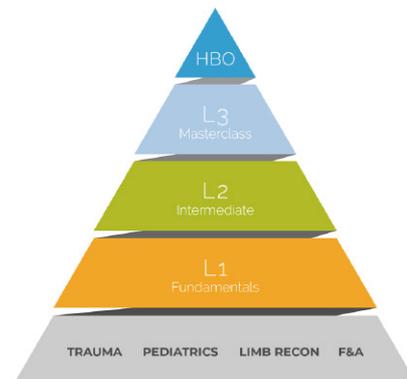
The high quality of the facilities was also highly valued. The newly renovated Orthofix Academy Educational Center



Milan, one of the biggest hubs in northern Italy. He explained that *“when treating polytrauma patients it is mandatory to perform what we know better, applying the surgical technique we are most used to in order **to reduce the operation time and related risks**. In **polytrauma and DCO** we need to **stabilize the fracture**, and **external fixation is quick and safe**. But participants also got the message that external fixation has broader indications than only being a temporary solution, or even the last option, instead in many cases it can be used as a **definitive solution**”*.

Patient first.

*“I tried to remind them that the **patient comes always first**. Three main concepts should accompany our daily practice:*



helped doctors to concentrate on their learning goals and, at the same time, made them feel comfortable and kindly welcomed, facilitating team work and the emergence of new professional and personal networks.

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