An Update on Orthobiologics and Regenerative Medicine.

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Osteoarthritis and muscle tendon pathologies are among the most common causes of pain and disability in humans and have a great impact on quality of life.[1] These conditions are often corelated with aging, but early onset of disability might be a consequence of traumatic events. Tissues affected by these pathologies have limited self-healing potential thus creating a difficult challenge for orthopaedic surgeons. In the past we have treated these ailments with NSAID and corticosteroids to mask symptoms, inhibit the inflammatory process and healing but caused rupture of tendons, muscle and skin and fat atrophy.[2] International Orthopaedics in 2010 published a study that steroids therapy is worst than no treatment at all at 6 months.[3]

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Orthobiologics are substances that Orthopaedic surgeons use to help injuries heal more quickly. They are used to improve the healing of broken bones and injured muscles, tendons, and ligaments. These products are made from substances that are naturally found in our body. When they are used in higher concentrations, Orthobiologics substances help speed up the healing process. Some key benefits associated with Orthobiologics conservative therapies include minimizing the impact of degenerative disease, all procedures are completed in the office as an outpatient and recovery is more rapid than surgery.[4] Orthobiologics therapies are a specific type of regenerative medical treatment. The best news is that it has gone from science fiction to a very real and very accessible form of treatment for a variety of orthopaedic injuries and joint degeneration. We were finding mechanical solutions like joint replacement and arthroscopy in not so long past. Over the years we have realised this is biology and now we are increasingly looking for biological solutions for biological problems. This all started initially as mechanical biologics with visco-suplemntation as first biologics, with limited success for a limited time with results lasting weeks at best.[5, 6] Blood stream biologics were next introduced with microfracture as the forefront followed by Glucosamine and lately collagen peptides which are a dietary supplement of small peptides that is highly soluble and highly absorbable and considered as functional foods.[7, 8] PRP (Platelet rich plasma) emerged as the second generation of Orthobiologics, and the first Orthobiologics of the autologous form. [9, 10]

In recent years, Bone Marrow Concentrate (BMC) has emerged as the third generation of Orthobiologics therapy and also lately stromal vascular fraction from a variety of origins including fat cells. Stromal vascular fraction with PRP is also showing encouraging results especially in Knee arthritis.[11] The evidence is out there. We have now numerous randomised control studies for arthritis of knee with over a thousand patients in the review.[11-14] The result suggests PRP is better than visco-supplementation, steroids, Ozone and placebo.[12] PRP reduces pain improves function and improve quality of life for at least 1 year with no side effects.[14] Some studies have shown detrimental effect of PRP on cartilage but when leucocyte rich PRP was excluded the results is amazing.[15]

There is now established outcome in multiple pathologies. Multiple injections seem to do better than a single shot.[16] Lately a combination of PRP and Plant origin collagen has been successful in cuff tears, Patella tendon Achilles tendon and muscle tears that can be treated non surgically, the combination is called tendo-acp which has collagen that act as a scaffold and PRP initiates healing and repair.[17]The new kid on the block is monocyte therapy. There was already a role identified in management of Stroke patients Alzheimer's disease and burns but now being extended to orthopaedics. The monocytes are cell sorted with selective charged membrane filtration, from one's own blood and are showing exceptional results in tendon injuries, focal cartilage defect and bone consolidation delays. [18-20]

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