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## **Stem Cell Therapy for Knee Injuries and Arthritis**

Utilizing your own stem cells to help the healing process of injured or degenerated joints. The human body is made of billions of specialized cells that form specific organs like the brain, skin, muscles, tendons, ligaments, joints, and bone. Each day these cells go through a degenerative and regenerative process. As older cells die, new cells are born from stem cells with the unique capability of being able to create multiple types of other cells. However, when tissues are injured, the degenerative process exceeds this regenerative process, resulting in structures that become weaker, painful and less functional. While there are several types of stem cells, those that are best at promoting musculoskeletal healing (tendon, ligament, cartilage and bone) are found in Adipose Tissue/bone marrow. These mesenchymal stem cells, or MSCs, are essential to successful patient outcomes which is capable of yielding much higher concentrations of these important cells. These non-surgical stem cell injection procedures happen within a single day and may offer a viable alternative for those who are facing surgery or even joint replacement. Patients are typically able to return to normal activity following the procedure and are able to avoid the painful and lengthy rehabilitation periods that are typically required to help restore strength, mobility and range-of-motion following invasive joint surgeries. Lastly, patients are far less vulnerable to the risks of surgeries, such as infection and blood clots. Knee injection procedure utilizes stem cells from your own body's reserves to help heal the injured area. Modern techniques in today's medicine allows us to withdraw stem cells from Adipose tissue, concentrate them through a lab process and then re-inject them precisely into the injured tissues in other areas of the body using advanced imaging guidance. Through Fluoroscopy and MSK Ultrasound, now we're able to ensure the cells are being introduced into the exact area of need. When the stem cells are re-injected, they enhance the natural repair process of degenerated and injured tendons, ligaments, and arthritic joints - Turning the tables on the natural breakdown process that occurs from aging, overuse and injury. How Are Stem Cells Obtained? The human body keeps a supply of stem cells available to help repair injured and degenerated tissues at all times, making it fairly simple to retrieve them for therapeutic purposes. As stem cells remain in reserve, in the Adipose tissue, we have found the easiest place to harvest these stem cells is from the tummy fat. Procedure is done in the office, numbing the abdominal skin before procedure. A special needle is inserted into the tummy. This harvesting procedure is well tolerated by patients and not considered difficult as many patients claim it is not painful. After collection of adipose tissue, it is taken to our laboratory and centrifuged to concentrate and purify the stem cells while other cells that are not needed are removed, leaving a concentrated sample of stem cells used to help heal your injury. The entire process is done by hand to enable customized designing of the stem cell specimen for your particular injury. A preparation of your concentrated platelets are also gathered at this time for injection into the injury site to release growth factors that "turn on" the stem cells that will later be injected. If you are suffering from a joint injury or degenerative condition such as osteoarthritis, you may be a good candidate for a stem cell procedure. "In advanced stage of Osteoarthritis; Stem Cell vs. total knee replacement both are effective but stem cell therapy is more affordable and practical in Bangladesh"