# New Advances in Stem Cell Therapy for Degenerative Diseases: A Case Series

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**Abstract**

Chronic or non-curable diseases represent a challenge for science. This supposes the implementation of new and advanced therapies in order to [first] stop progression of such diseases, [second] re-establish organ structure and function and [third] improve life quality and life expectancy. On the past decade several advances in regards of treatment of these diseases have been made, including diabetes mellitus, Alzheimers, Parkinson's, cardiovascular disease, chronic arthritis, vertebral column lesions, among other diseases. Genetic, mitochondrial, and peptide therapy are novel treatment approaches that are an aid to Stem Cells Therapy (SCT) in these patients. [1, 2, 3]

Diabetic retinopathy, nephropathy, and neuropathy are the mostly reported complications, these all take a huge toll on patients life quality and ultimately expectancy.[4] In addition, insulin resistance is becoming more common and SCT is a promising therapy in terms of lowering the need for anti-diabetic drugs.[5] Other degenerative diseases like Parkinson's and Alzheimer's affect patients abilities to perform basic activities of life on their own, and diseases such as cardiovascular disease and arthritis limit patients physical acticity. Given novel therapies (specially Stem Cells) are difficult to track it is another challenge to measure subjectively the outcomes in patients.[6] It is therefore important to have in account all possible variables affecting each patient in order to asses for outcomes. As mentioned diseases complications and impairments have a big impact in patient life quality.

**Methods**
In order to evaluate our cases, 60 of our patients were selected based on their clinical condition, lab work status, organ involvement. Our patient-based approach started with a thorough clinical history, physical examination and lab work prior to treatment, measurements include: basic metabolic panel, lipid panel, tumor markers, *viral antigen markers*, various hormones concentrations. Media (photos and videos) are taken to evaluate certain pre and post procedure signs and symptoms such as difficulty walking, peripheral neuropathy, memory loss, mobility, etc. And lastly pertaining imaging studies are requested as recommended per case. -All that are found out of range (for blood studies) or abnormal (for imaging studies) are repeated again after procedure and compared. Each case then is evaluated comparing the studies and physiological, and clinical condition of the patient prior and after the received treatment.

**Cells Harvesting and Implantation**

1. **Harvesting:** Stem cells are harvested from iliac crest, sacral bone. Amount obtained may vary from patient to patient, but ranging from 100-200 mls.
2. **Centrifuging**: Harvested bone marrow is sent to centrifuging in order to separate its products. Plasma is extracted from the tube (and saved) and cells are extracted carefully from the transitioning area.
3. **Signaling and Activation**: cells are further treated with antibiotic, signaled with peptides and cytokines, and then activated twice with laser light.
4. **Application:** cells are then placed near to the damaged or affected organs, for example, near the pancreas in abdomen to improve pancreas function, and in those with DM complications, near affected organs as well (tendons, corpus cavernous, facias, nasolabial folds, eyes, etc) following the trajectory of blood vessels.

**Follow-up**
Lab work and imaging studies that had previously been off range are repeated in order to evaluate outcome and progression on treatment.

**Results:**
Laboratory results, imaging studies, and clinical evaluation are all taken into consideration when evaluating patient outcomes, signs and symptoms are compared as well through video, and photos.

Our average improvement rate is from about 80-90% in most cases, and life expectancy is extended to approximately 8 years, with notable improvement in life quality. This translates specifically to reduction in insulin or oral anti-diabetic drug need, improvement or peripheral neuropathy, less referred erectile disfunction in the patients population with DM. Patients with Parkinson's achieve sphincter control, lessening of frequency in episodes with hallucinations and delusions, decrease in tremor intensity. Patients with Alzheimer's after a few months of treatment start showing signs of slower disease progression, increased recall of names and events, and increased ability to perform basic daily activities. Our case series studies show that Stem Cell therapy for patients with DM type 2, Parkinsons, Alzheimers and other diseases is a safe and effective intervention in terms of life quality and life expectancy, and slowing of disease progression in degenerative diseases. No patient present any adverse effect other than pain and/or mild ecchymosis in the site of puncture.


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