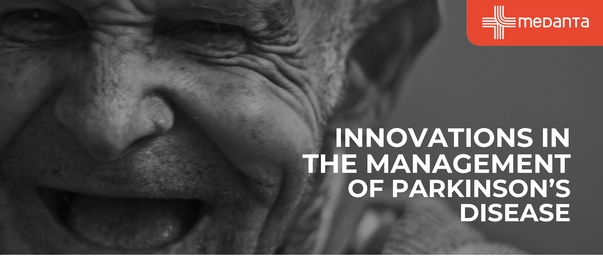

INNOVATIONS IN THE MANAGEMENT OF PARKINSON'S DISEASE

PARKINSON'S DISEASE
is a progressive disorder of the nervous system.

First symptom is usually a barely noticeable tremor in one hand.

Stiffness or slowing of movement common, face lacks expression.

Arms do not swing while walking; speech becomes soft or slurred.

Symptoms worsen over time leading to difficulty performing daily activities.

HISTORY
& CONVENTIONAL MANAGEMENT

First described as 'paralysis agitans' by Dr James Parkinson in his famous 'essay on shaking palsy' in 1817.

Anti-parkinson's medication & neuro-rehabilitation tide over the first few years.

The efficacy of medication gradually declines,

and increases the patient's dependency on caregivers.

EVOLUTION OF SURGICAL MANAGEMENT
OF ADVANCED CONDITION

Irreversible and difficult to adjust as the condition progresses.

Historical procedures were ablative, causing irreversible changes to the brain tissue.

Esoteric procedure with programmable electrical stimulation to specific areas.

Emergence of reversible and adjustable surgery utilizing deep brain stimulation using brain pacemakers.

Patient-specific direct targeting of neural circuits for the pacemaker procedure.

Technological innovations like DTI-MRI, robotic procedures and AI aid precision and accuracy for a better outcome.

TECHNOLOGY INNOVATIONS + SURGEON'S EXPERTISE
MAKE OUTCOMES BETTER

Advanced brain-imaging MRI technologies such as fibre-tracking methods like DTI: Diffusion Tensor Imaging improve precise targeting.

Robotic brain-pacemaker awake-neurosurgical procedure reduces dependence on manual adjustments and produces better efficacy.

Machine learning models aid in patient selection, targeting and eventual brain-pacemaker programming optimization.

Real-time watch-dog feedback analysis of the local field potentials by the brain-pacemaker pulse generator itself which would then automatically release a closed-loop anticipatory stimulation response, as and when needed, back to the brain alleviating any unpredictable manifestation of PD symptoms as far as possible.

Remote-controlled satellite-aided modulation of the brain pacemaker from the physician's desk, enables the fine-tuning of the device for patients in far-off places.

Human factors / Surgeon's expertise:

- Proper case-selection
- Adequate target-planning
- Detailed intra-operative assessments

Minimal medications + Regular exercises + Appropriate brain-pacemaker neuromodulation = Patients back to productive lives.

Based on the information provided by:
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