We describe our experience with CT guided Real Time Plasma Energy Discoplasty (PED) for symptomatic Cervical Disc Degeneration. The primary purpose was to evaluate the role of percutaneous plasma energy delivery as a less invasive option of disc decompression than open surgical disectomy with the additional advantage of disc preservation (Discoplasty). The secondary purpose was to evaluate the advantage of high quality real time multi-slice CT for needle guidance over routine X-ray fluoroscopy in accuracy and complication avoidance.

50 patients with symptomatic Cervical Disc Degeneration and disc protrusions as defined by clinical findings correlated with MRI were treated. All patients were assessed to have contained disc protrusions. 30 patients had predominantly radicular symptoms and 20 patients had predominantly axial pain. The procedure was carried out in an outpatient setting under local anesthesia with intravenous sedation in an interventional CT suite under sterile conditions. A percutaneous puncture and needle placement into the symptomatic disc was carried out in real time CT. Either an anterior or a lateral approach was carried out to avoid critical vascular and neck structures based on CT with contrast (CT angio). A wand was then placed into the nucleus and 2-3 lesions done for 8-12s duration. The average procedure time was 55 minutes. There were no intra-procedure complications. One patient had a vaso-vagal episode during neck palpation prior to needle placement requiring a rescheduling that went uneventfully. One patient had a post-procedure hoarseness of voice that resolved in 24 hours. Most patients were discharged from hospital an average of 2 hours after the procedure.

28 of 30 patients with radicular symptoms had significant relief (VAS mean pre-op: 8.2; VAS mean post-op: 2.1). 15 of 20 patients with axial pain had significant relief (VAS mean pre-op: 8.5; VAS mean post-op: 2.3). 5 patients had recurrent symptoms (mean follow-up: 12 months; range 6-18 months).

In conclusion, PED is a less invasive option than open surgery in selected patients with a reasonably good success rate of symptom relief (86%) and with minimal morbidity. There were no intra-procedure complications including inadvertent vascular puncture or incorrect needle placement and lesioning outside the nucleus with real time CT guidance. Further long term studies are needed to assess recurrence rates and conversion to open surgery including TDR. However this procedure does not preclude the patients receiving TDR in the future.