The style of imparting medical training has evolved, over the years. The traditional methods of teaching and practicing basic surgical skills under apprenticeship model, no longer occupy the first place in modern technically demanding advanced surgical disciplines like neurosurgery. Furthermore, the legal and ethical concerns for patient safety as well as cost-effectiveness have forced neurosurgeons to master the necessary microsurgical techniques to accomplish desired results. This has lead to increased emphasis on assessment of clinical and surgical techniques of the neurosurgeons. However, the subjective assessment of microsurgical techniques like micro-suturing under the apprenticeship model cannot be completely unbiased. A few initiatives using computer-based techniques, have been made to introduce objective evaluation of surgical skills.

This thesis presents a novel approach involving computerized evaluation of different components of micro-suturing techniques, to eliminate the bias of subjective assessment. The work involved acquisition of cine clips of micro-suturing activity on synthetic material. Image processing and computer vision based techniques were then applied to these videos to assess different characteristics of micro-suturing viz. speed, dexterity and effectualness. In parallel subjective grading on these was done by a senior neurosurgeon. Further correlation and comparative study of both the assessments was done to analyze the efficacy of objective and subjective evaluation.

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The public is welcome to attend.