"ROLE OF STERIOLITHOGRAPHIC MODELS IN DIAGNOSIS AND TREATMENT PLANNING OF VARIOUS DEFORMITIES OF CRANIOMAXILLOFACIAL REGION- A PROSPECTIVE STUDY"

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ABSTRACT

AIM: The aim of the study is to evaluate the usefulness of 3D stereolithographic models in preoperative planning and intraoperative execution of surgery in craniomaxillofacial region including deformities due to trauma, pathology and those associated with deformities involving growth.

OBJECTIVES:

To evaluate the usefulness of stereolithographic 3D models in

1. Pre-operative planning of reconstructive maxillofacial surgery
2. Measure the intraoperative time
3. Ease of adaptation of hardware
4. Assess accuracy of reconstruction using post-op CT -scan/surgeons questionnaire/patient questionnaire.
5. Measure total mean flap time and total reconstruction time

MATERIALS AND METHODS: This study was performed on 50 patients who were

admitted to the department of oral and maxillofacial surgery in SDM Craniofacial surgery and Research Centre, Dharwad for treatment of post-traumatic defect, pathology and those associated with deformities involving growth of maxillofacial region. The period of study was from June 2017 to June 2019, on patients who were diagnosed of various deformity in Craniomaxillofacial region.

RESULTS: Out of 50 patients who were included in this study, there was a preponderance of males in both the groups.

The stereolithographic model in this study were used mainly for reconstructive (40%, 10/25 models), pathology (32%, 8/25 models), trauma (12%, 3/25 models), secondary deformity (12%, 3/25 models) distraction osteogenesis (4% 1/25 models).

The total mean scores from the different subject's assessments were 8.5 by surgeons, 7.18 by patients.

CONCLUSIONS: Stereolithography model were found by the group subjects to be very useful, particularly for diagnostic and patient education as well as simulation of surgery.

Total duration of surgery was reduced by half an hour when compared to conventional group. The mean flap time was found less in model group which was statistically significant compare to conventional group.

KEY WORDS: Stereolithography, DIACOM, Head and Neck Reconstruction, Free Flap, Trauma, Pathology, Secondary Deformity, Distraction Osteogenesis.