INTRODUCTION
Many patients becomes edentulous in one arch while retaining some or all of their natural teeth in the opposing arch. Several difficulties are encountered in providing a successful, single complete denture treatment. According to French FA\(^1\) artificial dentures function like mechanical machines in an anatomic environment. In cases where there is a clash between esthetic & functional requirements, a choice is to be made by favouring one at the expense of the other or make some amount of compromises in most of the situations. Single complete dentures may be opposed by (1) natural teeth (2) fixed restorations (3) a removable partial denture (4) an existing complete denture.\(^2\)

CASE REPORT
A 52 year old male reported to the department of prosthodontics (Institute of Dental Sciences) with a chief complaint of completely edentulous maxillary arch opposing a partial complement of natural dentition prosthetically by incorporating metal denture base in place of a conventional poly methyl methacrylate material to combat the masticatory forces from natural dentition and improve the longevity of the prosthetic replacement.

PROCEDURE
Impression of the lower natural teeth was made with an irreversible hydrocolloid impression material & the dental stone diagnostic cast was poured. Preliminary impression of the edentulous maxilla was made with impression compound and plaster cast was poured for the fabrication of a custom special tray. The peripheral tracing procedures were completed with green stick impression compound and the secondary impression was made with zinc oxide eugenol impression material. Master cast was made with dental stone Type III and the mould of the same was made with reversible hydrocolloid (Agar) and a refractory cast was poured with ethyl silica bonded investment material. On the refractory cast the denture base pattern wax was adapted and the sprues were attached & invested. The denture base was casted with cobalt chromium metal. The denture base covered the palate and residual ridges with retentive loops extending on the ridges and the posterior palatal seal area for mechanical retention of acrylic resin and teeth to the metal.

The vertical dimension of occlusion was established and occlusion rim on the maxillary denture base was constructed & contoured for adequate lip support in the anterior region to simulate the vertical and horizontal overlap of the anterior teeth. The anterior region of the occlusal rim had the same thickness as the incisal edges of the anterior teeth to allow for this vertical overlap. After this with the help of functional chew in method the centric records were made and transferred on the mean value articulator.

Arrangement of the artificial teeth was carried out to reveal the necessary changes to be made on the lower teeth. Adjustments in the artificial teeth were incorporated in preference to making changes to the natural teeth. A trial of waxed up maxillary complete denture was made followed by acrylization of the complete denture (figure3) with heat polymerized acrylic resin. The interferences in denture were eliminated and denture given to the patient. Post insertion instructions were given to the patient regarding its maintenance & hygiene.

DISCUSSION
One of the most clinical situations involving a single denture is that of a complete upper denture and lower natural teeth. When a complete denture is opposed by natural teeth, it will almost require some degree of
contouring to provide a harmonious occlusion. The reason for such alteration is mainly due to (1) unfavourable inclination of the occlusal plane (2) malpositioned individual teeth assumed positions resulting excessively steep inclinations, and (3) too wide buccolingual width of natural teeth.

Balance in natural dentition is mainly seen only in centric occlusion but not in the protrusive or lateral excursions. Protrusive & bilateral balance is not necessary for tooth retention as natural teeth resist stress from all directions individually and are thus stable. On the other aspect, artificial dentures merely rest on surface on the tissues with a film of saliva between the dentures on the mucosa. The teeth and base function as one unit, and force exerted against any tooth in an unfavourable direction dislodges the whole denture. Dentures remain stable only when forces exerted against the teeth are directed favourably to the base support. Balanced occlusion contributes greatly to stability, efficiency & comfort. Horizontal thrust not only tends to dislodge the dentures, but also tends to destroy the alveolar ridge.

Maxillary denture base may lack retention and encounter tissue changes of the edentulous ridge followed by discomfort, occlusal problems and fracture of denture bases. There might be occlusal stress on the maxillary denture and the underlying edentulous tissue due to forces from teeth and musculature and opposing natural dentition, & the position of the mandibular teeth which are improperly aligned may also avoid achievement of bilateral balance for stability and lead flexure of the denture bases. The midline fracture in a denture is often a result of flexural fatigue. Areas of stress concentration such as large frenal notch act as additional factors, also denture with a wedged or locked occlusion contribute to concentration of stresses. Though poly methyl metha acrylate (PMMA) denture bases have good mechanical, biological & esthetic properties, the impact & fatigue strength of PMMA are not entirely satisfactory, thus may fail when there is excessive parafunctional and or functional forces.

Cobalt chromium bases in maxillary denture reduce functional deformation and thrust to the supporting tissues occurring in the anterior part of the maxilla. Besides rigidity and fracture resistance these metal bases have several other added advantages like excellent strength to volume ratio, good adaptation to the supporting tissues, enhanced control of denture plaque, high thermal conductivity, high biocompatibility, very little dimensional changes in time through fluids absorption and does not interfere with phonation due to its decreased bulk which also makes the denture light weight.

**SUMMARY AND CONCLUSION**

In this particular case though the occlusal plane was dictated by the mandibular natural teeth, the plane was not very steep and hence the teeth required very little modification and a balanced maxillary complete denture was given to the patient which had a metal denture base with acrylic teeth. This combination provided great comfort to the patient as the metal denture base was strong to resist the catastrophic failure (failure results from a final loading cycle that exceeds the mechanical capacity of the remaining sound portion of the material) and flexural fatigue if PMMA was to be used as denture base. The metal denture bases are good thermal conductors & less bulky. There would be no propagation of crack from the deep labial notch as well. The PMMA in the posterior palatal seal would allow for relining of the denture in the long run.

**REFERENCES**


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LIST OF PHOTOGRAPHS

Fig1: Pre-operative view - High Frenal attachment

Fig2: Mandibular arch

Fig3: Maxillary denture with metal palate base

Fig4: Post-operative view after denture insertion