

An Obturator With A Soft Touch: A Case Report

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Abstract:- Factors that affect the management of maxillary defects are the presence of teeth, amount of remaining support area and defect characteristics. When these factors are not favorable and negatively impact the treatment outcome, then successful prosthetic management of the defect becomes more challenging. For good prognosis, sufficient retention of the prosthesis is a prerequisite. Simultaneously, the prosthesis should be comfortable to the supporting and surrounding tissues, which have undergone surgery. Moreover, these tissues exposed to oral environment are not used to it. So, the material used to fabricate prosthesis should be a flexible acrylic which is softer and more friendly to these tissues. This presentation describes a method of fabricating a obturator with a material called Lucitone FRS(Flexible resin system) Dentsply U.S.A, for a patient with acquired maxillary defect following surgery. Flexible material was used to improve retentive quality of the prosthesis along with convenience and comfort of the patient.

Keywords:- Flexible acrylic, obturator, Lucitone FRS

Introduction:

When extensive surgery for the carcinoma of oral cavity is done, no doubt, surgery is done successfully to remove the defect but treatment is not over there. Patient's life is totally changed post surgically because of the major functional & cosmetic problems like nasal regurgitation of water while drinking and poor phonetic efficiency. Bigger job is left to rehabilitate the patient as close as possible, what a person enjoys in good health . So, we should use the most innovative, tried, trusted, favourable & softer material to remaining tissues to increase the comfort and reduce the functional & cosmetic problems . Here, a case report of an obturator made of a flexible acrylic Lucitone FRS (Flexible resin system), Dentsply, USA is presented. The material is chosen because of the softness, so that prosthesis can easily engage the deeper undercuts of the remaining tissues, hence increasing the retention to great extent and also it is totally atraumatic while inserting and removing easily overcome. Hence, two major common problems of conventional obturator (retention and trauma while inserting and removing) are easily overcome to make a prosthesis more patient friendly.

Characteristics of flexible material:

There is almost no porosity, higher dimension & color stability, higher glass transition temperature, easy to grind & polish, more impact & stain resistant, simple to use, monomer free, more esthetics – in case R.P.D. because clasps can be made of clear flexible acrylic instead of metal, life-like translucency, high strength, abrasion resistance, resiliency, flexural strength, elastic memory, creep resistance & excellent solvent resistance. But flexible acrylic does not have only advantages, it has few disadvantages like requirement of expensive instruments & mechanical retention is required to retain the teeth with denture base.

Comparison between Polymethyl Methacrylate & Flexible Material

Property	Polymethyl Methacrylate	Lucitone FRS (flexible resin system), DENTSPLY, USA.
TENSILE STRENGTH psi	8000	9000
Shrinkage	6%	0.7%
Melting point °C	200	240
Glass transition temp°C	125	155

Case report:

A 30 yrs old, male patient was operated for Pleomorphic Adenoma approximately 8mts back. (fig1).He came to the O.P.D with the chief complaint of poor speech & nasal discharge of water while drinking. After examining the patient, my findings were, it was a case of class I defect [Aramany 1978]5, all teeth of 2nd quadrant were present, all the teeth in first quadrant were missing. Remaining dentition was sound.(fig2&3).

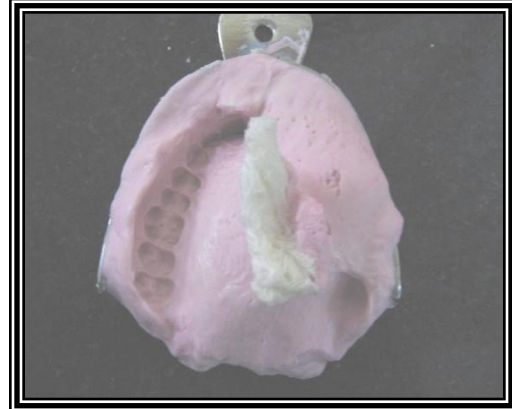


fig1

fig2



fig5



Surveying was done for the identification of location and depth of the undercuts(fig6) and also undercuts of defect were blocked with wax.

fig3



fig6

Final impression was made using poly vinyl siloxane impression material with putty relined technique(Addition Silicon,Aquasil,Dentsply). Impression was poured in type III dental stone(Kalabhai,D.P.I, India) & master cast obtained (fig7&8)

Treatment planning:

Patient was advised for surgical closure of defect, but patient was not willing for surgery. Hence, planning was done to make Obturator6,7 and material planned was flexible acrylic with injection moulding technique which will be followed by a cast partial denture8. Flexible material was chosen because of its softer nature, as there was large defect in palate but there were few retentive undercuts which can be utilized for retention atraumatically.

Procedure:

Diagnostic impressions are made using irreversible hydrocolloid (Alginate, Zelgan Dentsply, India) after putting the gauge deep into the defect.(fig4&5).

fig7



fig4

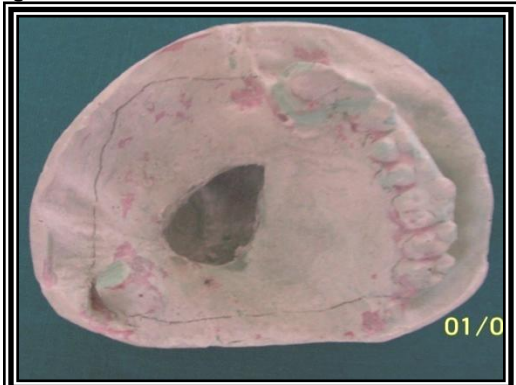




fig8

Autopolymerizing acrylic (D.P.I) base plate was made & stainless steel continuous bar clasp attached to it.9,10,11. Wax rim was made on tray & jaw relations were done. Casts were articulated and teeth arrangement was done. Try-in was done. (fig9)



fig9

Lab procedure:

Casts were demounted from articulator and invested in a special flask of Success injection moulding machine (Dentsply U.S.A). One sprue was attached (fig10) and dewaxing was done. Mechanical retentive holes and grooves were made on tissue surface of teeth to aid in mechanical retention of teeth with the Lucitone FRS because, this material does not have a chemical bonding with the acrylic teeth, as in the case of conventional acrylic dentures.

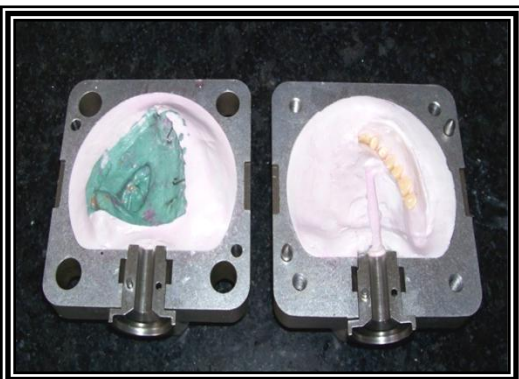


fig10

Turn oven on with cartridge sleeve in place (preset to 575°F) at least 15 minutes prior to processing. (fig11)



fig11

Insert the Lucitone FRS cartridge. (fig12). Set timer for 17 minutes.



fig12

Adjust the air pressure to 100psi and install success narrow piston head. Use heat lamps at the lowest height setting and place flask halves directly under heat lamps. (fig13)

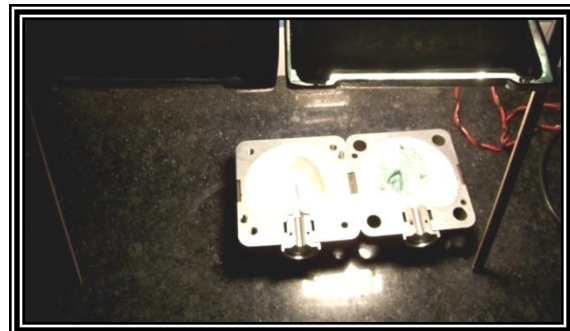


fig13

Assemble flask halves with brackets and the injection insert. (fig14)

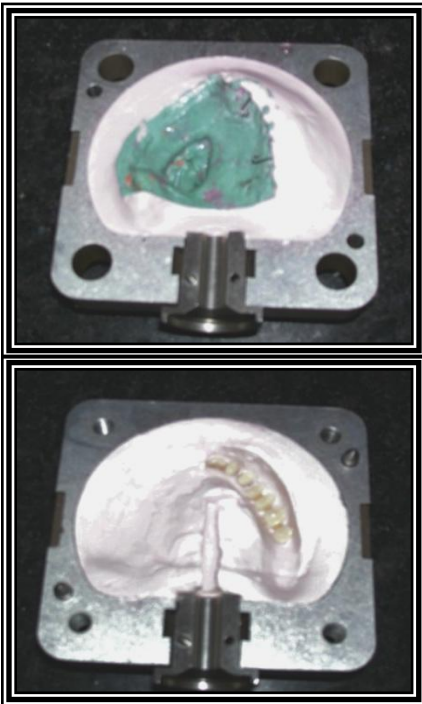


fig14

Remove the cartridge sleeve and cartridge assembly from the furnace. Put it onto the injection insert.(fig15)



fig15

Put the flask and the material together. Position in injection machine and engage piston for 1 minute. (fig16)



fig16

After injection, immediately remove the flask assembly from the system. Immediately disengage the cartridge assembly from the flask assembly. (fig17). Bench cool for 5-10 minutes.



fig17

DIVEST:

Remove the investment from the bottom half of the flask. Sprue was cut with disc & Characterization done using acrylic colors to match the melanin pigmentation of adjacent remaining tissues. (fig18&19) Polish and finish as usual. (fig20)

Fig18



fig19



fig20

Prosthesis delivered to the patient(fig21)



fig21

Result (fig22&23)

As in any case of obturator, the problem of nasal regurgitation of water in nose while drinking is completely solved, there was a tremendous improvement in speech, retention was also good and insertion & removal was totally painfree.

Fig22

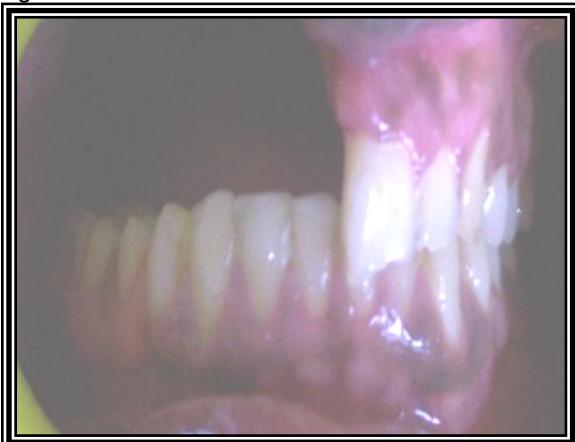


fig23

Discussion:

Every year, lacks of people need removable prosthesis, in any form like complete denture, removable partial denture or any other maxillofacial prosthesis like obturator e.t.c. The comfort and esthetics are the most important features, how these people adapt or react to these prosthesis. Since, early 1930's, compression moulding technique is being used widely throughout the world for making intraoral removable prosthesis. No doubt, millions of people in society have been benefitted from this technique for so many years, but this technique has quiet a few disadvantages like polymerization shrinkage, residual monomer, hard material and inability to engage undercuts atraumatically. But, the science is made to overcome the disadvantages of existing material and to make more innovative & comfortable material. The research in the dental materials as well in polymer sciences has given a much better acrylic material which has overcome many drawbacks of conventional polymethylmethacrylate resin(PMMA). Especially, the patients, who have undergone surgery, have already gone through lot of mental and physical agony, as well as, their residual tissues are also highly compromised. So, the biggest challenge for the doctor is to utilize the remaining tissues in best possible way by using a material which can easily engage the retentive undercuts, devoid of disadvantages of PMMA and so, easily acceptable to the patient.

Conclusion

For good prognosis, sufficient retention of the prosthesis is a prerequisite. Simultaneously, the prosthesis should be comfortable to the supporting and surrounding tissues, which have undergone surgery. Moreover, these tissues exposed to oral environment are not used to it. So, the material used to fabricate prosthesis should be softer and more friendly to these tissues.

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