

*Case Report*

## Collapsible Denture - an Innovative Approach

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### ABSTRACT

Rehabilitation of a patient with limited mouth opening is the greatest challenge faced by the prosthodontist since there is difficulty to access oral cavity for dental procedures. This clinical report describes the fabrication of collapsible removable complete denture by sectional impression tray technique and use of permanent heat cure silicone soft liner in edentulous patient with scleroderma.

**Keywords:** scleroderma, limited mouth opening, silicone soft liner, collapsible denture.

### INTRODUCTION

The intraoral structures may be of normal size, but there will be abnormally small oral orifice and this condition is described as Microstomia and it was great challenge to both the dentist and the patient during restorative procedures and subsequent use of the prosthesis. Microstomia can occur in conditions like scleroderma, burns, radiotherapy, cleft lip, maxillofacial trauma, or surgical treatment of orofacial neoplasms. [1,2]

Scleroderma is an autoimmune disorder of unknown aetiology characterized by vasomotor disturbance, fibrosis of connective tissue, overproduction of normal collagen fibers, subsequent atrophy of the skin, subcutaneous tissues, muscles, and internal organs with associated immunologic disturbances. It is mostly seen between 30 and 50 years of age, females being affected more often than males. Hardening and tightening of the skin and mucosa is seen due to connective tissue fibrosis.

Xerostomia, microstomia, and decreased mucosal resiliency are common problems encountered in these patients, so it reduces the quality of life by difficulty with eating. Insertion and removal of prosthesis was difficult due to limited mouth opening and also make the oral mucosa vulnerable to trauma from the denture. [3,4]

The permanent silicone soft liner (MOLLOPLAST-B) has viscoelastic and elastic properties, so it permits wide and even distribution of forces and also has cushioning effect thereby minimizing the trauma of underlying supporting tissues. [5]

The heat activated cross linking is in the nature of pure addition reaction which does not produce any by product. It has no plasticizers. Once polymerised it provides highly elastic base with a rubber consistency that bonds firmly to the acrylate.

Here in this article we are describing the innovative technique for management of limited mouth opening in scleroderma

patient by using permanent silicone soft liner.

## CASE REPORT

A 52 year old female patient (Fig-i) reported to the department of prosthodontics, Tamilnadu Government Dental College and Hospital, with the complaint of difficulty in chewing food.

From her past medical history, she had scleroderma for the past 10 years with limited mouth opening and reduced manual dexterity due to finger deformities (Fig-iii). On extra oral examination, she revealed limited mouth opening of 24 mm (Fig-ii), and on intra oral examination, complete edentulous maxilla and mandible with dry mouth was present.



Fig i: Pre-operative; Fig ii: Maximum mouth opening; Fig iii: Hand and finger deformities; Fig iv: Sectional mandibular record base



Fig v: Sectional mandibular record base on mandibular master cast; Fig vi: Jaw relation records; Fig vii: Wax trial  
Fig viii: Tin foil adaptation on mandibular master cast after dewaxing

## Procedure

Upper arch was “U” shaped and narrow so we did not find any difficulty in placing the impression tray whereas in lower it was wider, so we planned to make normal denture for upper and a foldable denture for lower arch using permanent heat cure silicon soft liner. Upper and lower primary impression was made using sectional stock tray with putty elastomeric impression material and primary cast obtained.

Sectional custom tray for mandible was fabricated using dowel pin and autopolymerizing acrylic resin. Sectional border moulding was done and definitive impression was made by using light bodied

impression material, reassembled outside and master cast was obtained.

Split record base was fabricated using autopolymerizing acrylic resin and stainless steel press button placed in the midline (Fig-iv, v). Routine jaw relations and wax try in procedures were done (Fig-vi, vii).

Flasking and dewaxing procedure was carried out. Aluminium foil was adapted on the tissue surface of lower investment flask to provide space for soft liner (Fig-viii), so that there was no change in vertical dimension. Heat cure acrylic resin was packed using compression molding technique. Overnight bench curing was done. Next day, it was cured and reopened,

aluminium foil was removed. Lower denture was cut in the midline in two halves of 'v'

shape(Fig-ix) and placed in the indentation of flask.



Fig ix: mandibular complete denture sectioned through midline; Fig x: Application of bonding agent; Fig xi: Finished maxillary complete denture; Fig xii: Finished mandibular complete denture

Primer bonding agent was applied on the tissue surface of lower complete denture (fig-x), MOLLOPLAST –B silicone soft liner was placed and counterpart closed

under compression. The flask with silicone material was cured in boiling water at 100<sup>0</sup>c for 2 hours to complete the polymerization.



Fig xiii: Post insertion; Fig xiv: Width of finished mandibular complete denture; Fig xv: Width of collapsed mandibular complete denture; Fig xvi: Insertion of mandibular complete denture

Finishing and polishing of the dentures were done by routine procedures with special cutters or grinding sleeves without any problems of heat build-up (Fig- xi, xii). Denture insertion done and patient called for review after 24 hrs and followed periodically.

## DISCUSSION

The most common problem faced by dentist in scleroderma patients is narrowing of oral aperture and rigidity of the tongue making intra oral procedures difficult with limited accessibility. Clinical significance of this patient is the reduced mouth opening and oral hygiene impairment, thereby it

makes conventional prosthodontic treatment difficult. [6]

Sectional impressions and dentures, flexible impressions, swing lock denture and cast magnetic attachments were the several techniques used in prosthodontic treatment for patients with microstomia. [7-9]

Chronic use of corticosteroids is often used for treatment of scleroderma, so an implant-supported prosthesis can be considered as an absolute contraindication or relative contraindication for the placement of dental implants. [10,11]

Use of soft liner has tendency for the growth of microorganism, so maintenance of good oral and denture hygiene can effectively minimize the microbial

colonization. So the patient has been instructed to clean the denture with soft brush or wiped with cotton under cold water. [5]

In this case report we used acrylic resin and permanent silicone soft liner for the fabrication of collapsible complete denture, so it can be easily inserted or removed. The distance between right and left retromolar pad after processing of denture with heat cure silicone soft liner can be reduced because of elasticity of soft liner (fig xiv, xv). Soft liner will maintain intimate contact with the tissues there by increase the retention and also due to their resiliency and cushioning effect it will minimizes trauma to the tissues.

Acrylic denture with silicone soft liner can be successfully used in microstomia patients caused by scleroderma, burns, radiotherapy, cleft lip, maxillofacial trauma, or surgical treatment of orofacial neoplasms. Improved retention and stability was noticed after periodical review, patient was satisfied with aesthetics and function.

## CONCLUSION

This clinical report describes collapsible removable complete denture in scleroderma patient with limited mouth opening using permanent heat cure silicone soft liner which is innovative and cost effective. It helps the patient for easy insertion and removal of prosthesis there by it restores function and esthetics. Periodical reviews of these patients enable the dentist to achieve the success of this type of prosthesis.

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