

## Case Report

### Role of complete denture salivary reservoir in palliative care of depression

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#### **ABSTRACT:**

Depression is a common occurrence among geriatric patients, especially if the patients are thought to have been suffering from elder maltreatment by their caretakers. In developing less moderate countries like India, the standard caretakers of elderly are their children which is based on the old social system. The impact of depression in individuals can either affect their ongoing medical treatment or antidepressant drugs, taken by patients can add problems to other medical /dental treatments. We present a case of an elderly female patient, who was taking two antidepressant drugs since few years and was a confirmed case of xerostomia. The patient was suffering from elder neglect which was verified from a questionnaire (EASI – elder abuse suspicion index). Maxillary complete denture was modified to hold an enabled large volume salivary reservoir. The technique used fabricating a template and hollowing the area through use of putty and ball bearings. After removal, the area of removal was sealed through the use of self cure resin. Impact of elder abuse on denture has also been discussed.

**Keywords:** elder maltreatment, neglect, complete denture, xerostomia, antidepressants

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#### **INTRODUCTION**

Geriatric population is growing fast and as per estimates, it is going to be the biggest challenge in health care in the coming decades. Nations, which are developed, may not even escape from this challenge. <sup>1</sup> In developing countries like India, the status of the current health care system has been exposed by the mayhem caused by Covid 19. <sup>2</sup> India has already been reporting problems associated with geriatric care, in which one of the most worrying is the elder maltreatment. <sup>3-5</sup> Elder abuse and neglect (EAN) has also been reported by medical and dental practitioners with high prevalence of its existence in their outpatient departments. <sup>1,6,7</sup> Sufficient evidence in the social science of EAN suggests that the quality of life of victims declines due to suffering of EAN. <sup>8,9</sup> Its significance in ongoing medical and dental treatment

has recently been established, <sup>10</sup> and it has been reiterated that such factors should be identified before starting of any treatment as it affects treatment compliance. <sup>11</sup> The depression of an individual suffering from EAN has been stated as the main reason of poor treatment compliance. <sup>12</sup> It is important to understand that most of dental treatments require patient cooperation and will to make treatments successful.

It is also a well known fact, that treatment with anti depressive drugs, have a serious side effect of xerostomia. <sup>13</sup> This case report presents a rare case of an elderly female patient who had severe xerostomia, since she had been taking antidepressants for last three years. The repercussions of EAN have also been discussed.

**CASE REPORT**

An elderly female patient aged 60 years old reported to the post graduate section of the department of Prosthodontics with a chief complaint of difficulty in mastication with her dentures, due to dry mouth associated with it. She also reported that her tissues will often burn and her mouth would also smell if she did not take water regularly. Patients medical history revealed that she was taking anti depressants (amitriptyline, Dothiepin) drugs since last three years. Social history revealed that she was present on her husband's pension. The patient had three sons who were not living with him. The patient had recently developed an indifferent and careless attitude about herself due to which she seemed to be neglecting herself (self neglect). An elder abuse screening index questionnaire (EASI) was applied to identify the existence of EAN. The screening of the EASI indicated that the patient was an existing EAN sufferer. Extra oral examination revealed that the patient had a dark complexion, with thin maxillary and mandibular lips (Fig 1 A).

**Figure 1: (a) Extra oral view (b) Teeth arrangement (c) Demounted maxillary cast (d) Dewaxed denture base**



The patient's existing denture did not demonstrate any signs of weak areas and was considered to be satisfactory. Intra oral examination revealed a well formed maxillary and mandibular residual alveolar ridges with an ideal ridge relation and inter occlusal space. After thorough consultation with her psychologist, various treatment options were presented to her including implants supported prosthesis and modified conventional complete denture. The patient consented for a modified complete denture, which would have a salivary reservoir (large volume) built into it. Routine clinical and laboratory procedures were performed till the stage of teeth arrangement and

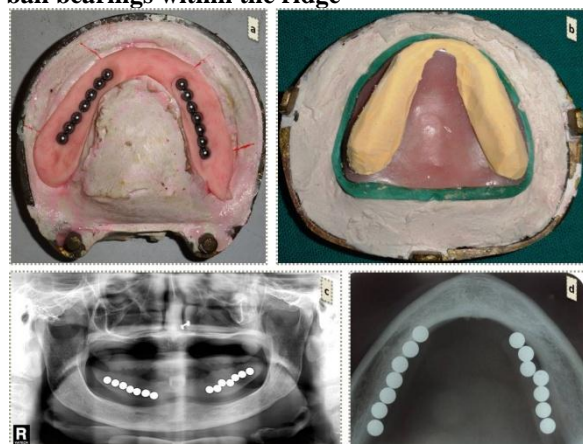
denture trial (Fig 1 B). After the denture trial was done, both casts were demounted (Fig 1 C), and flasking was done routinely. In order to make a reservoir, the demounted cast was waxed up and then a vacuum formed template (LS; GC America) was fabricated on it (Fig 2 A) and a cast was fabricated for future reference (Fig 2 B). To check the depth of the planned reservoir, an endodontic file (Mani Inc) was placed from the template and the design for the reservoir was contemplated in terms of its dimensions (Fig 2 C). At the stage of dewaxing (Fig 1 D), the trial denture base was adapted with putty material (stationary putty) over which the vacuum formed template was adapted to fit (Fig 2 D).

**Figure 2: (a) Template over the trial denture (b) Poured cast (c) Endodontic file for measuring depth (d) Verifying seating of template**

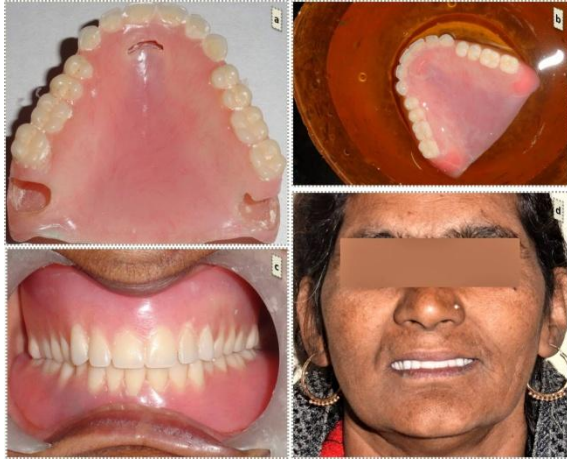


Acrylic dough (DPI, India) was packed within the other half (Fig 3 a) and a series of ball bearings were placed within the packed dough. The other half containing the putty was packed over the half and the denture was processed (Fig 3 b).

**Figure 3: (a) Trial packing with ball bearings (b) Putty placed on opposing cast (c) X ray showing relation of ball bearings (d) Occlusal x ray showing ball bearings within the ridge**



After finishing and polishing, the denture was checked for fit. On the day of insertion the denture was first exposed for radiographs (opg and occlusal view). The denture being heavy showed the relation of ball bearings on the radiographs (**Fig 3 c, d**) to confirm the alignment of the ball bearings. Holes were then made on the distal side of the maxillary denture and the putty along with ball bearings were removed (**Fig 4 a**) thus leaving the denture hollow from inside. **Figure 4 : (a) Processed denture with putty and ball bearings removed (b) Processed denture soaked in water (c) Complete denture in mouth (d) Patient during follow up.**



After removal, the space was closed with self cure acrylic resin (Fortex; Lucite Intl, Durham) with the provision of minute holes present within the surface. The denture could store almost 4 filled syringes of 5 ml (Dispovan). The denture was stored in water (**Fig 4 b**) following which the denture was inserted. A clinical remount was done to correct occlusion (**Fig 4 c**) and the patient was discharged after giving instructions (**Fig 4 d**). The patient was satisfied with the clinical outcome of the denture as she could wet her mouth whenever she desired to.

## DISCUSSION

A complete denture rehabilitation of a female patient who was taking anti depressive medication was successfully rehabilitated with a new complete denture prosthesis in which a high volume salivary Reservoir was incorporated. With the assistance of an EASI (elder abuse suspicion index) questionnaire, the patient was diagnosed to suffer from some form of Elder abuse and neglect (EAN). Human neglect is a very complex and a broader social issue that has not been much touched by the scientific community due to the sensitivity associated with it. Otherwise, all forms of neglect do exist in society in the form of parental neglect, child neglect and elder neglect.<sup>14-15</sup>

EAN is basically a potential conflict between two adult individuals (victim and the perpetrator),<sup>16</sup> where the perpetrator has been most commonly found to be someone from one's own family.<sup>17</sup> Existence of depression in such individuals is a common finding,<sup>18</sup> the impact of which has been associated with poor treatment compliance with medical and dental treatments.<sup>10,11</sup> The occurrence of such menace is a global problem, and has been seen across all spectrums of religions and societies.<sup>19</sup> Although it has been mentioned across the ages, but scientifically there is not even a proper classification in the literature.<sup>20</sup> Uses of antidepressant drugs, have been commonly associated with the development of xerostomia (when stimulated salivary flow rate is  $\leq 0.5$ – $0.7$  ml/min and the unstimulated salivary flow rate is  $\leq 0.1$  ml/min).<sup>21</sup> The patient in this case had been on two different antidepressants, both of which are associated with xerostomia.<sup>22</sup>

A large volume salivary Reservoir can be constructed only, if the vertical dimensions and the interocclusal distance between the maxillary and mandibular residual alveolar ridge permits. In this case the interocclusal distance was determined during clinical intra oral examination and it was found to be more than 10 mm. Incorporation of salivary reservoirs within the maxillary denture has many advantages one of the keys being a large reservoir size.<sup>23</sup> The main advantage of using mandibular denture as a reservoir is the possibility of a gravity feed system which delivers the wetting agent directly on the mucous.<sup>24</sup> In case of maxillary, the size of the holes is to be kept a minimum so that water can be sucked with some pressure. This avoids loosing and or filling the reservoir too often.<sup>25</sup> Functional salivary reservoirs have also been associated with cases where irradiation for cancer treatment results in severe xerostomia.<sup>26</sup>

## CONCLUSION

Elder abuse and neglect is present in our society and has been definitely spotted among dental patients. Depression is a common symptom associated with such social behaviour and it is important to identify its suffering so that treatments can be planned accordingly. While providing a salivary reservoir is just a symptomatic relief, additional use of drugs that enhance secretion of saliva should also be considered. A large volume reservoir is easily incorporated within maxillary denture.

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