ORIGINAL ARTICLE

ASSESSMENT OF PATIENTS WEARING AUTO POLYMERIZED ACRYLIC RESIN FIXED PARTIAL DENTURES

[1]HINA MEMON
[2]MUHAMMAD RIZWAN MEMON
[3]AAMIR MAHMOOOD BUTT
[4]SALEEM AHMED MEMON

ABSTRACT

This descriptive study was carried out at dental out-patient department of Liaquat medical University Hospital Hyderabad from January 2013 to December 2013. Thirty-five patients wearing auto polymerized (self-cured) fixed partial dentures provided by unqualified and qualified dental practitioners were assessed. Condition of oral health was evaluated on the basis of proper history and clinical examination. Prosthesis condition was also assessed. Oral health of underlying soft and hard tissues was carefully evaluated after removing the prosthesis with the help of slow speed hand piece without jeopardizing oral tissues. It was evident in this study that fixed partial dentures made from auto polymerized (self cure) acrylic resins had adversely affected the oral tissues compelling the patients to visit the qualified dentist for proper treatment of their problems.

Key Words: *Fixed auto polymerized acrylic partial denture, complications.*

INTRODUCTION

Acrylic resin based polymer materials have been used since 1960' s for dental restorations.[1] Acrylic resins are a group of related thermoplastic substances derived from acrylic acid, meth acrylic acid or other related compounds.[2] The use of resin based restorative materials in dentistry has risen exponentially.[3]

Acrylic materials are found in many dental products.[4] Most resin systems used in dentistry are based on methylmethacrylate.[3] Resin based materials consisting of liquid monomethylmethacrylate (MMA) and polymethylmthacrylate powder (PMMA) are the most commonly used polymers[5] in dentistry particularly in fabrication of dentures, orthodontic appliances, for individual trays and temporary crowns[3] due to their low cost and ease of use.[6]

Polymethylmethacrylates can be classified as heat, chemical or light activated depending on the factor that initiates the reaction. Chemical or autopolymerized materials involve a chemical activator like N, N – dimethyl p-toludine.[3] The most frequent allergens found in prosthetic materials are methacrylate and metals.[4] Both patients and dental personnel are exposed to these interactions and the potential risks, with the patient being the recipient of the restorative materials and the dental personnel handling many of the materials on a daily basis.[7] Residual monomer leaching into the oral environment from self cure acrylic resins is the main cause of allergic reactions. Moreover autopolymerized resins eluted considerably more substances than did microwave ad heat polymerized resins.[3]

Asthma has also shown to be caused by methylmethacrylates.[1] 3% of dental personnel in one rural district suffered from contact dermatitis.[3] Use of certain autopolymerized resins may be associated with excessive residual monomer content and thereby causing allergic contact stomatitis, irritation of skin, eyes, mucous membranes[7], contact dermatitis[1], burning and soreness in mouth with or without visible mucosal inflammation and ulceration and irritant contact dermatitis.[7] Irritation of oral mucosa beneath or adjacent to resin restorations is certainly most severe local adverse effect.[3]

Auto polymerized acrylic resin fixed partial denture is widely used in our local environment by many qualified dentists and unqualified dentists due to poor socioeconomic conditions and lack of knowledge. This study was done to assess the harmful effects of this material on patients oral tissues.

[1] **Correspondence Author:** Hina Memon, BDS, FCPS Trainee Asst Professor Prosthodontics, Institute of Dentistry, Liaquat University of Medical and Health Sciences. Jamshoro, Sindh, E-mail drmrizwanmemon@hotmail.com, Mobile No. 0333-9307810.
[2] Muhammad Rizwan Memon, BDS, FCPS Assistant Professor Prosthodontics
[3] Aamir Mahmoood Butt, BDS, FCPS Assistant Professor Prosthodontics
[4] Saleem Ahmed Memon, BDS Lecturer Prosthodontics

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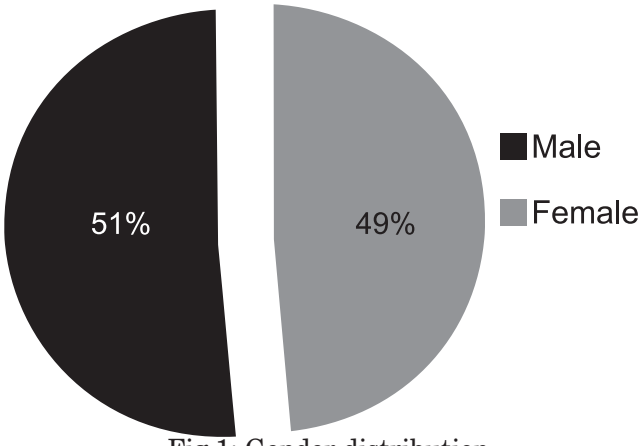

Fig 1: Gender distribution

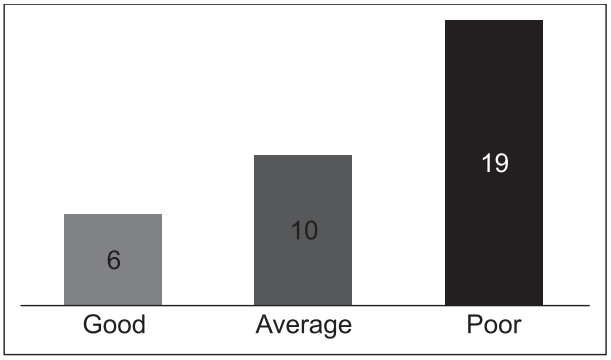

Fig 2: Socioeconomic status of patients

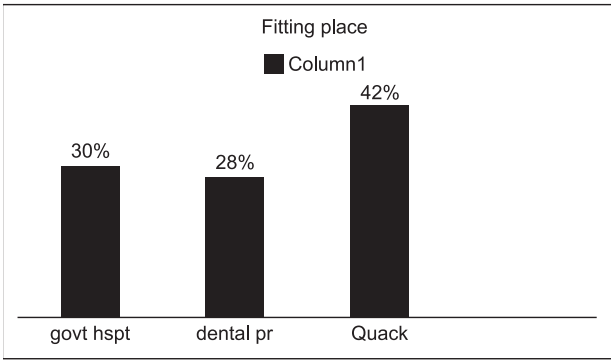

Fig 3: The proportions (%), according to the fitting-place

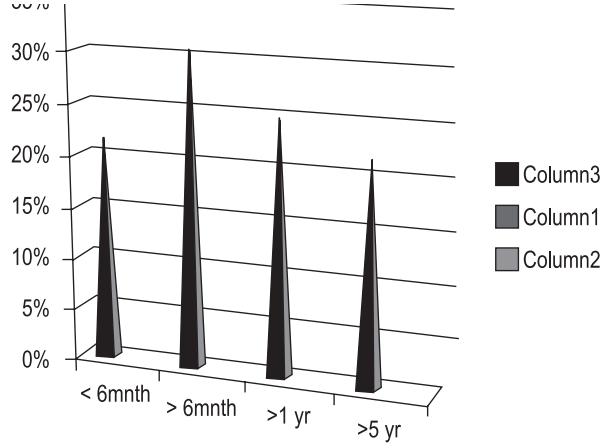

Fig 4: Acrylic fixed partial denture in relation to rendered service-life

METHODOLOGY

With a convenience sampling technique and descriptive study design, during the period from January 2013 to December 2013, data relating to 35 patients wearing auto polymerized self-cured fixed partial denture were collected, using a structured Proforma. The participants of the study were patients who reported at dental out-patient department of Liaquat Medical University Hospital, Hyderabad.

After taking written informed consent detailed history was taken followed by proper intraoral clinical examination and prosthesis examination. Auto polymerized self cured acrylic fixed partial denture was then removed with the help of slow speed hand piece and condition of underlying oral tissues was assessed. Patients were then treated with proper prosthodontic approach considering there socioeconomic status.

RESULTS

Of the total 35 patients, the females (51%) outnumbered the males (49%) with age between 20 to 60 years (Table 1 and Fig 1). In general, higher percentage of patients with poor socioeconomic status were found to be visiting unqualified dentists for self cure acrylic resin fixed partial dentures (Fig 2). Majority of fixed partial dentures were placed by unqualified dentists (Fig 3). It was observed that maximum number of patients had prosthesis in both jaws and majority of fixed partial dentures were placed in anterior region of the mouth (Table 2). Majority of patients had used them for a period of more than 6 months to one year (Fig 4). Most of the patients needed replacement of their existing prosthesis for the reason of aesthetics and opted for this type of prosthesis due to lack of knowledge (Table 3). On clinical examination it was found that 68% of patients were suffering from burning mouth sensation, 74%

TABLE 1: AGE OF PATIENTS

Age of Patients	No. (%)
20 to 30	11(31.4%)
31 to 40	10(28.5%)
41 to 50	6(17.4%)
51 to 60	5(14.2%)
61 and above	3(8.5%)
Total	35

TABLE 2: DISTRIBUTION OF SELF-CURED FPD ACCORDING TO ARCH AND SITE OF ARCH

Arch	Percentage	Site of Arch	Percentage
Maxillary	31%	Anterior	40%
Mandibular	25%	Posterior	31%
Max+mand (both)	42%	Ant+post (both)	28%

TABLE 3: REASONS FOR SELECTING AND REPLACEMENT OF SELF-CURED FIXED PARTIAL DENTURE

Reasons of replacement	Percentage	Reasons for Selecting	Percentage
Esthetics	44%	Lack of time	28%
Mastication	28%	Poor financial status	25%
Speech	14%	Lack of knowledge	47%
Others	14%		

TABLE 4: EVALUATION OF SELF-CURED FIXED PARTIAL DENTURE PROBLEMS

Evaluation	Condition	Percentage
Oral hygiene		
	Poor	71.5%
	Good	28.5%
	Excellent	0%
Condition of abutments		
	Healthy	28.5%
	Mobile	37%
	Carious	34.5%
Condition of mucosa beneath prosthesis		
	Healthy	11.6%
	Inflamed	57%
	Ulcerative	31.4%
Burning mouth		
	Yes	68%
	No	32%
Halitosis		
	Present	80%
	Absent	32%
Denture hygiene		
	Poor	74.3%
	Good	25.7%
	Excellent	0%
Condition of prosthesis		
	Good	20%
	Fractured	43%
	Wear out	37%
Discolouration of prosthesis		
	Present	65.7%
	Absent	34.3%

had poor denture hygiene, 71% had poor oral hygiene, 37% had mobile abutments, 57% had inflamed mucosa beneath the prosthesis and halitosis was also present in 80% of patients along with discolored prosthesis in 65% and It was also found that 43% of patients had their prosthesis fractured (Table 4).

DISCUSSION

Acrylic resins have been widely used in the field of prosthodontics and orthodontics for various purposes as denture base formation and liners.[6,3] The biocompatibility of these resins were questioned and allergic reactions were reported in literature.[6] Skin contact with methyl methacrylate and polymethyl methacrylate has been reported to cause allergic reactions.[3] A published study reported 3% of dental personnel suffering from contact dermatitis in a rural district.[3] Gingival reactions to cold cured acrylic resins have been found more oftenly compared to heat cure acrylic resins.[5] Higher level of residual monomer in self cure acrylic resins has been associated with these reactions. Burning and soreness of mouth with or without mucosal inflammation and ulcerations have been found in many denture wearing patients.[8] This study shows that 68% of patients have suffered from burning mouth sensations with or without inflammation of mucosa beneath the prosthesis made from self cured acrylic resins. In our local population where majority of patients are belonging to low socio-economic area and have a poor literacy rate are bound to visit quacks and fake dentists for most of their dental problems. These patients have lack of knowledge about their problems and treatment protocols, thus suffer from miserable oral health conditions. It is very important to maintain a proper check and balance on this substandard dental treatments provided by non dental personnel to avoid future oral and general health hazards in people who are unaware of the consequences of these hazardous materials.

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