OPEN ACCESS Freely available online

Journal of Physical Chemistry & Biophysics

Mini Review

Residual Ridge Resorption: An Overview of Management

Saniya Juneja*

Department Of Chemistry, institute of dental sciences, pakistan

ABSTRACT

Residual ridge resorption is an inevitable process which affects the prosthodontic prognosis majorly. This review article aims to provide a brief overview toward the management of this condition using various treatment modalities, techniques and principles that are categorised under preventive, conventional and osseointegrated approach.

Keywords: Residual ridge resorption; Atrophic jaws; Management of residual ridge resorption

INTRODUCTION

The physiologic process of reduction in residual ridge following extraction of teeth has been described as a DISEASED state of the edentulous mouth marked by severe loss of bone. This has a cumulative effect leaving a diminished bone quantitativly and qualitatively [1].Residual ridge resorption is an inevitable process however the rate may vary [2]. Sequele of this condition is poor prosthodontic prognosis in terms of retention, stability, support and aesthetics.

Various classification systems are given for the diminshing bone. These include: atewood's classification [3], Lekholm And Zarb classification [4], Cawood and Howell Classification [5], American college of Prosthodontics classification based on bone height (mandible only) [6] etc. Reduction in residual ridge can be assessed in terms of quantity and quality by various radiographic techniques [7] which include opg [8], lateral cephalograms [9], dental panoramic tomography [10] and cbct [11].

ETIOLOGY

The multifactorial etiology of resorption of residual ridges has been categorized by Atwood under various subcategories:

Anatomic factors- residual ridge resorption is directly related to the anaomy of bone in terms of amount and density.

Metabolic factor- this includes local and systemic factors. Local factors affecting bone resorption are Endotoxins, Osteoclast activating factor, Prostaglandins, Human gingival bone resorption stimulating factor, Heparin. Systemic factors are those affecting metabolism of calcium, phosphorus and proteins, hormonal influences and genetics. Functional factors- the magnitude, direction, type and frequency of force applied to the ridges are directly related to the reduction of residual ridges.

Prosthetic factors- this includes various materials, techniques and concepts applied in fabricating the prosthesis.

MANAGEMENT

Preventive approach

Acknowledging M.M Devan, all the necessary measures should be taken to improve the prognosis of the remaining teeth and the missing teeth should be replaced as soon as they are lost. Various options for rehabilitation of partially edentulous state includes- rpds, cpds, implants, tooth supported overdentures, precision attachments etc (Figure 1).

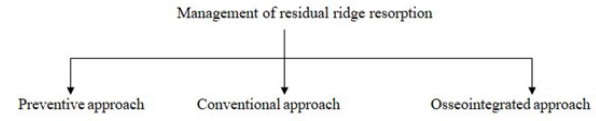

Figure 1: Management of residual ridge resorption.

Conventional approach

Conventional approach includes the complete denture for rehabilitation. It can be done either after surgical intervention or without. Surgical intervention is required in cases of severly resorbed ridges to improve denture foundation (Figure 2).

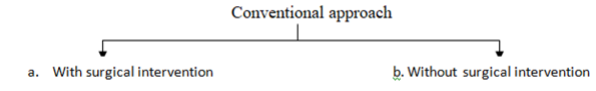

Figure 2: Conventional approach.

Correspondence to: Saniya juneja, Department Of Chemistry, Institute of Dental Sciences, Pakistan; E-mail: saniyajuneja@gmail.com

Received: February 06, 2021, **Accepted:** February 20, 2021, **Published:** February 27, 2021

Citation: Juneja S (2021) Residual Ridge Resorption: An Overview of Management. Phys Chem Biophys. 10:292.

Surgical intervention: includes various preprosthetic surgeries like ridge augmentation, vestibuloplasty, distration osteogenesis, shelf reconstruction, secondary epitheliasation and grafting procedure. Surgical procedures although improve the prognosis of the denture but these may not be possible in every case such as underlying systemic diseases or unfavorable quality and quantity.

Without surgical intervention: Compromised ridges have always proposed to be a rehabilitative challenge as patients possess highly variable expectations. Fenlon M and Sherriff M suggested that patient satisfaction depends upon the quality of complete denture prosthesis fabricated. To some extent these challenges can be overcome by following certain postulaed guidelines for fabrication of complete denture prosthesis.

Osseointegrated approach

Osseointegrated approach is indeed better than the conventional approach in terms of enhanced retention, stability, function, comfort and patient satisfaction (Figure 3).

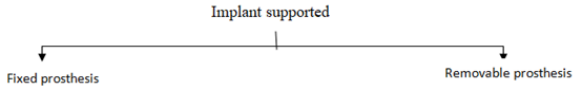

Figure 3: Implant supported.

Implant supported fixed prosthesis possess chalange for rehabilitation of atrophic jaws in tems of anatomical limitation, quality of bone, sinus pnematization in case of maxilla etc. Various techniques have been proposed to overcome this.

* Improving the bone in quality and quantity by graft reconstruction

* Modifying implant in design and techniques- sinus lift procedure, zygomatic implants, pterygoid implants, mini implants, all on concept and its variations- All-on-4: zygoma implants and quad zygoma, All-on-4 "V-4", All-on-4 shelf: Maxilla, All-on-4 shelf: Mandible. All-on-4 transsinus technique.

CONCLUSION

There is not any evidence suggesting that the reduction of residual ridges have been reversed following extraction hence the clinician should have thorough knowledge of this diseased state and the principles involved in its management. Though implant is more predictable management option, conventional approach is still acceptable considering systemic condition, socioeconomic status and patient acceptance in developing countries.

REFERENCES

1. Whitmyer C, Esposito S, Alperin S. Longitudinal Treatment of a Severely Atrophic Mandible: A Clinical Report. J Prosthetic Dent. 2003; 90: 116–20.
2. Douglas A. Reduction of residual ridges: A major oral disease entity. J. Prosthet. Dent. 1971; 26 (3): 266-279.
3. Lekholm U, Zarb GA. In: Patient selection and preparation. Tissue integrated prostheses: osseointegration in clin dent. 1985; 199–209.
4. Cawood JI, Howell RA. A classification of the edentulous jaws. Int J Oral Maxillofac Surg. 1988;17(4):232-6.
5. Nishimura I, Hosokawa R, Atwood DA. The knifeedge tendency in the mandibular residual ridges in women. J Prosthet Dent. 1992; 67: 820- 826.
6. McGarry TJ, Nimmo A, Skiba JF, Ahlstrom RH, Smith CR, Koumjian JH, Guichet GN. Classification system for the completely dentate patient. J Prosthodont. 2004; 13(2):73-82.
7. Soikkonen K, Ainamo A, Xie Q. Height of the residual ridge and radiographic appearance of bony structure in the jaws of clinically edentulous elderly people. J Oral Rehabil. 1996; 23: 470-475.
8. Von WN, Kollerup G. Symptomatic osteoporosis: a risk factor for residual ridge reduction of the jaws. J Prosthet Dent. 1992; 67:656-660.
9. Xie Q, Aimano A, Tilvis R. Association of residual ridge resorption with systemic factors in home-living elderly subjects. Acta Odontol Scand. 1997; 55: 299-305.
10. Mah P, Reeves TE, McDavid WD. Deriving Hounsfield units using grey levels in cone beam computed tomography. Dentomaxillofac Radiol. 2010; 39: 323–335.
11. Atwood DA. Some clinical factors related to rate of resorption of residual ridges. J Prosthet Dent. 1962; 12 (3):441-50.