Residual Ridge Resorption: An Overview of Management

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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 quantitatively 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 diminishing bone. These include: atwood’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 anatomy 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).

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 severely resorbed ridges to improve denture foundation (Figure 2).

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Surgical intervention includes various preprosthetic surgeries like ridge augmentation, vestibuloplasty, distraction osteogenesis, shelf reconstruction, secondary epithelisation 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 postulated 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).

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