

Residual Ridge Resorption: An Affliction for the Prosthodontist

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Tooth loss is inevitable and occurs most frequently due to caries and periodontal disease. A number of secondary factors also play a pivotal role in loss of tooth structure. As a part of physiological process i.e. ageing, tooth loss becomes a regular picture. The human jawbone particularly the alveolar bone is totally related to the tooth structure. After the loss of tooth structure, the alveolar bone also tends to resorb and gradually atrophy. This is commonly known as Residual Ridge Resorption (RRR). RRR or bone resorption is a common, chronic, progressive, irreversible, incapacitating, debilitating & a complex biophysical process occurring in each and every patient.

RRR is quite common after first 6 months post extraction of the tooth and undergoes significant catabolic remodelling. Even after this period, the RRR is bound to occur but the pace is quite slow. This may lead to a situation and a point comes whereby there is lesser support available required for adequate stability and retention of the removable complete dentures ultimately hampering the proper function of the prosthesis. The situation becomes tough particularly in cases with resorption associated with the mandible.

A proper classification for RRR is needed to discuss issues related with the fellow dental surgeons and even to decide on what treatment modalities can be used to successfully rehabilitate the prosthesis. There have been a number of classifications associated with the ridge resorption process. [1]

RRR is known to be associated with a number of etiological factors commonly known as the multifactorial disease. In spite of this, the exact aetiology is not properly understood. Many researchers plunged into the discover the factors associated with the RRR. However, Atwood was quite instrumental in suggesting the main factors involved in RRR namely the anatomic, prosthetic, metabolic and functional factors. [2] According to Pietrokovski, a plethora of factors were involved in the causation of bone loss. These factors were identified as metabolic/systemic diseases like osteoporosis, inflammation, hyperparathyroidism, diabetes, malnutrition, hormonal imbalances, and genetic factors. In addition to this, few local factors, such as mechanical stress and tobacco consumption were also involved. [3] Out of these, after the age of 40 years and in particular to the post-menopausal women who were affected by osteoporosis, RRR was seen as a common picture in these candidates. To conclude, the counterbalance between the catabolic and the anabolic factors would decide the bone remodelling and subsequently the bone resorption. Recently, certain periodontal pathogen causing inflammatory mediators and genetic mediators have been contributing to the aetiology of the RRR.

The assessment of RRR can be done clinically and radiographically. A number of research studies have also been conducted regarding the same in the past. Earlier, 2D radiographs namely the OPG (Orthopantomogram) and lateral cephalogram was used to evaluate the levels of bone. [4] However, with the inclusion of 3D diagnostic modalities like CBCT (Cone Beam Computed Tomography), the levels of bone and mainly bone loss were evaluated with better accuracy and less radiation exposures. CBCT is now a gold standard diagnostic modality.

The management of resorbed edentulous ridges is an uphill task. Generally, the prosthodontic management can be categorized with and without any surgical intervention. The prosthodontic management without any surgical intervention involves the use of impression techniques which are to be modified with the objective to attain more supporting area. The modified impression techniques mainly include admixed, functional all green, and cocktail technique. Neutral zone approach had been extensively studied and proved fruitful in rehabilitation prosthetically. In fact, soft liners or tissue conditioners can be used for the abused and irritated tissues associated with the resorbed ridge. The prosthodontic management with the surgical intervention involves the use of dental implants. Generally, mandibular implant supported overdentures can be used to rehabilitate such cases. In some case, bone grafts need to be used to further help in regeneration of bone. Recently, PRF (Platelet Rich Fibrin) & PRP (Platelet Rich Plasma) have done wonders in bone formation. A couple of studies have been done in relation to distraction osteogenesis and bone formation.

The ultimate aim of various treatment modalities associated with the prosthetic rehabilitation of the resorbed ridges is to attain more coverage, stability and retention of the prosthesis. [5]

Hence, to culminate, the complex and multifactorial RRR is an eye opener not only for the prosthodontist but also for the general dental practitioner to successfully rehabilitate the aged. It is right to say that the RRR is an irrepressible, relentless and an unbeatable phenomenon and a beleaguer for the Prosthodontist.

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