

"BUZZ IN IMPLANT DENTISTRY" – PLATFORM SWITCHING

*Amalorpavam V., *Jithin, **T.Sreelal, ***Giri Chandramohan,
Aparna Mohan, *Allen Jim Hines

*PG Students, **Professor and Head of the department, ***Reader, ****Senior lecturer, Dept of Prosthodontics, Sree Mookambika Institute of Dental Science, Kulasekaram, Kanyakumari, Tamilnadu | Email of corresponding author : amalor.dr@gmail.com

Abstract:

Platform switching is a newer concept in implant dentistry for controlling postrestorative crestal bone levels as a means of limiting circumferential bone loss around dental implants. It is a restorative protocol which has been reported by Dr Richard Lazzara. The platform switching concept implies the use of prosthetic components having a platform diameter undersized when compared to the diameter of the implant platform. In this way, the prosthetic connection is displaced horizontally inwards from the perimeter of the implant platform, creating an angle, or step, between the abutment and implant. The mechanism by which this stepped effect may contribute to maintenance of marginal bone height and horizontal dimension of the step allows for an additional area where biologic attachment may take place, thus limiting the extent to which physiologic remodeling of the bone crest must take place to accommodate the biologic zone. This review article emphasizes on the importance of platform switching which increases the longevity of dental implants.

Keywords : Crestal bone loss, Longevity of the Implants, Aesthetics.

Introduction

The goal of modern dentistry is to provide patients with good oral health in a predictable fashion. The partial and completely edentulous patient may not have normal masticatory function, good esthetics, and phonation with a traditional

removable prosthesis. When wearing a removable denture, usually the patients masticatory ability will be reduced to one-sixth of the level formerly experienced with natural dentition.¹ An ideal implant prosthesis can bring back normal muscle activity and thereby improving the masticatory function. The most important criteria for the success of dental implants are the presence of good quantity and quality of bone around the implants. The longevity of dental implants is highly dependent on integration between implant components and oral tissues. Implant is regarded as successful if bone loss around the implant is up to 2 mm during the first year of implant function. In implant dentistry, platform switching (PLS) (fig1) is a method used to preserve alveolar bone levels around dental implants. The concept refers to placing restorative abutment of narrower diameter on implants of wider diameter, rather than placing abutments of similar diameters, referred to as platform matching (PLM) (fig1)

History

Discovered by accident in the late 1980's, the benefits of PLS have become the focus of implant related research with increasing frequency. It can be considered a means of preventing initial peri-implant bone loss. Introduction of wide diameter implants in the late 1980s created a situation, in which mismatch standard diameter abutments were used simply because of lack of commercial

availability of components to match the wide-diameter implants. The consequence of this form of treatment was an unintentional "change of platform," which became known as "PLS." Serendipitously, it was found that these implants exhibited less than expected initial crestal bone loss. Several early clinical reports demonstrated enhanced soft and hard tissue responses to these platform-switched implants, leading many implant companies to incorporate PLS into their implant systems even for narrower body implants.

Concept of platform switching

- The platform switch concept was first introduced by Lazzara &Porter and Gardner
- In 1991, Implant Innovations, Inc. (3i, Palm Beach Gardens, FL) introduced 5 mm and 6 mm diameter implants.
- Restored with standard 4.1 mm diameter components
- After a 5-year period, the typical pattern of crestal bone resorption was not observed in platform switched implants.

How platform switch helps

- It results in a circular horizontal step, which enables a horizontal extension of the biologic width and diminution in alveolar bone loss

reduced the potential influence of microgap on the crestal bone and decreased stress levels in the peri-implant bone and increases the force in and around the screw. Also, provides the clinician with additional surgical and prosthetic treatment options for use with wide diameter implants²

Biologic width and platform switching

- The peri-implant soft tissue seal comprises of a junctional epithelium and connective tissue.
- This biologic soft tissue coats the implant supporting bone in a 3–4 mm wide zone.
- It was suggested that the inward positioning of the implant-abutment interface allowed the biologic width to be established horizontally, as an additional horizontal surface area is created for soft tissue attachment.
- Less vertical bone resorption is required to compensate for the biologic width.
- This design increases the distance between the inflammatory cell infiltrate at the microgap and the crestal bone, thereby minimizing the effect of inflammation on marginal bone remodeling.

How platform switching reduces crestal bone loss ?

1. Shifting the inflammatory cell infiltrate inward



Fig 1: Left : Platform Matching
Right : Platform switching

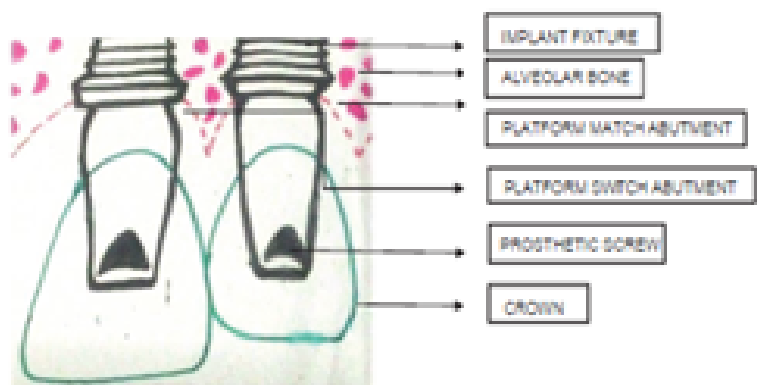


Fig 2

PROSTHETIC AND IMPLANT DENTISTRY

Official Publication of Indian Prosthodontic Society
Kerala State Branch

and away from the adjacent crestal bone⁴.

2. Maintenance of biological width and increased distance of IAJ from the crestal bone level.
3. The possible influence of micro-gap on the crestal bone is diminished.
4. Decreased stress levels in the peri-implant bone. (fig 3)(fig 4)

Benefits of platform switching

1. Increased implant longevity.
2. Improved esthetics.
3. The effect of inter-implant distance is minimized. "A minimum of 3 mm inter-implant distance is needed to preserve marginal bone"

Indications for platformswitched implants

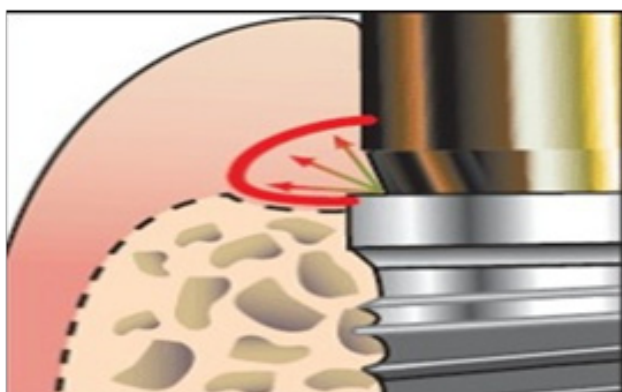
- If anatomic structures limit the residual bone height⁵
- If shorter implants are used in atrophic areas
- To achieve good esthetic results in anterior maxilla

Limitations of platform switching

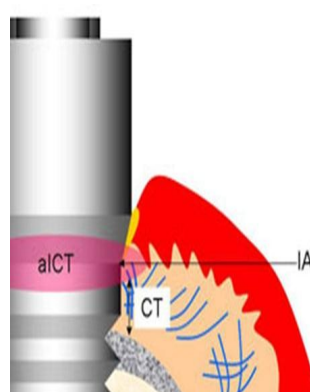
1. If normal sized abutments are to be used, implants of larger size need to be placed. This might not be possible always clinically.
2. If normal implants are to be used, smaller diameter abutments may compromise the emergence profile in aesthetic areas.
3. Around 3 mm of soft tissue should be present to place platform switched implants or else bone resorption is likely to occur.
4. For platform switching to be effective, the under sizing of the components must be carried out during all phases of the implant treatment[6].

Conclusion:

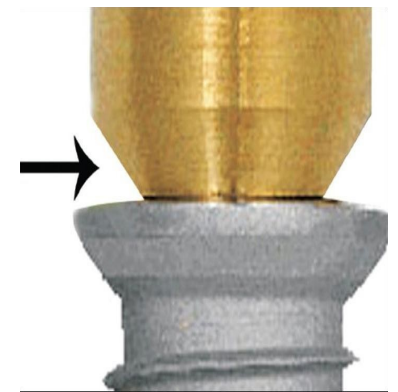
Many factors contribute to marginal bone loss around implants and its solution cannot be attributed to any single parameter. However, an appropriate understanding and use of platform switching concept in routine treatment improves crestal bone preservation and controlled biologic space repositioning. It appears to be a promising tool in preserving peri implant bone and further research is needed to substantiate its application in contemporary implantology.



(Fig 3)



(Fig 4)



(Fig 5)

References

1. Qian J, Wennerberg A, Albrektsson T. Reasons for marginal bone loss around oral implants. *Clin Implant Dent Relat Res.* 2012;14:792–807. [1]
2. Lazzara RJ, Porter SS. Platform switching: A new concept in implant dentistry for controlling postrestorative crestal bone levels. *Int J Periodontics Restorative Dent.* 2006;26:9–17. [2]
3. Prosper L, Redaelli S, Pasi M, Zarone F, Radaelli G, Gherlone EF. A randomized prospective multicentre trial evaluating the platformswitching technique for the prevention of postrestorative crestal bone loss. *Int J Oral Maxillofac Implants.* 2009;24:299–308. [3]
4. Atieh MA, Ibrahim HM, Atieh AH. Platform switching for marginal bone preservation around dental implants: A systematic review and meta- analysis. *J Periodontol.* 2010;81:1350–66. [4]
5. Cappiello M, Luongo R, Di Iorio D, Bugea C, Cocchetto R, Celletti R. Evaluation of peri-implant bone loss around platform-switched implants. *Int J Periodontics Restorative Dent.* 2008;28:347–55 [5].
6. Prosper L, Redaelli S, Pasi M, Zarone F, Radaelli G, Gherlone EF. A randomized prospective multicentre trial evaluating the platformswitching technique for the prevention of postrestorative crestal bone loss. *Int J Oral Maxillofac Implants.* 2009;24:299–308[6].