

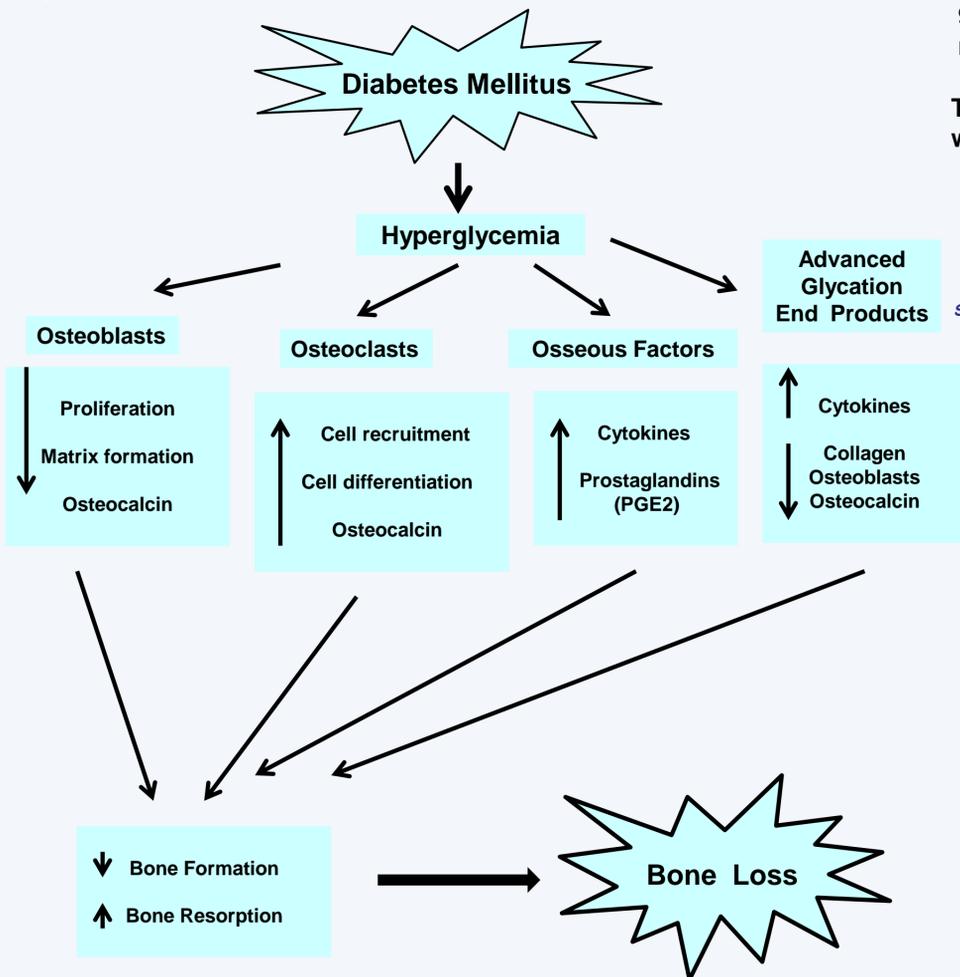
THE PREDICTABILITY OF DENTAL IMPLANT THERAPY IN DIABETES TYPE-II PATIENTS

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Background

The use of dental implants in patients with type II diabetes is a questionable issue due to the adverse effect of hyperglycemia on osseointegration.

There is lack of evidence about the long term outcome of implant therapy in patients with diabetes, in comparing to patients without diabetes.



Impact of Hyperglycemia on Bone

Aim of the study

To evaluate whether diabetic type II patients, are at greater risk of implant therapy and bone grafting failure and complications in comparing with non diabetic patients.

To evaluate whether the glycemic control, has influence on the success rate of dental implant therapy in this group diabetic type II patients.

Patient with uncontrolled glycemic level, (H_gA_{1c} = 8.6) with immediate implantation and immediate loading



Before treatment

After 6 months

62 years old female with controlled glycemic level, (H_gA_{1c}=6.8)



Before treatment

5 years after treatment

Methods and Materials

The study includes 23 patients, who received totally 171 dental implants, which supported totally 2 removable full arch and 35 fixed partial and full arch prostheses.

The age range of the patients was 46-82 years.

All patients did not take BP therapy. None of them was heavy smoker.

The follow up period, was 11-76 months with the mean follow up of 35 months after the implant surgery.

In 2 patients the implant therapy included sinus lift grafting.

All patients were monitored for H_gA_{1c} values.

Results

61 implants were placed in the mandible, and 102 implants were placed in the maxilla without prior augmentation.

3 implants failed to osseointegrate in the mandible and 6 implants failed to osseointegrate in the maxilla.

The CSR in the mandible was 95.08 %, and in the maxilla was 94.12 %. From the 8 implants placed after sinus lift surgery, none of them failed.

The 163 implants which placed in native (non augmented bone), were divided also to 2 groups:

In patients with H_gA_{1c} < 7, 1 implant from the 73 implants placed failed to osseointegrate, resulting in CSR=98,63%. In the second group with H_gA_{1c} > 7, 8 implants from the 90 placed failed to osseointegrate, resulting in CSR=91.11%.

Survival rate of implants according to the type of implantation in native (not augmented) bone.

Type of implantation	No. of implants	Implants failed	Cumulative survival rate %
2 stage protocol	84	6	92.86 %
Immediate loading	79	3	96.20 %
Total	163	9	94.48 %
Immediate implantation	56	3	94.64 %
Immediate implantation w/ immediate loading	38	2	94.74 %

Survival of implants in general population. Not diabetic patients

Type of implantation	No. of implants	Implants failed	Cumulative survival rate %
2 stage protocol	879	18	97.95 %
Immediate loading	699	18	97.42 %
Total	1578	36	97.72 %
Immediate implantation	596	12	97.99 %
Immediate implantation w/ immediate loading	289	7	97.58 %

Survival rate of implants in augmented bone after sinus lift

Patient No.	Age	H _g A _{1c}	Bone augmentation procedure	No. of implants	Implants failed	complications
4	60	8.2 %	Bi-lateral open window Sinus Lift with Bio-Oss mixed w/Autogenous bone (00% / 10%) Implants placed 9 months later	7	None	None
18	59	6.9%	Uni-lateral open window Sinus lift with Bio-oss mixed w/Autogenous bone (00% / 10%) with simultaneous implant placement	1	None	None
Total				8	None	

60 years male with uncontrolled glycemic level, (H_gA_{1c} = 8.2) Successful sinus lift and rehabilitated implants-35 months after implant placement.



CSR of implants in 2 groups of Diabetic patients with comparing to the Non Diabetic patients.

	Non Diabetic patients	Well controlled Diabetic patients	Uncontrolled Diabetic patients
CSR %	97.72	98.63	91.11

Conclusions

Dental implants placed in diabetes type 2 patients, can successfully osseointegrated and remain functionally stable.

New approaches and protocols, in dental implant therapy such as immediate loading and immediate implantation, are viable and are with the same predictability in comparing with the non diabetic patients.

There is difference in the predictability of dental implants therapy between well controlled diabetic patients with H_gA_{1c} < 7.0 %, to uncontrolled diabetic patients with H_gA_{1c} > 7.0 %.

Sinus augmentation and GBR procedures can success in well controlled diabetic type II patients.

Treatment planning of dental implant therapy in diabetic patients should not differ in comparing with other patients in regard to the type of the prosthesis. Fixed prostheses supported by dental implants is viable treatment in this population and there is no indication to limit the treatment options to removable prostheses supported by dental implants just because the retreatability of this kind of therapy. It is especially true for the well controlled diabetic patients.

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