Immediate implant placement in posterior maxilla with simultaneous bone augmentation: a case series

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Background

Immediate implant placement in the posterior maxilla is challenging due to its bone characteristics; however, it offers advantages like **lesser surgical steps, faster rehabilitation time and patient preference.**

The implant selected for immediacy, especially in areas of poor bone quality and quantity, should be one that facilitates high primary stability.

Aim

To assess the **implant stability** and **marginal bone level** around implants placed immediately following extraction in the posterior maxilla in conjunction with bone augmentation.

Materials & Methods

Patients reporting with teeth with poor prognosis in the posterior maxilla were selected. Extraction and immediate implantation using Conelog Progressive-Line with simultaneous bone augmentation was done. Implant Stability Quotient (ISQ) was recorded (Osstell TM Mentor); the marginal bone level (MBL) and native bone to implant contact (BIC) was analyzed radiographically using the Image J software. The success of the treatment protocol was based on these parameters. These parameters were measured immediately following implant placement and at 3 months, 6 months and 1-year intervals.*

Figure 1: a) Pre operative radiograph showing teeth (16,17) with poor prognosis b) Conelog progressive line in-situ after extraction of teeth c) Post operative radiograph showing Conelog PL implants in prosthetically ideal positions in conjunction with sinus augmentation and socket grafting. The yellow line indicates the maxillary sinus lining.

Results

14 Implants were placed in a patient group with average age of 64.2(±8.47) years. The average radiographic native bone to implant contact was 4.7(±2.3)mm (Mesial) and 5.2(±2.1)mm (Distal). The mean follow up was 16(±3.08) months.

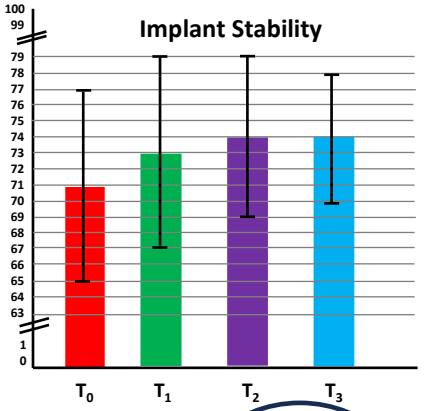
S. No	Age/ Sex	Tooth replaced	Implant Dimension(mm)	BIC (Native bone) in mm	ISQ (Axial, Lateral)				MBL (mm)			F/U-months
					T_0	T_1	T_2	T_3	T_0-T_1	T_0-T_2	T_0-T_3	
1	73/M	16	Ø5 x 9	3.7(M), 3.7(D)	59,67	60,67	60,67	60,67	0.23	0.40	0.44	18
2	73/M	17	Ø5 x 9	4.5(M), 6.5(D)	70,70	70,71	70,71	70,71	0.30	0.37	0.50	18
3	70/F	24	Ø3.8 x 13	6.4(M), 7.0(D)	72,75	73,75	72,75	72,75	0.67	0.70	0.71	14
4	70/F	15	Ø3.8 x 13	4.7(M), 5.9(D)	69,75	71,75	71,75	70,75	0.43	0.67	0.70	14
5	70/F	17	Ø5 x 7	3.6(M), 3.7(D)	63,70	68,75	70,77	73,77	0.21	0.30	0.32	14
6	60/F	26	Ø5 x 7	1.9(M), 2.1(D)	71,71	70,71	70,71	71,71	0.90	0.93	0.90	21
7	68/F	26	Ø5 x 11	2.6(M), 4.7(D)	71,73	71,75	72,77	72,77	0.42	0.56	0.58	20
8	68/F	17	Ø5 x 9	3.0(M), 3.5(D)	65,72	75,75	76,77	76,77	0.34	0.50	0.45	20
9	56/F	27	Ø5 x 9	3.2(M), 3.5(D)	58,55	58,55	65,64	66,66	0.21	0.32	0.35	14
10	76/F	14	Ø3.8 x 13	9.2(M), 7.9(D)	79,80	81,82	82,83	82,83	0.30	0.25	0.20	17
11	76/F	26	Ø4.3 x13	8.8M), 8.9(D)	70,63	71,73	71,73	72,73	0.54	0.43	0.46	17
12	80/F	26	Ø4.3 x 11	7.5(M), 8.4(D)	77,78	77,80	79,80	80,80	0.36	0.47	0.50	13
13	66/F	25	Ø4.3 x 9	4.4(M), 3.2(D)	75,77	77,79	79,79	79,79	0.29	0.21	0.23	12
14	66/F	27	Ø4.3 x 9	2.8(M), 3.8(D)	73,75	74,75	75,74	75,75	0.32	0.30	0.33	12

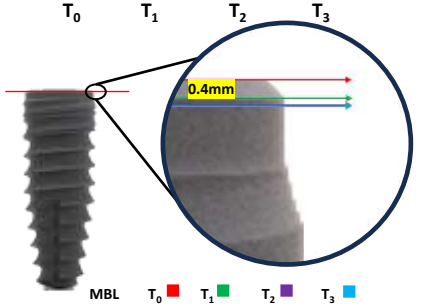
Table 1: Parameters measured for 14 implants placed immediately following extraction in posterior maxilla at T_0 (Time of placement), T_1(3 months following placement), T_2 (6 months following placement) and T_3 (1 year following placement)

Parameters	Mean (Standard Deviation)
T_0 ISQ Value	71(±6)
T_1 ISQ Value	73(±6)
T_2 ISQ Value	74(±5)
T_3 ISQ Value	74(±4)
MBL T_0 - T_1	0.39(±0.19)
MBL T_0 - T_2	0.45(±0.26)
MBL T_0 - T_3	0.47(±0.01)

* **Ethical committee clearance and Trial registration**

KCDS/51/Ethical Comm/2022-23
CTRI/2022/06/043348





Conclusion

Within study limitations, high implant stability and minimal marginal bone level changes were observed with immediate implant placement in posterior maxilla in conjunction with bone augmentation, when using this implant design.

- ✓ ISQ values increased from 3 to 6 months and then remained constant till 1year follow up
- ✓ MBL changes were most pronounced in the first 3 months and then stabilized.