

# OUTCOME OF DENTAL IMPLANTS PLACED IN TERTIARY CARE HOSPITAL

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# DENTAL IMPLANTS

- A dental implant (also known as an endosseous implant or fixture) is a surgical component that interfaces with the bone of the jaw to support a dental prosthesis.

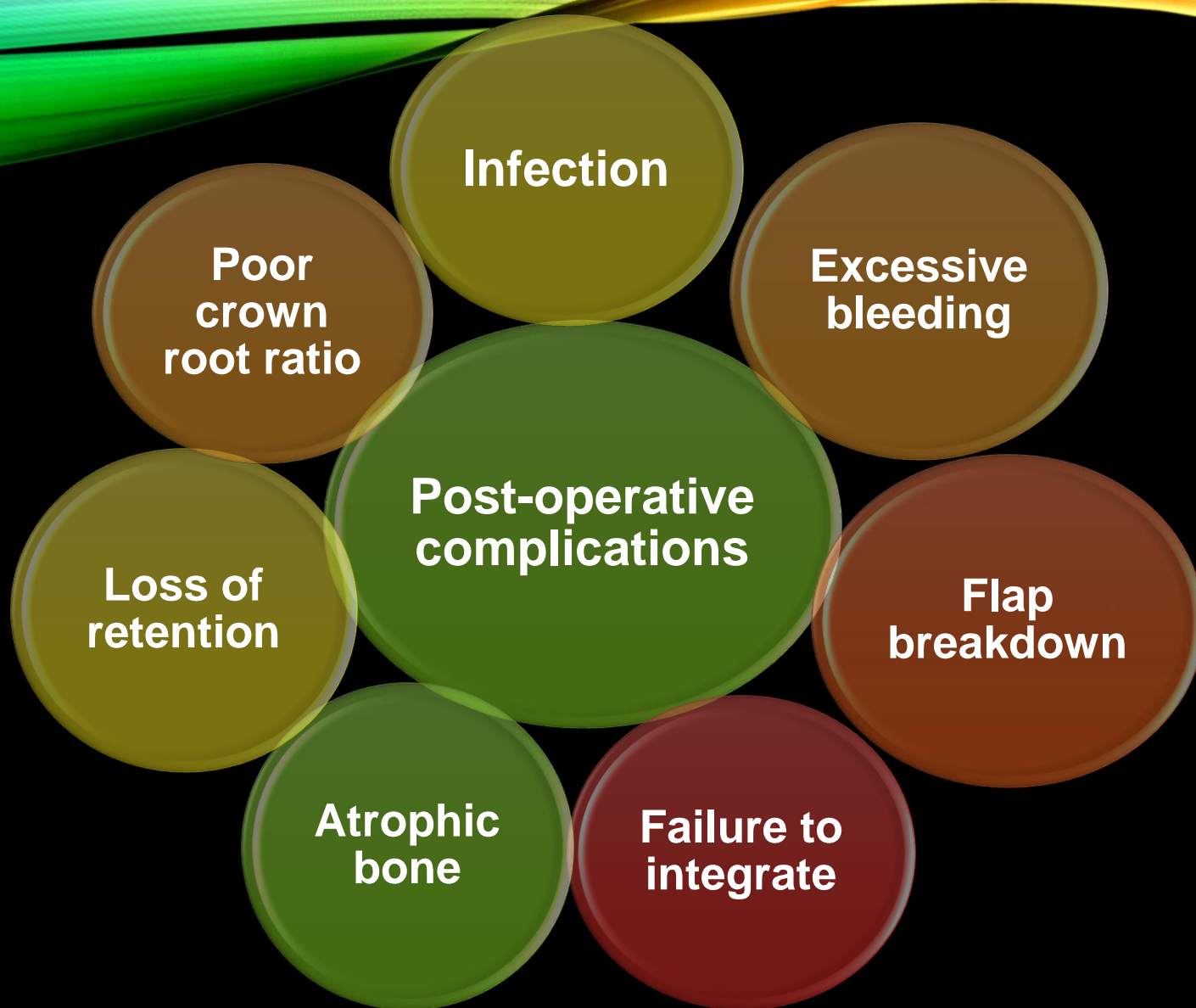


Palmer R .Introduction to dental implants. Br Dent J. 1999 Aug 14;187(3):127-32.

# SUCCESS CRITERIA FOR DENAL IMPLANT

- Immobile when tested clinically.
- Radiographically- no peri-implant radiolucency.
- After first year in function, radiographic vertical bone loss of  $<0.2$  mm per annum.
- Absence of signs and symptoms.
- Implant fully functioning according to its intended prosthodontic purpose





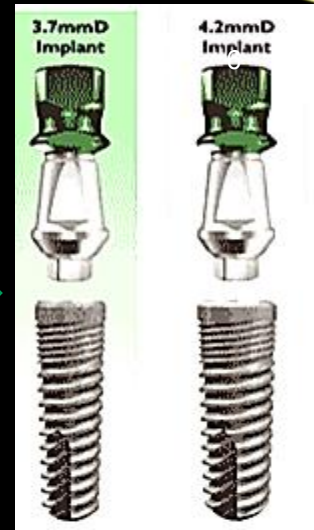
Esposito, M.; Grusovin, M. G.; Talati, M.; Coulthard, P.; Oliver, R.; Worthington, H. V. (2008). "Interventions for replacing missing teeth: antibiotics at dental implant placement to prevent complications" *Cochrane Database of Systematic Reviews* .

Javed, F.; Romanos, G. E. (2010). "The role of primary stability for successful immediate loading of dental implants. A literature review". *Journal of Dentistry* **38** (8): 612–620

# CLASSIFICATION OF DENTAL IMPLANTS

# IMPLANT SIZES

- Mini/ Narrow Body dental implants



- Standard Implant Platform

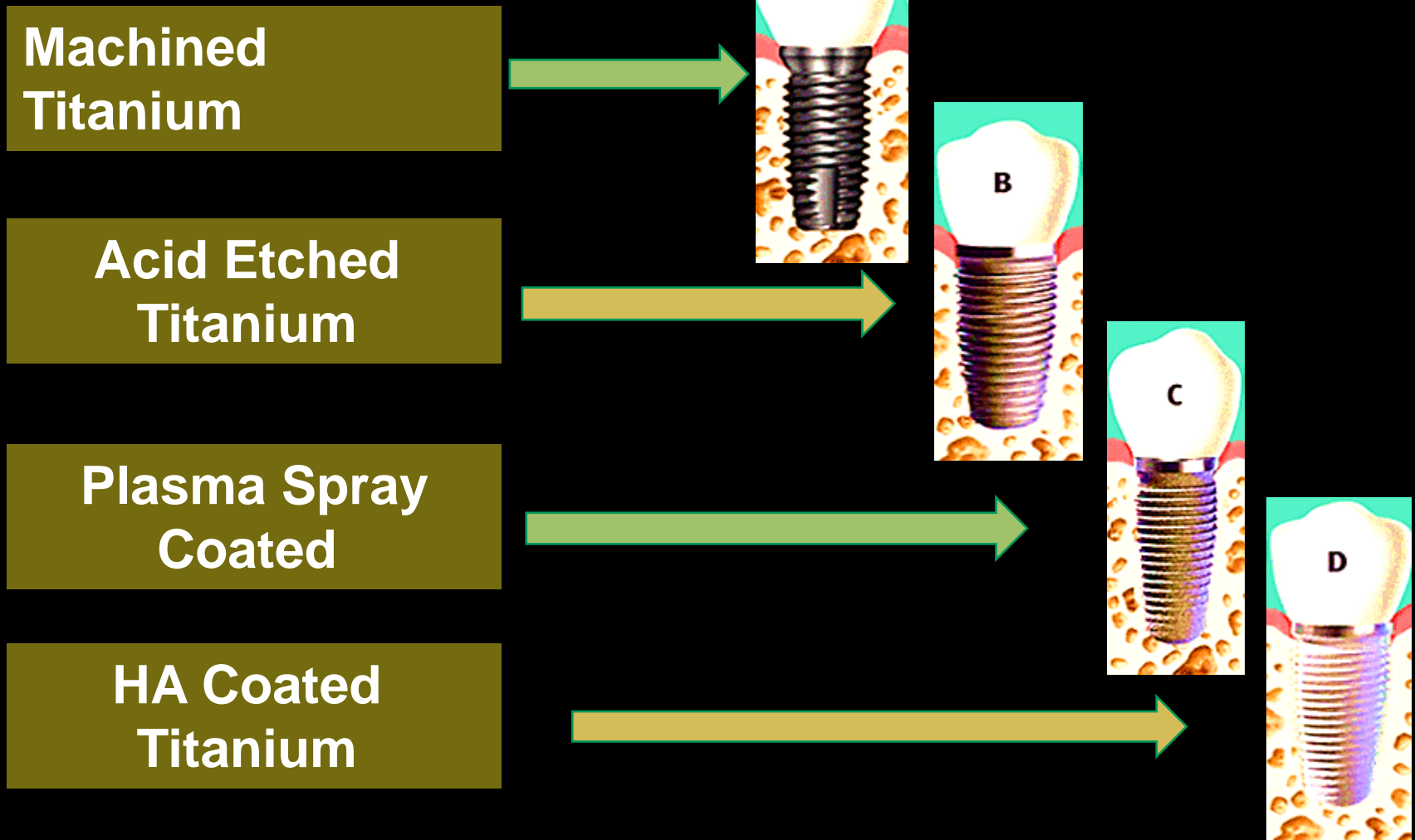


- Wide Implant Platform





# IMPLANT SURFACE MODIFICATIONS



Esposito, M; Coulthard, P; Thomsen, P. & Worthington, HV. (2005). The role of implant surface modifications, shape and material on the success of osseointegrated dental implants. A Cochrane systematic review. Eur J Prosthodont Restor Dent, 13, 15-31.

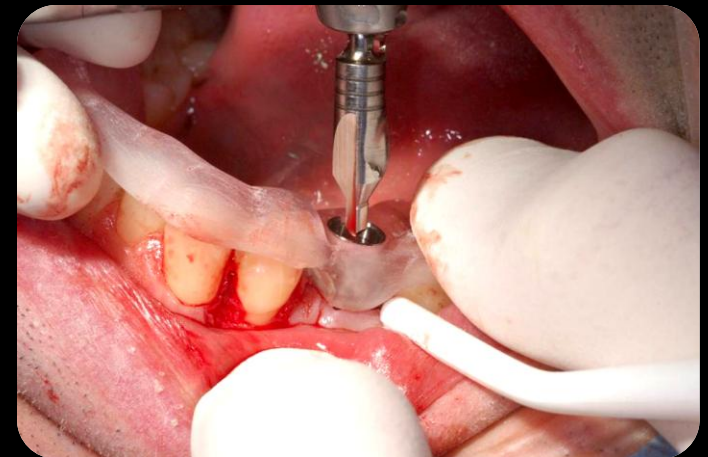
# TIME OF INSTALLATION

- Immediate implants
- Delayed implants



# TIME OF PROSTHETIC LOADING

- **Immediate loading:** Application of functional or nonfunctional load to an implant at the time of placement or within 48 hours
- **Early loading:** 4 - 8 weeks.
- **Delayed loading implant:** after 3-6 months.



# IMPLANT PLACEMENT



3 million people in the US have implants placed.

Approximately 1 million dental implants placed annually.

Crest® Oral-B® at [dentalcare.com](http://dentalcare.com) Continuing Education Course, Revised March 6, 2013.

Moldovan S, Lyle DM. The Failing Implant: Reducing Risk- Addressing modifiable risk factors to help avoid complications. Inside Dentistry June 2014, Volume 10, Issue 6.

# RATIONALE

- Since local data is lacking on success of this treatment modality, therefore we wanted to explore the outcome of implant service in our center.

# STUDY

12

## OBJECTIVE

To assess the outcome of dental implant placement at AKUH.



# MATERIALS AND METHODS

- Study design : Retrospective charts review
- Study duration : 2010-2014
- Setting : AKUH dental clinics

- **Inclusion criteria:**

- Patients receiving implants since 2010 under local anesthesia
- Patients who received dental implants with all surgical and prosthetic work done within AKUH.

- **Exclusion criteria:**

- Patients whose data was missing.
- Implant procedure done by other faculty.



# DATA ANALYSIS

- SPSS version 19.0
- Descriptive statistics & frequency distribution were computed.
- Chi square test was applied to explore association of implant success with other factors such as jaw type, dentate status, need for grafting.
- P-value of 0.05 was taken as statistically significant.

# RESULTS

**Study duration: 2010-2014**



**Total number of implants placed at AKU n ≈ 300**



**Placed by other consultants 173**



**165**

**Failed to osseointegrate n=6**



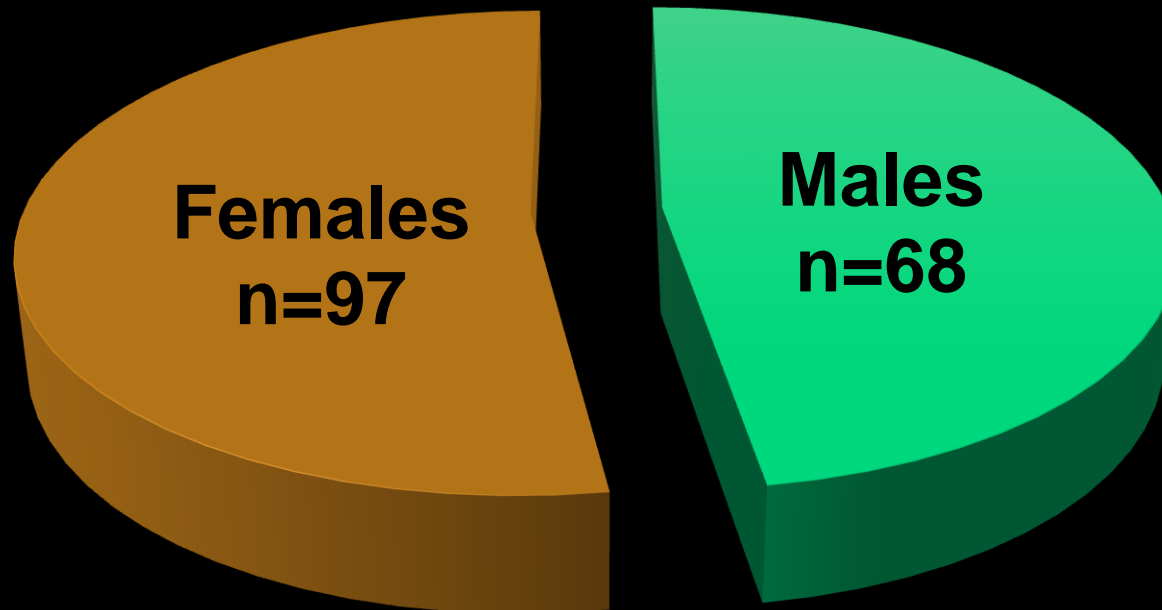
**159**

**Surgically successful but Yet to be loaded prosthetically n=55**



**Successful cases  
Prosthetic data available n= 104**

# Implants placement acc to Gender

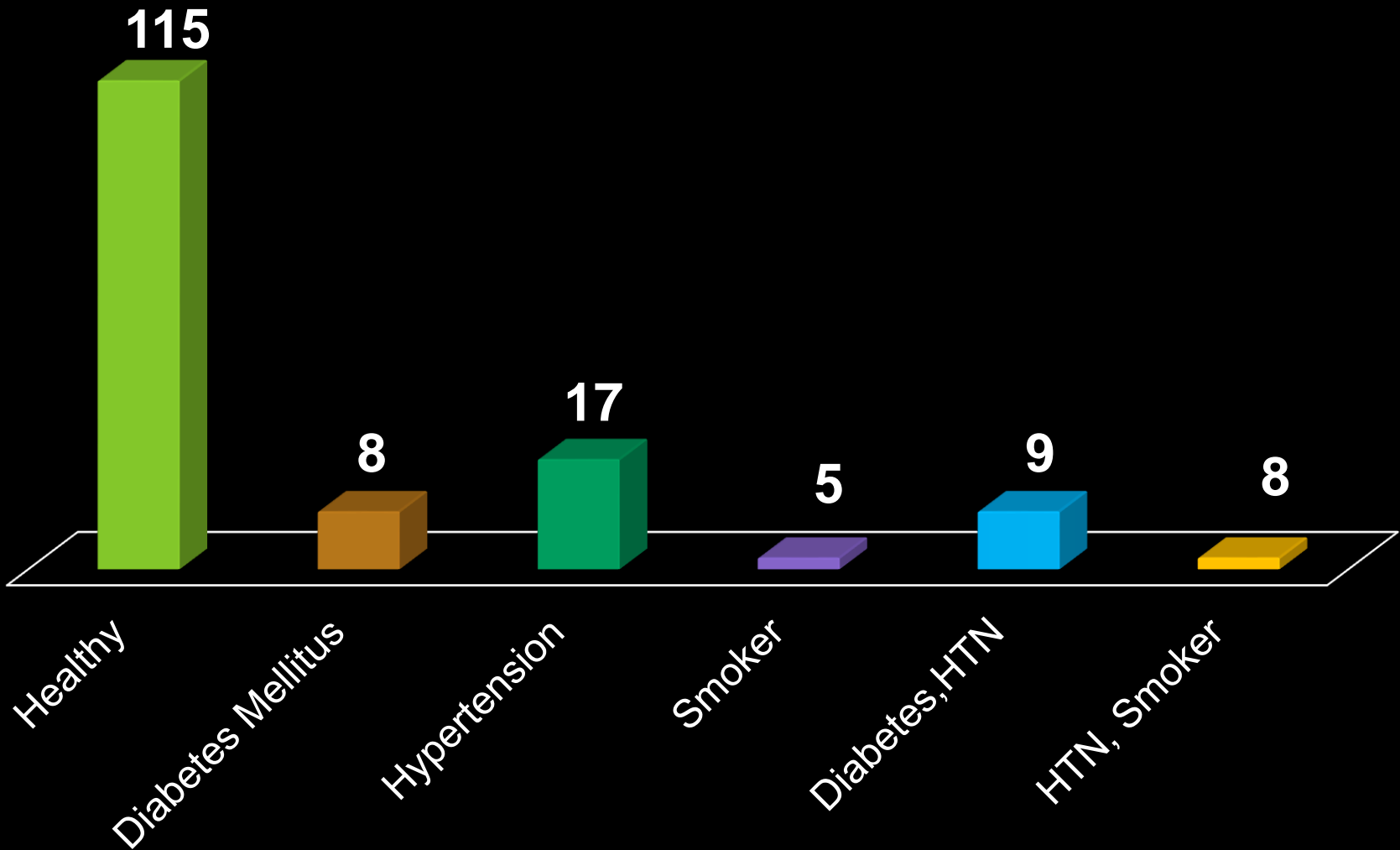


# MEAN AGE OF THE PATIENTS

	n	Minimum	maximum	mean	Std. deviation
Age (years)	165	17	73		

# MEDICAL STATUS

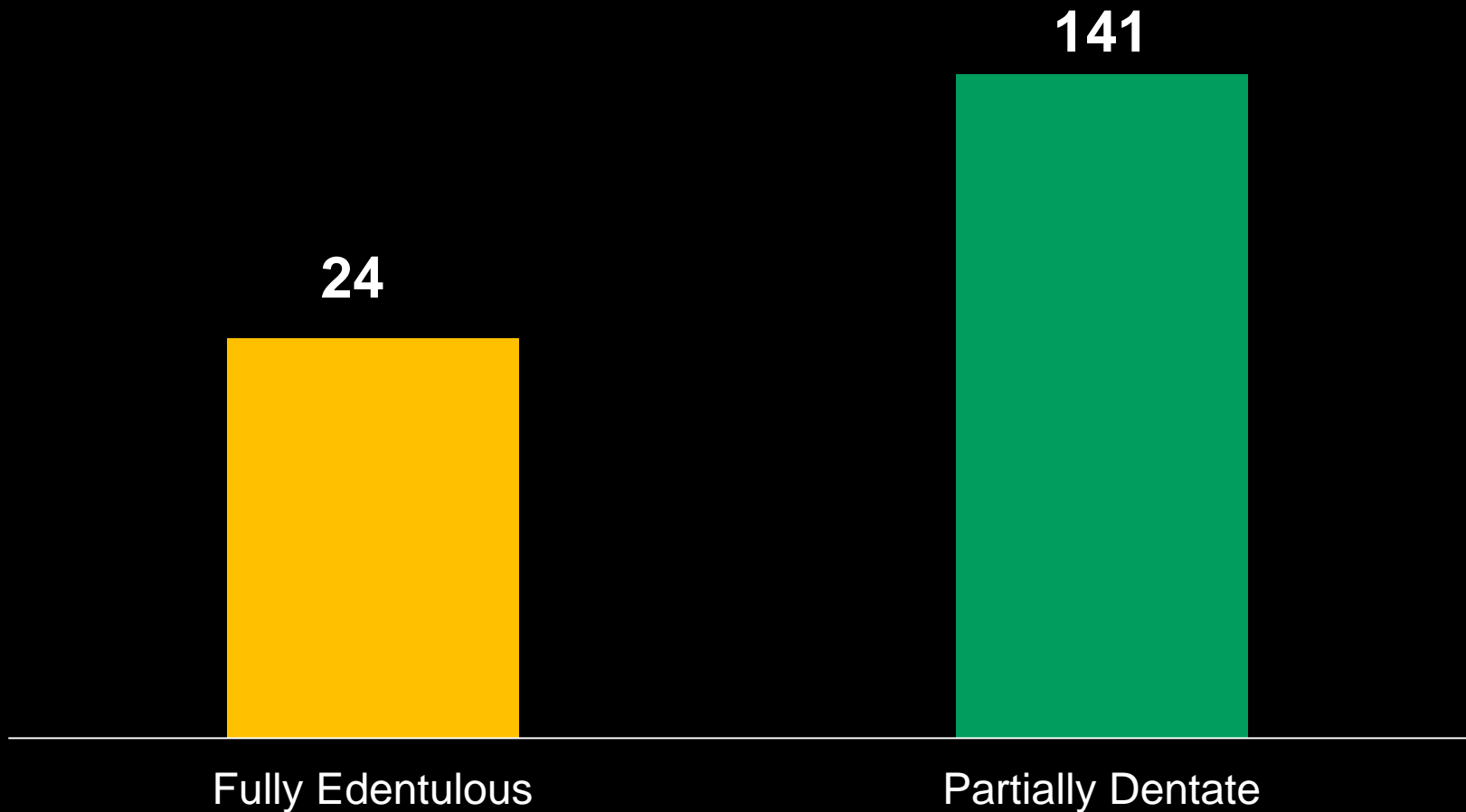
n=165





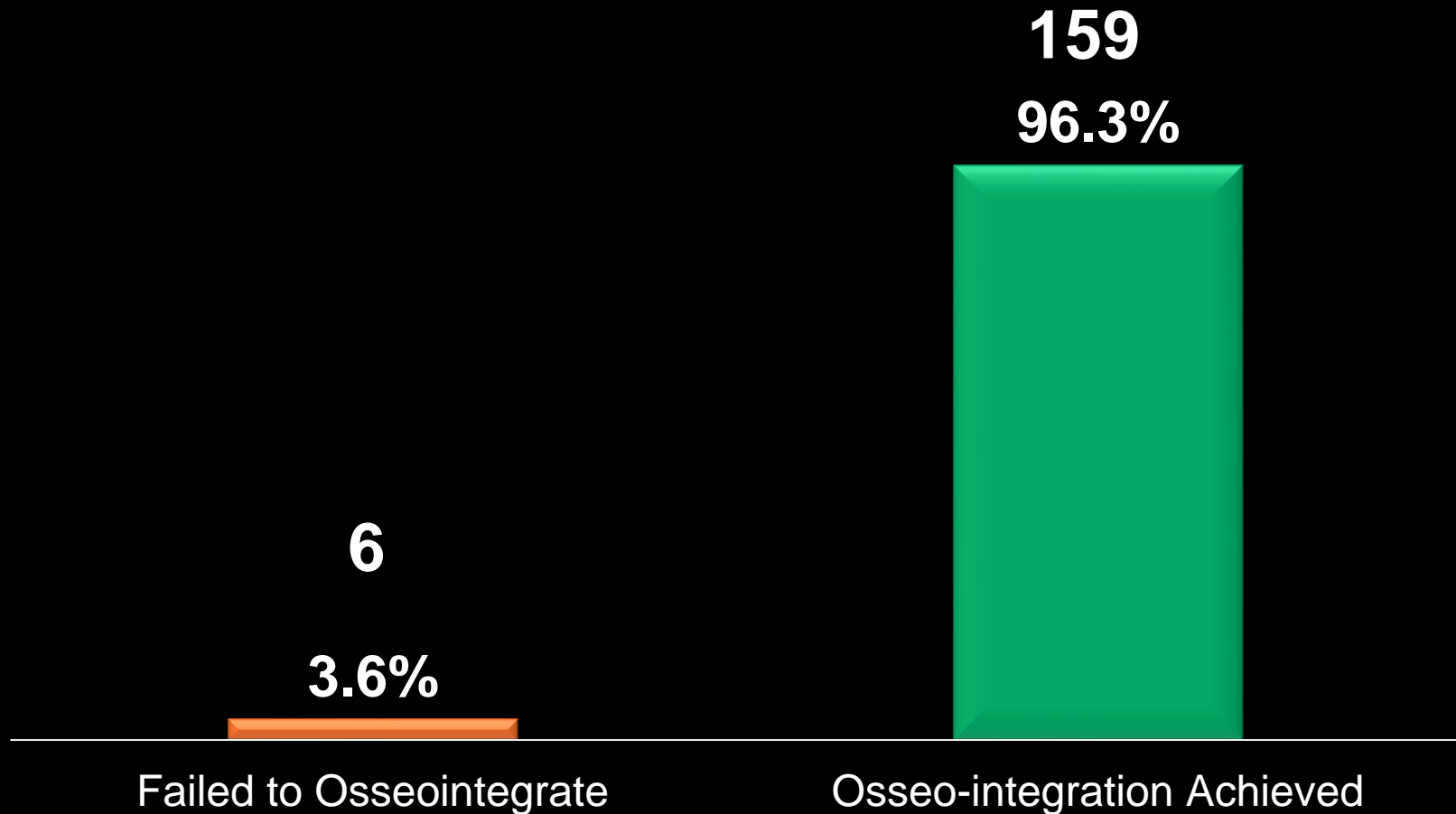
# PATIENT DENTAL STATUS

n=165



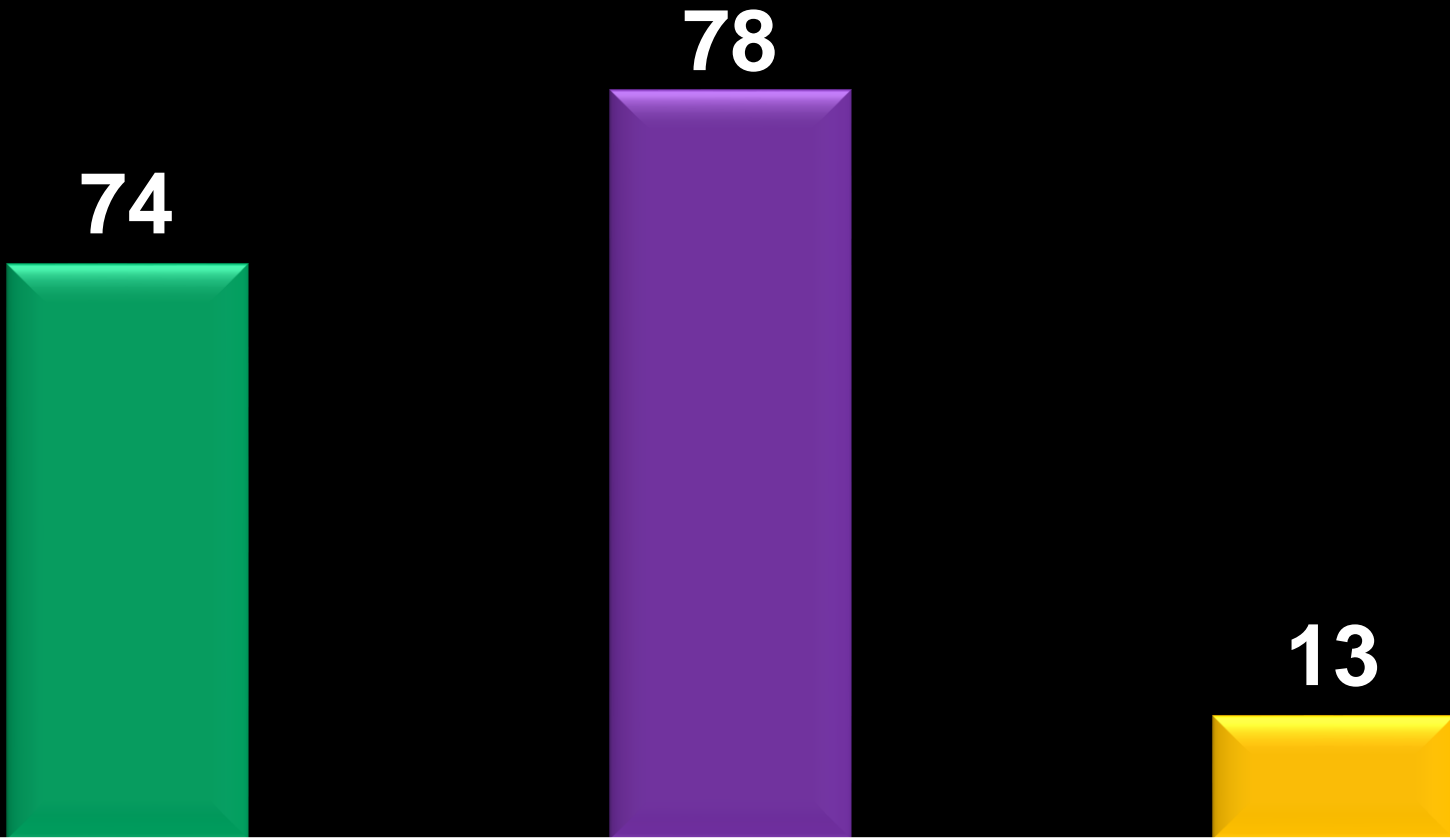
# OSSEOINTEGRATION OUTCOME

n=165



# IMPLANT DIAMETER

n=165



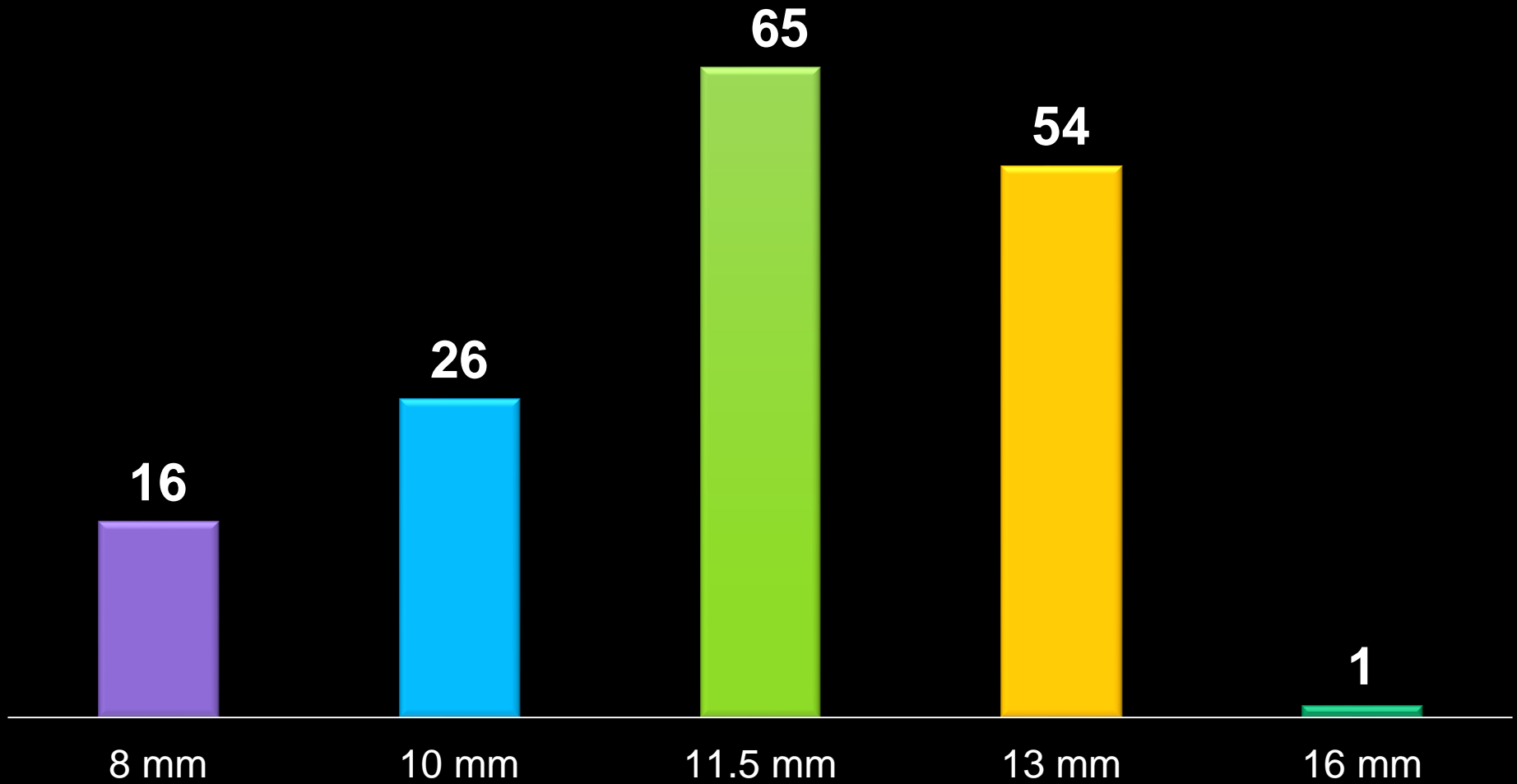
3.7mm (Green)

4.7mm (Purple)

6mm (Golden)

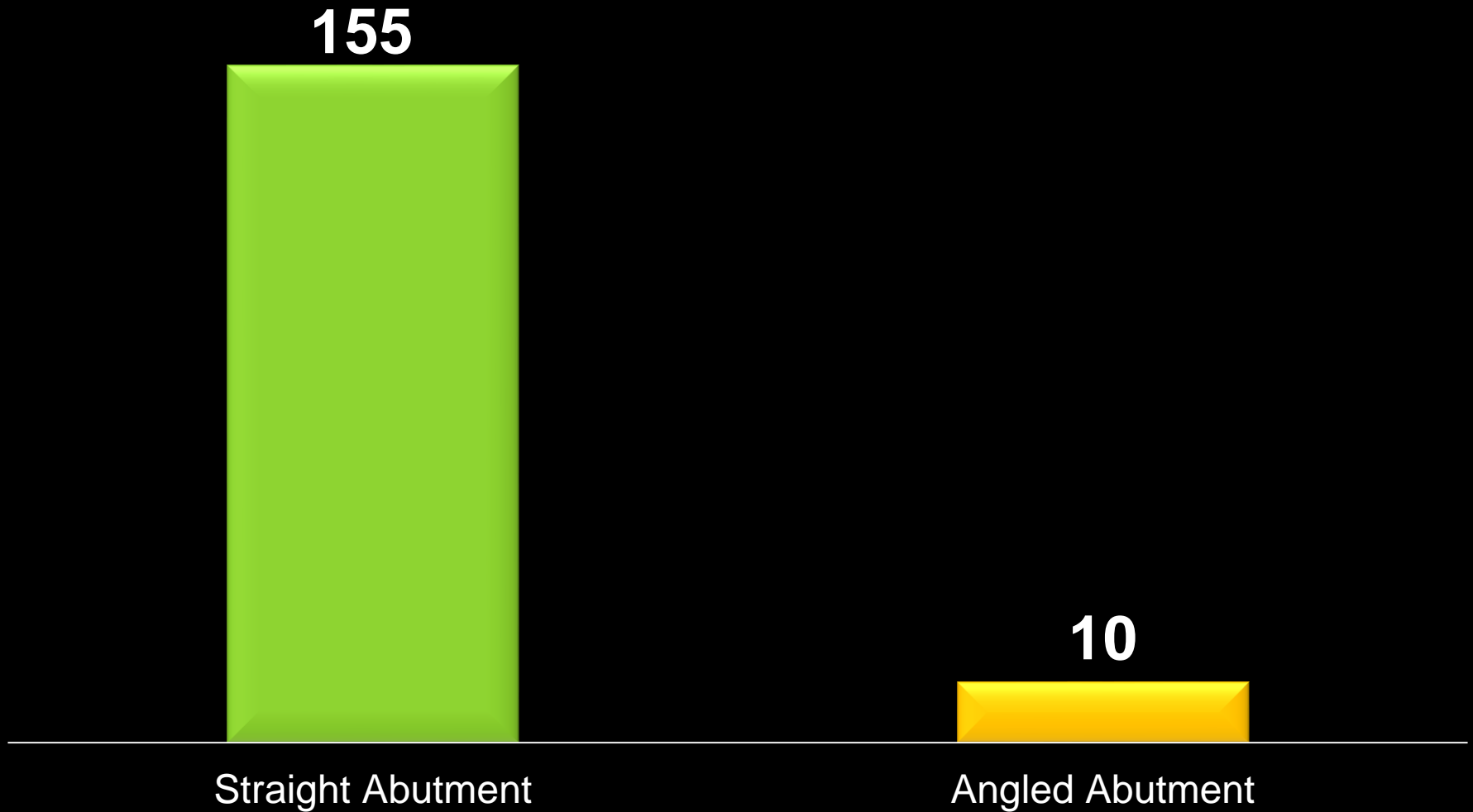
# IMPLANT LENGTH

n=165



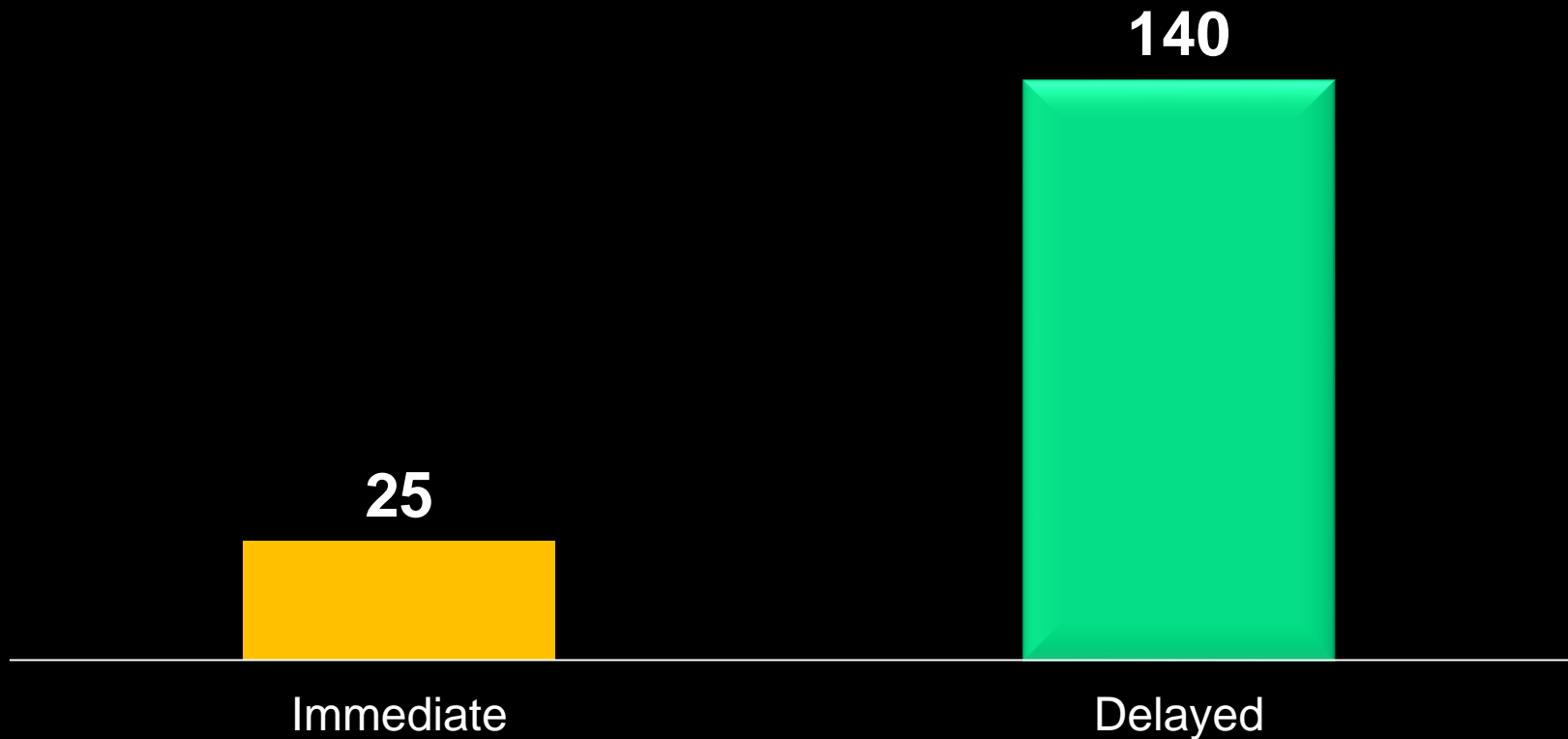
# TYPE OF ABUTMENT

n=165



# TIME OF LOADING

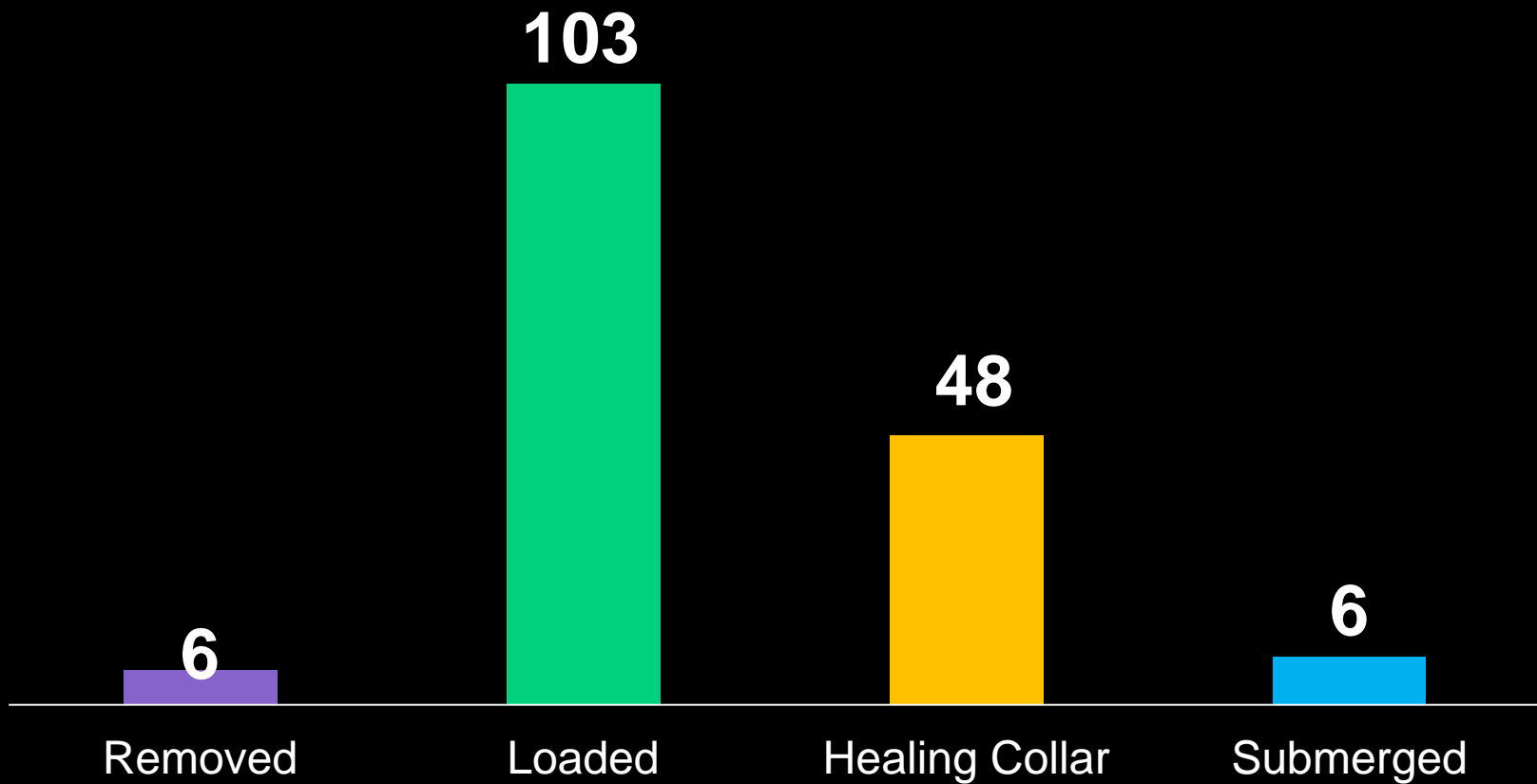
n=165





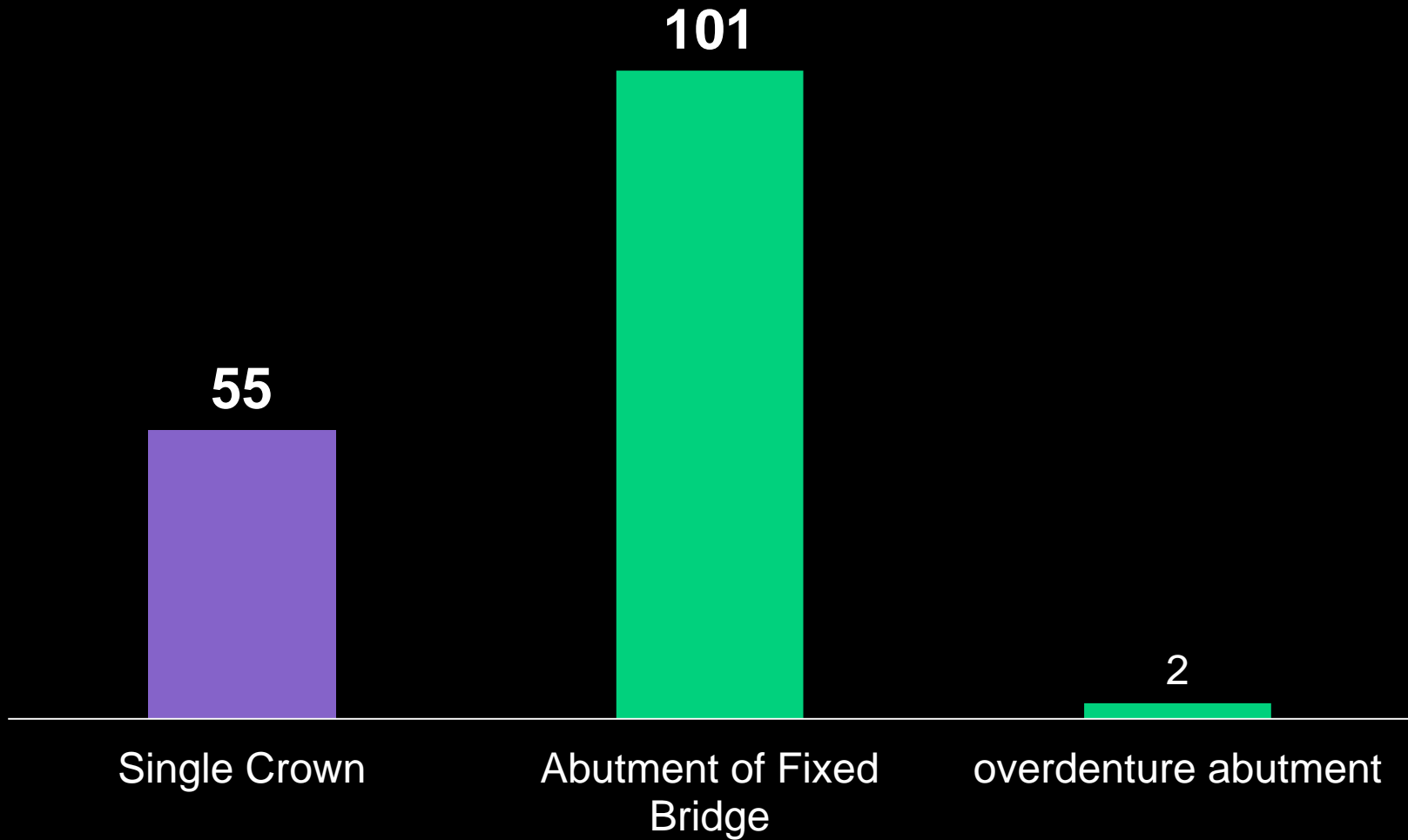
# LOADING OF IMPLANT

n=127



# FINAL PROSTHESIS

n=159



# OSSEO-INTEGRATION OUTCOME

OSSEOINTEGRATION OUTCOME	PATIENT'S DENTAL STATUS		TOTAL	P value
	Fully edentulous	Partially dentate		
Failed to integrate	4	2	6	0.364
Osseo-integration achieved	61	98	159	
Total	65	100	165	

Osseointegration outcome (Grafting)		Patient's Dental Status		Total n= 165	p value
		Fully edentulous	Partially dentate		
No graft	Failed to integrate	4	1	5	0.09
	Osseointegrated	44	70	114	
Minimal graft	Osseointegrated	10	20	30	
	Failed to integrate	0	1	1	
Considerable grafting	Osseointegrated	1	2	3	
	Failed to integrate	4	2	6	
Total	Osseointegrated	50	86	159	
	Failed to integrate				

# DISCUSSION

- Dental implants are considered as a predictable treatment option for replacement of missing dentition.
- With the achievement of high success rates, frequency of dental implant placement is increasing worldwide.

# COMPARISON WITH OTHER STUDIES

Other studies	n, Age	Study	Implant type, Placement	Width, Length, Site	Restoration, Follow up	Success of implants
Min-Su Bae (Korea) 2011	294 implants 27-71 years	2 years Retrospective	MIS Self Tapping	3.75 mm 11.5-13 mm Maxillary/ Mandibular molars	Single abutment, FPD, Over denture. 4 years	97.3%
Renzo Guanieri (Italy) 2014	46 implants 2 failed 26-60 years	2 years Retrospective, multicenter	BioHorizon Immediate	3.8-4.6 mm 9-15 mm	- 24 months	95.6%
AKUH (Pakistan) 2014	165 implants 6 failed 17-70 years	5 years Retrospective Single center	Zimmer Immediate + delayed	4.7 mm 11.5 mm All sites	Single crown, FPD Overdenture. Upto 5 years	96.3%



# COMPARISON WITH OTHER STUDIES

Other studies	n, Age	Study	Implant type, Placement	Width, Length, Site	Restoration, Follow up	Success of implants
Alejandro Pachos (Spain) 2005	415 implants, 22 failed 21-89 years	7 years Retrospective Multicenter	Klockner. Delayed	3.2-5.5 mm 10-18 mm Posterior maxilla	Single, FPD, Over denture 5 years	95.38%
Zeev Omrainer (Israel) 2012	173 implants 1 failed 18-75 years	10 years Retrospective	Zimmer Immediate+ delayed	3.7 mm 13 mm	- 10 years	99.0%
AKUH (Pakistan) 2014	127 implants 5 failed 17-70 years	4 years Retrospective	Zimmer tapered screw vent. Immediate + delayed	4.7 mm 11.5 mm All sites	Single crown, FPD Overdenture Upto 4 years	96.1%

# CONCLUSIONS

- Most common length: 11.5mm
- Most common diameter: 4.7mm (purple)
- Most common site : LR6
- Prosthesis for more than half of the implants were fixed bridges.

- Our results are comparable to other centers of the world in terms of success achieved in osseointegration of dental implants i.e. 96%
- Previous studies have demonstrated a decrease in the success rate of implants in patients with medical co-morbidities.

# FAILURES OF IMPLANTS

- The most probable cause for the failure of 5 implants in our study group:
- **Case 1**: 46 Male, maxillary premolar. Atrophic maxilla, Significant deficiency in bone+ bone grafting
- **Case2**: Edentulous atrophic maxilla: 80 years female, diabetic, hypertensive, early loading with interim prosthesis.

# FAILURES OF IMPLANTS

- **Case 3, 4**: 55 years male. Diabetic, atrophic edentulous maxilla, early loading with interim prosthesis. Failure on left and right maxilla.
- **Case 5**: 22 years male, significant bone loss in anterior maxilla, premature loading.
- **Case 6**: 55 female, implant failure during removal of prosthesis.

# STRENGTHS

- Baseline statistics on current outcome of implant placement in our center.
- Complete data available on both clinical and radiographic aspects.
- Surgical and prosthetic aspects were covered.
- Rigid criteria of implant success was used.

# LIMITATIONS

- No comparison group
- Single clinician
- Single center study
- Single arm study
- No data on patient satisfaction/ esthetic aspects

# RECOMMENDATIONS

- Cases with atrophic maxilla, significant bone loss and those subjected to interim prosthesis loading should be dealt with caution.
- Multicentre studies on implants with a larger sample size should be commenced.
- For the clinicians; is to form an archive to store data for research and study purposes.



THANK  
YOU