COURSE SYLLABUS

IMPLANTOLOGY I.

Semmelweis University Faculty of Dentistry, Dentistry

Name of the course: Implantology I.

Credit value: 2

Lessons *(in hours in the whole semester)*: 28 from this, lectures: 1/week, practicals: 1/week, seminars:0

Type of the course: compulsory

Semester in which it is announced according to the curriculum: 8. semester

Frequency of announcement *(per semester or year)*: per year

The responsible educational and research organizational unit for teaching the subject: Depatment of Oro-Maxillofacial Surgery and Stomatology

Academic year: 2023/2024 2st semester

Subject (Neptun) code[1]: FOKOSZB311 _1A

Lecturer of the course: Dr. Joób-Fancsaly Árpád
Academic position: associate professor
Address: Semmelweis University, Depatment of Oro-Maxillofacial Surgery and Stomatology, 1085 Budapest, Mária str 52.
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The goals and place of the course in regards to the education of dental students:
Learning the fundamentals of oral implantology and its practical application. Laying the fundamentals of theory, introducing implantological aspects of surgical and prosthetic dentistry and parodontology. During exercises, learning the steps of implantation and bone replacement, getting to know the steps and elements of prosthodontics. Theoretical and practical solutions to complications of implantation.

Location of the course *(address of lecture hall, seminar room etc.)*: Semmelweis University, Depatment of Oro-Maxillofacial Surgery and Stomatology, 1085 Budapest, Mária str 52.

Competences acquired by completion of the course: According to SAC they are entitled to simple treatments

Pre-study requirements and prerequisites of course registration and completion:
General and dental radiology II., Periodontology I., Oral and Maxillofacial Surgery II.
In case of a multi-semester subject, the standpoint of the educational-research unit on the concurrent subject registration and on the requirements of permission thereof:
there is no possibility for concurrent subject registration

Number of students required for announcement of course *(min., max.)*: The number of students on each course will be determined according to the expected number of students, taking our educational capacity into consideration. Each course will be held as declared in the rules of small-group education.

Method of course registration: via the Neptun System

Detailed course/lecture description[2]: *(to facilitate credit recognition in other institutions)*

Semester syllabus :

1. Introduction. History of oral implantology. The classification of oral implants, according to the anatomic site. Endosteal implants.
2. The indications, contraindications of implant treatment.

3. **Diagnostics and treatment planning.**

4. **General considerations of implant surgery.**

5. Special considerations of implant surgery. The time of implant placement.
6. **The fundamental biomechanics of oral implants.**

7. The role of surface chemistry and topography in the osseointegration

8. The essential conditions of success of the implant therapy I. Biocompatibility. Osseointegration.

9. The essential conditions of success of the implant therapy II. Gingival seal. Progressive osseointegration.

10. The essential conditions of success of the implant therapy III. The factors influencing the masticatory load transmission through implants.

11. The fundamentals of implant prosthodontics I. Implant abutments, impression techniques.

12. The fundamentals of implant prosthodontics II. Prosthetic options on implants.

13. Implant failures. Biological, mechanical complications and their management.

Practice of Implantology complements and deepens the knowledge obtained during the theoretical course

- Diagnostics – X-ray diagnostics, CBCT analysis, introduction of X-ray and surgical template
- Implant surgery overview through the Straumann system. Steps of implant placement.
- Introduction and practice of the steps of sinus-lifting and lateral augmentation with the products of Geistlich.
- Itroducing the prothetical elements of several types of implant supported prosthesis. Practicing the steps of the prostethics on a model with the SIC implant system.
- Implant failure management through the Osstem implant system.
- Introduction of the steps of guided surgey. Nobel Biocare system overview.

Lecturers:

Dr. Ashourioun Amir Hossein
Dr. Bérczi Kinga
Dr. Czinkóczky Béla
Prof. Divinyi Tamás
Dr. Joób Fancsaly Árpád
Dr. Kádár László
Dr. Komlós György

Dr. Koppány Ferenc
Dr. Kovács Noémi
Dr. Körmöczi Kinga Renáta
Dr. Marton Rita Margita
Dr. Németh Zsolt
Dr. Szűcs Attila

Courses *(obligatory and elective)* which in part or entirely overlap the topics of above course:
Prosthodontics, periodontics

Special academic work required for completion of the course[3]:
No

Attendance on practices and lectures, replacement in case of missed sessions:
No

Method of checking acquired knowledge during the study period[4]: No

Requirements of an accepted semester *(signature of the lecturer)*: Participation in 75% of the practical education

Type of the exam: Colloquium: oral exam from the theoretical and practical material of the first semester

Topics for the semi-final exam

1. The history of oral implantology. The development of implants, implant-systems.
2. The classification of dental implants according to the anatomic localization. Endosteal implants.
3. The indications, contraindications of implant treatment.
4. Essential diagnostics of oral implants. X-ray diagnosis. Modell analyzis. Surgical templates.
5. General conditions of implant placement. Implantation step by step.
6. Surgical protocols. The timing of implant placement. Advantages, disadvantages.
7. Biomaterials, biocompatibility. Osseointegration, its meaning and significance in oral implantology.
8. The role of surface chemistry and topography int he osseointegration.
9. The morphology and clinical importance of gingival seal around implants.
10. The factors, influencing the masticatory load transmission through implants.Implant placement and loading protocols.
11. The biomechanics of implant restorations: The biomechanical role of the implant.
12. The biomechanics of implant restorations: The biomechanical role of the connectionbetwen implant and prosthetic superstructure.
13. The types of prosthetic abutments on implants. Impression techniques in implant prosthodontics.
14. The types of prosthetic restorations on implants. Advantages, disadvantages of different solutions.

Short questions

1. How can you summerize the possible sucess rate of modern implant treatments?
2. What were the trends, and clinical trials with implants prior to the modern implantology?
3. What was the first biocompatible alloy?
4. What was the concept of subperiosteal implants?
5. What were the causes of failure of subperiosteal implants?
6. Who was the developer of the blade-vent implants?
7. What was the concept of „pseudo-parodontium” in oral implantology?
8. Who discovered, and published the concept of „osseointegration” first?
9. Since when do we reckon the modern implantology?
10. What were the stages of the developement of modern implantology?
11. What is the meaning of an implant system?
12. What is the intramucosal implant?

13. What is the transmandibular implant?
14. What is the transdental implant?
15. How can we classify the endosteal implants?
16. What is the main indication of blade-vent implants?
17. Why are the blade-vent implants not used generally today in the clinical practice?
18. What are the advantages of rotation-symmetric /root-form/ implants?
19. What type of rotation-symmetric implants do you know?
20. How can you classify the screw-type implants?
21. What are the most important indications for implantation?
22. Which teeth are most often replaced with implants?
23. How do we classify the contraindications?
24. How does diabetes affect our implantation procedures?
25. Which type of osteoporosis can affect implantation?
26. How do smoking, alcoholism, and drug use affect osseointegration?
27. What local contraindications can prohibit implantology interventions?
28. What do we know about the metallosis and allergenic effects of titanium?
29. What is the description of bone quality class D1 and what are the locations for it on the jaws?
30. What is the description of bone quality class D2 and what are the locations for it on the jaws?
31. What is the description of bone quality class D3 and what are the locations for it on the jaws?
32. What is the description of bone quality class D4 and what are the locations for it on the jaws?
33. Why do we need panoramic x-ray and template with metal sphere?
34. What are the situations when computer tomography is recommended?
35. Why do we have to make surgical template?
36. What can we examine using model analysis?
37. Regarding the way of healing, what kind of surgical protocols do you know?
38. What are the surgical steps of implant placement?
39. What is the surgically recommended minimal distance between a tooth and an implant and between two implants?
40. What is the meaning of „primary stability” of the implants?
41. What is the purpose of the second operation in the two-stage protocol?
42. What are the possible timings of implant placement after tooth-loss?
43. What are the advantages and disadvantages of immediate implantation?
44. What are the advantages and disadvantages of delayed implantation?
45. What is the difference regarding the treatment plan, between the early and lateimplantation?
46. What are the advantages and disadvantages of the late implantation?
47. What are the essential conditions of successful implantation?
48. What is the „biocompatibility”?
49. What is the „biomechanical funtional ability”?
50. What are the biotolerant materials?
51. What are the bioinert materials?
52. What are the bioactive materials?
53. Which is the most widely used titanium alloy?
54. What is the „osseointegration”?
55. What are the conditions of osseointegration?
56. What are the bioactive materials used for?
57. Why is it important to research the ideal implant morphology?
58. What does macro- and microporosity mean?
59. What are the parameters to describe a certain implant surface morphology?
60. What does Bone-Implant Contact (BIC) mean?
61. What do you know about the Titanium Plasma Spray method?
62. What do you know about sandblasting?
63. What do you know about the laser surface treatment?
64. What do you know about the SLA surface?
65. Which methods may be applied to study the success of surface modification?

66. What are the technical possibilities to surgically expose implants prior to prosthetic work?
67. What are the morphologic parts of the gingival seal around implants?
68. What is the „biological width”?
69. What are the possible clinical significances of the biological width around implants?
70. What is the progressive osseointegration?
71. What is the clinical significance of progressive osseointegration?
72. What are the conditions of long term maintenance of osseointegration?
73. Which factors have influence on the loading of oral implants?
74. When can we load the implants after insertion?
75. What are the advantages and disadvantages of immediate loading?
76. What is the value of „micromotion” tolerated by the bone?
77. Which factors have influence on the immediate loading of endosteal implants?
78. What is the primary stability of implants, and what is the importance of it?
79. What does the early loading of endosteal implants mean?
80. Why don't we use aluminum-oxide ceramic implants anymore?
81. How would you rank the load-bearing ability of implants according to their forms?
82. What are the important physical elements and their description in biomechanics?
83. Which biomechanical investigative methods are useful in clinical practice?
84. What are the most important biomechanical principles of implantology?
85. What is the importance of the mechanical stress distribution in periimplant bone?
86. What is the difference between natural teeth and implants regarding their biomechanical behaviour?
87. What is the role of rotational torque in implantology, and what are the possibilities to decrease it?
88. How can implant geometry influence the long-term implant success?
89. What is the theoretical basis of the concept of stress-breakers? What is their function and clinical importance?
90. What is the biomechanical difference between cylindrical and screw type implants?
91. What do the terms reactive and therapeutic biomechanics mean?
92. What is the surgical and prosthetic role of healing abutments?
93. What are the characteristics of the one-piece abutment?
94. How can we provide the rotation stability of implant abutments?
95. How can the divergence of implants be prosthetically corrected?
96. What are the characteristics of the zirconia abutments?
97. What is the basic difference in taking impressions, between the conventional and implant prosthodontics? (direct, indirect impressions)
98. How can you describe the impressions on implant and abutment level?
99. What is the difference between impression techniques with closed or open tray?
100. What are the types of fixed implant restorations?
101. What are the advantages of cemented implant prosthesis?
102. What are the disadvantages of cemented implant prosthesis?
103. What are the advantages of screw-retained implant prosthesis?
104. What are the disadvantages of screw-retained implant prosthesis?
105. What are the types of removable implant restorations?

Grading of courses[5]:
Verbal explanation of one essay of a greater topic (topic is up), followed by 3 quiz questions (topic is up) answered instantly. Failing any of parts of the exam will result in failure of the whole exam.
The possibility and requirements of an offered grade: there is no possibility for offered grade

Exam registration: Through Neptun system

Rules of repeating exams: As per the current regulations of University

List of textbooks, lecture notes and recommended textbooks:

Textbooks : Divinyi T. /edit./: Orális implantológia. Semmelweis Kiadó, Budapest, 2007

Bibliography:

1.Worthington Ph., Lang B. R., LaVelle W. E. /edit/:Osseointegration in der Zahmedizin. Eine Einführung,Quintessenz,Berlin,1995.ISBN3-87652-558-6

2.Koeck B., Wagner W. /edit/: Implantologie. Elsevier, München, 2004. ISBN 3-437-05310-8

3. Worthington Ph., Lang B.R., LaVelle W.E. /edit/: Osseointegration in Dentistry. An Introduction. Quintessence, Chicago, 1994 ISBN 0-86715-281-8

4. Sethi A., Kaus Th.: Practical implant dentistry. Quintessence, London, 2005 ISBN 1-85097-061-0

5.F. Carranza: Clinical Periodontology – Elsevier

6.O. Jensen: The Sinus Bone Graft – Quintessence

7.ITI Treatment Guide, Volume 2 and 4, Loading Protocols In Implant Dentistry Quintessence

8. D. Buser: 20 Years of Guided Bone Regeneration in Implant Dentistry - Quintessence

Other study aids:
On the website of Semmelweis University:
http://semmelweisegyetem.hu/szajsebeszet/oktatas/implantologia/

Signature of course lecturer:
Signature of head of department:
Date of submission:
Opinion of OKB:
Notes from the Dean's Office:
Signature of Dean:

[1] Filled out by the Dean's Office following approval
[2] Detailed and numbered for each week of theoretical and practical lessons one by one, indicating the names of lecturers and instructors
[3] Eg. field practice, medical chart analysis, survey conducting, etc.
[4] Eg. homework, report, midterm exam etc. Topics, dates, method of retake and replacement.
[5] Method of inclusion of theoretical and practical exams. Method of inclusion of midterm assessments.