

COURSE SYLLABUS

IMPLANTOLOGY II.

Semmelweis University Faculty of Dentistry, Dentistry
Name of the course: Implantology II. Credit value: 1 Lessons (<i>in hours in the whole semester</i>): 14 from this, lectures: 0/week, practicals: 0/week, seminars:0 Type of the course: compulsory Frequency of announcement (<i>per semester or year</i>): per year Semester in which it is announced according to the curriculum: 9.th Semester The responsible educational and research organizational unit for teaching the subject: Department of Oro-Maxillofacial Surgery and Stomatology
Academic year: 2024/2025 1st semester
Subject (Neptun) code¹: FOKOSZB311 _2A
Lecturer of the course: Dr. Joób-Fancsaly Árpád Academic position: associate professor Address: Semmelweis University, Department of Oro-Maxillofacial Surgery and Stomatology, 1085 Budapest, Mária str 52. Tel: 06 1 266 0457 Email: joob.fancsaly.arpad@semmelweis.hu
The goals of the course in point of view of the education of dental students: Learning the fundamentals of oral implantology. Laying the fundamentals of theory, introducing implantological aspects of surgical and prosthetic dentistry and parodontology, detailed overview of the bone substitution procedures and materials.
Location of the course (<i>address of lecture hall, seminar room etc.</i>): Semmelweis University, Department 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: Implantology I., Periodontology II., Oral and Maxillofacial Surgery III. 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 (<i>min., max.</i>): 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 description²: <i>Semester syllabus :</i>

1. Bone replacement I. Osteoconduction. Osteoinduction. Bone grafting materials. Guided Bone Regeneration (GBR). Bone grafting procedures in the outpatient surgery.
2. Bone replacement II. The sinus-lift procedure. Indications, contraindications, surgical techniques.
3. Bone replacement III. Osteogenesis, bone transplantation. Distraction osteogenesis
4. Bone replacement IV. Mistakes and complications in bone grafting
5. The periodontal aspects of implant therapy
6. Esthetic considerations in implant surgery. Surgical management of soft tissues.
7. Periimplant soft tissue management.
8. The influencing factors of periimplant tissue stability.
9. The possibility of PRF application in oral implantology.
10. Guided surgery in oral implantology.
11. Guest lecturer
12. Implant prosthodontics I. Crowns on implants.
13. Implant prosthodontics II. Fixed dental prosthesis on implants.
14. Implant prosthodontics III. Mesio-structures, combined (fixed-removable) prosthesis on implants.

Lecturers:

Dr. Barabás József
 Dr. Bogdán Sándor
 Prof. Divinyi Tamás
 Dr. Joób Fancsaly Árpád
 Dr. Kádár László
 Dr. Körmöczi Kinga Renáta
 Dr. Molnár Bálint
 Dr. Németh Zsolt
 Dr. Szűcs Attila
 Prof. Windisch Péter

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 course³:

No

Attendance on practices and lectures, replacement in case of missed sessions:

No

Method of checking acquired knowledge during the study period⁴: No

Requirements of an accepted semester (*signature of the lecturer*): no

Type of the exam: mods of the material of the first and second semester

Topics for the 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 analysis. Surgical templates.
5. Biomaterials, biocompatibility. Osseointegration, its meaning and significance in oral implantology.
6. The role of surface topography in the osseointegration. Procedures altering the surface chemistry and morphology.
7. The morphology and clinical importance of gingival seal around implants.
8. The biomechanics of implant restorations: The biomechanical role of the implant.
9. The biomechanics of implant restorations: The biomechanical role of the connection between implant and prosthetic superstructure.
10. The planning of implant restorations.
11. General surgical technique of implant placement. The timing of implantation.

12. Implant placement and the different loading protocols.
13. The esthetic aspects of implant surgery.
14. The biology of bone regeneration.
15. The therapeutical possibilities of bone replacement. Bone substitutes. Guided Bone Regeneration (GBR).
16. Bone grafting surgical procedures without bone transplantation.
17. Possibilities of osseointegration in bone replacement.
18. Bone transplantation. Surgical techniques. Distraction osteogenesis.
19. The types of prosthetic restorations on implants. Advantages, disadvantages of different solutions.
20. The types of prosthetic abutments on implants. Impression techniques in implant prosthodontics.
21. Single tooth restorations using implant. Surgical and prosthetic considerations.
22. Implant restorations in edentulous free-end situations. Surgical and prosthetic considerations.
23. Implant rehabilitations of fully edentulous jaws. Surgical and prosthetic considerations.
24. The complications of implant treatment. Early: surgical complications. Late: biological, mechanical complications
25. Periodontological aspects of implant treatment.
26. Practical aspects of planning dental implant restorations. "Key positions" of implants.
27. Variations of sinus lift techniques. Difficulties and complications.
28. The process of guided surgery in implantology.
29. PRF solutions and their application in oral implantology.
30. What is the importance of peri-implant keratinized mucosa?
31. What are the techniques to preserve the buccal bone plate in case of immediate implant placement?
32. Formability and retention of the peri-implant soft tissue - prosthetic operations.

Short questions

1. What were the trends, and clinical trials with implants prior to the modern implantology?
2. What was the first biocompatible alloy?
3. What was the concept of subperiosteal implants?
4. What were the causes of failure of subperiosteal implants?
5. Who was the developer of the blade-vent implants?
6. What was the concept of „pseudo-parodontium” in oral implantology?
7. Who discovered, and published first the concept of „osseointegration”?
8. Since when do we reckon the modern implantology?
9. What were the stages of the development of modern implantology?
10. What is the meaning of an implant system?
11. What is the intramucosal implant?
12. What is the transmandibular implant?
13. What is the transdental implant?
14. How can we classify the endosteal implants?
15. What is the main indication of blade-type implants?
16. Why the blade-vent implants are not used generally today in the clinical practice?
17. What are the advantages of rotation-symmetric /root-form/ implants?
18. What type of rotation-symmetric implants do you know?
19. How can you classify the screw-type implants?
20. Which are the major indications of implant placement?
21. Which teeth are most often replaced with implants?
22. How can contraindications be classified?
23. How does diabetes influence our implant activities?
24. Which type of osteoporosis may be a contraindication of implant placement?
25. How do smoking, alcoholism and drug abuse influence osseointegration?
26. What local contraindications may hinder implant placement?

27. What do you know about titanium metallosis and allergy?
28. What is the description of bone quality class D1 and what are the locations for it on the jaws?
29. What is the description of bone quality class D2 and what are the locations for it on the jaws?
30. What is the description of bone quality class D3 and what are the locations for it on the jaws?
31. What is the description of bone quality class D4 and what are the locations for it on the jaws?
32. Why do we need panoramic x-ray and template with metal sphere?
33. What are the situations when computer tomography is recommended?
34. Why do we have to make surgical template?
35. What can we examine using model analysis?
36. What are the possible times of implant placement after tooth-loss?
37. What are the advantages, disadvantages of immediate implantation?
38. What are the advantages, disadvantages of delayed implantation?
39. What is the difference regarding the treatment plan, between the early and late implantation?
40. What are the advantages, disadvantages of the late implantation?
41. Regarding the healing of implants, what kind of surgical protocols do you know?
42. What are the surgical steps of implant placement?
43. What is the surgically positioned minimal distance recommended between the implants, and the implant-tooth?
44. What is the purpose of the second operation in the two-stage protocol?
45. How can you compare the different surgical protocols regarding the soft tissue healing around implants?
46. What are the essential conditions for the success of dental implantation?
47. What is biocompatibility?
48. What is the biomechanical functional ability?
49. What are the biotolerant materials?
50. What are the bioinert materials?
51. What are the bioactive materials?
52. Which is the most widely used titanium alloy in implantology?
53. What is osseointegration?
54. What are the conditions of successful osseointegration?
55. What are the bioactive materials used for?
56. What about the technical possibilities of the surgical exposure of implants?
57. What are the morphologic parts of the gingival seal around implants?
58. What is the „biologic width“?
59. What are the possible clinical significances of the biologic width?
60. What is the progressive osseointegration?
61. What is the clinical significance of progressive osseointegration?
62. What are the conditions of long term survival of osseointegration?
63. Which factors influence the loading of oral implants?
64. When can implants be loaded after insertion?
65. What are the advantages and disadvantages of immediate loading?
66. What is the value of „micromotion“ tolerated by the bone?
67. Which factors influence the immediate loading of implants?
68. What is the primary stability of implants, and what is the importance of it?
69. What does early loading of implants mean?
70. Why do not we use the alumina implants any more?
71. How would you rank the load-bearing character of implants, according to their forms?
72. Definition of physical terms used in biomechanics.
73. Which biomechanical investigative methods can also be used in clinical practice?
74. What are the basic biomechanical principles of making an implant prosthesis?
75. What is the importance of the mechanical stress distribution in periimplant bone?
76. What is the difference between natural teeth and implants from the perspective of biomechanical behaviour?
77. What is the role of torque, and what are the possibilities to decrease it?

78. How can implant geometry influence long-term success of implants?
79. What is the theoretical basis of stress breakers, how can their clinical significance be judged?
80. What is the biomechanical difference between cylindrical and screw type implants?
81. Why is searching for an 'ideal morphology' important?
82. What does micro and macro porosity mean?
83. What parameters characterize a given surface morphology?
84. What does Bone-Implant Contact (BIC) mean?
85. What do you know about the Titanium Plasma Spray method?
86. What do you know about sandblasting?
87. What do you know about laser surface modification?
88. What do you know about the SLA?
89. Which methods may be applied to study the success of surface modification?
90. What is the surgical and prosthetic rule of healing abutments?
91. What characterizes the one-piece abutment?
92. How to provide the rotation stability of implant abutments?
93. How can be the divergence of implants prosthetically corrected?
94. What is characteristic of the zirconia abutments?
95. What does the direct impression technique mean?
96. What does the indirect impression technique mean?
97. What is the essence of the closed and open tray impression technique?
98. What are the parts of an implant retained prosthesis?
99. What types of fixed implant restorations do you know?
100. What are the advantages of cemented implant prosthesis?
101. What are the disadvantages of cemented implant prosthesis?
102. What are the advantages of screw-retained implant prosthesis?
103. What are the disadvantages of screw-retained implant prosthesis?
104. What are the types of removable implant restorations?
105. What are the roles of osteoblasts?
106. What is the definition of growth factors?
107. What are the bone morphogenic proteins (BMP)?
108. What are the possible clinical applications of growth factors?
109. What are the phases of bone regeneration?
110. What is the definition of remodeling?
111. What kind of graft is suitable for peri-implant keratinized mucosa widening?
112. Which donor areas can be used for full-thickness gingival flap transplantation?
113. What are the possibilities of bone replacement?
114. What is the osteoconduction?
115. When were bone substitutes first used?
116. What are the clinically important properties of bone replacement materials?
117. Which are the most frequently used bone substitutes?
118. Which two important factors influence the clinical success of bone substitutes?
119. What is the basic principle of Guided Bone Regeneration?
120. What kind of membranes do you know that can be used in Guided Bone Regeneration?
121. What is the essence of lateral augmentation surgery?
122. What are the limitations of the use of bone substitutes?
123. What is osteoinduction?
124. What is the role of bone morphogenetic proteins (BMPs)?
125. How can we harvest bone chips intraorally?
126. How is platelet rich plasma (PRP) produced?
127. What is the essence of bone-splitting surgery technique?
128. What is the sinus-lift surgical procedure, and what are the technical possibilities?
129. How can the time of implantation be related to the sinus lift surgery?
130. What seems to be the future possibility of bone replacement?
131. What are the guidelines for implant prosthetics when treating periodontal patients?

132. How can overloading of teeth be prevented?
133. What is the modern, aesthetic approach to implantation?
134. Why is immediate implantation beneficial?
135. What is the possibility of preserving the interdental papilla?
136. What soft tissue augmentation methods do you know?
137. What are the causes of implant overload?
138. What are the etiological factors of peri-implantitis?
139. What are the early and late consequences of peri-implantitis?
140. Why is a regular dental checkup important after implantation? How can peri-implantitis be treated?
141. For which type of tooth loss do we most often prepare a crown on an implant?
142. What are the general prosthetic conditions for making a crown?
143. What is the function of the implant head (prosthetic abutment)?
144. Possible methods of attaching the crowns, considerations for choosing the fixing method.
145. What aesthetic aspects must be considered when making crowns?
146. What are impression abutments and what is their role when making crowns?
147. What methods and materials are used for impression?
148. What metal alloys and tooth-colored materials are used when making crowns attached to implants?
149. What are the conditions for making a bridge on implants?
150. How can the load on individual implants be reduced with a prosthetic method?
151. What is the „tripodial” implant placement?
152. What are the advantages and disadvantages of implant supported fixed partial dentures?
153. What are the advantages and disadvantages of combined implant-tooth supported prosthesis?
154. What are the conditions of completing FPD in totally edentulous jaws?
155. What is the meaning of the mesio-structure and how are they made in implant prosthodontics?
156. What is the role of mesio-structure (bar-construction) in the distribution of masticatory forces?
157. What is the role of the mesio-structure in supporting and anchoring the implant prosthesis?
158. What are the cross-sections of mesostructures in general, and which one is used when?
159. What is the O-ring attachment, and what are the prosthetic indications?
160. Which grafts are suitable for widening the peri-implant mucosa?
161. Concerning the interdental papillae: what is Tarnow's rule?
162. The development, principle and practice of single-phase and two-phase implants.
163. What does the SLActive implant surface mean?
164. Aesthetic aspects in the formation of peri-implant soft tissue.
165. Advantages of fixed dental restorations, combinations of fixed restorations for both implants and teeth in case of implant and tooth.
166. What does peri-implant mucositis mean?
167. What does periimplantitis mean?
168. What are the therapeutical possibilities of periimplantitis?
169. What is the base of regenerative therapy of periimplantitis?
170. What are the most frequent mechanical complications?
171. What is the success rate of the sinus lift surgery?
172. What technical variations do you know for sinus lift?
173. What are the advantages and disadvantages of sinus lift surgery with lateral window?
174. What is the indication and the procedure of the sinus lift with crestal exploration?
175. What are the compliactions and difficulties of sinus lift surgery?
176. What is the importance of platform shifting/switching?
177. How can the conical cutter be used?
178. Describe the main characteristics of the conical connection.
179. What torque is required for immediate loading after immediate implant placement?
180. What is the 'socket shield' technique?
181. What is the significance of the transfer key?
182. What are the main aspects of implant planning (implant size selection and placement)?
183. What diagnostic tools are used in implant planning and what are their main features?

184. What is a metal sphere template?
185. What are the parts of a surgical template?
186. What supported surgical templates do you know? Advantages, disadvantages.
187. What technology can be used to make surgical templates? Advantages, disadvantages.
188. Describe the steps of using the Nobel Guide system.

Grading of courses⁵:

Verbal explanation of two essay of a greater topic (topic is up), followed by 5 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: 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. ISBN 3-87652-558-6
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://semmelweisgyetem.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.